

# City of Portsmouth

Department of Public Works



---

**May 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](http://www.Cityofportsmouth.com/publicworks) - water

### Water Use Restrictions

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

The current water supply conditions have recovered from the drought that occurred in 2016. The mandatory “No Lawn Watering” water use restrictions and “Voluntary Measures” are no longer in effect; however, we ask our water customers to please continue to use water wisely, minimize waste, and incorporate water efficient fixtures and appliances whenever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.

Precipitation events in late-2016 and early-2017 have helped to recharge the Bellamy Reservoir, increase stream flows and cause groundwater levels to rise to conditions typical for this time of year. Water operations staff continue to assess the supply conditions and will provide updates at least monthly.

Additional updates and tips regarding water efficiency can be accessed at the [cityofportsmouth.com](http://cityofportsmouth.com).

## Current Customer Water Demand

<b>Current Water Demand</b>
Below Normal
<b>Normal</b>
Above Normal
High
Very High
Historic High

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

Customer's continued efforts to conserve water have helped to keep water demand below normal in April. 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	Monthly Demand (Million Gallons per Day (MGD))	Historic Average Demand (ten-year average (MGD))
April 2016	4.21	4.14
May 2016	4.77	4.73
June 2016	5.62	5.07
July 2016	6.09	5.49
August 2016	5.66	5.51
September 2016	4.47	4.96
October 2016	3.89	4.23
November 2016	3.59	4.01
December 2016	3.79	3.93
January 2017	3.69	4.11
February 2017	3.54	4.20
March 2017	3.68	4.18
April 2017	4.01	4.14

Average daily water demand was 4.01 million gallons per day (MGD) in April 2017, which is 3.1% below the 10-year normal for this time of year and 0.20 MGD lower than demand in April 2016.

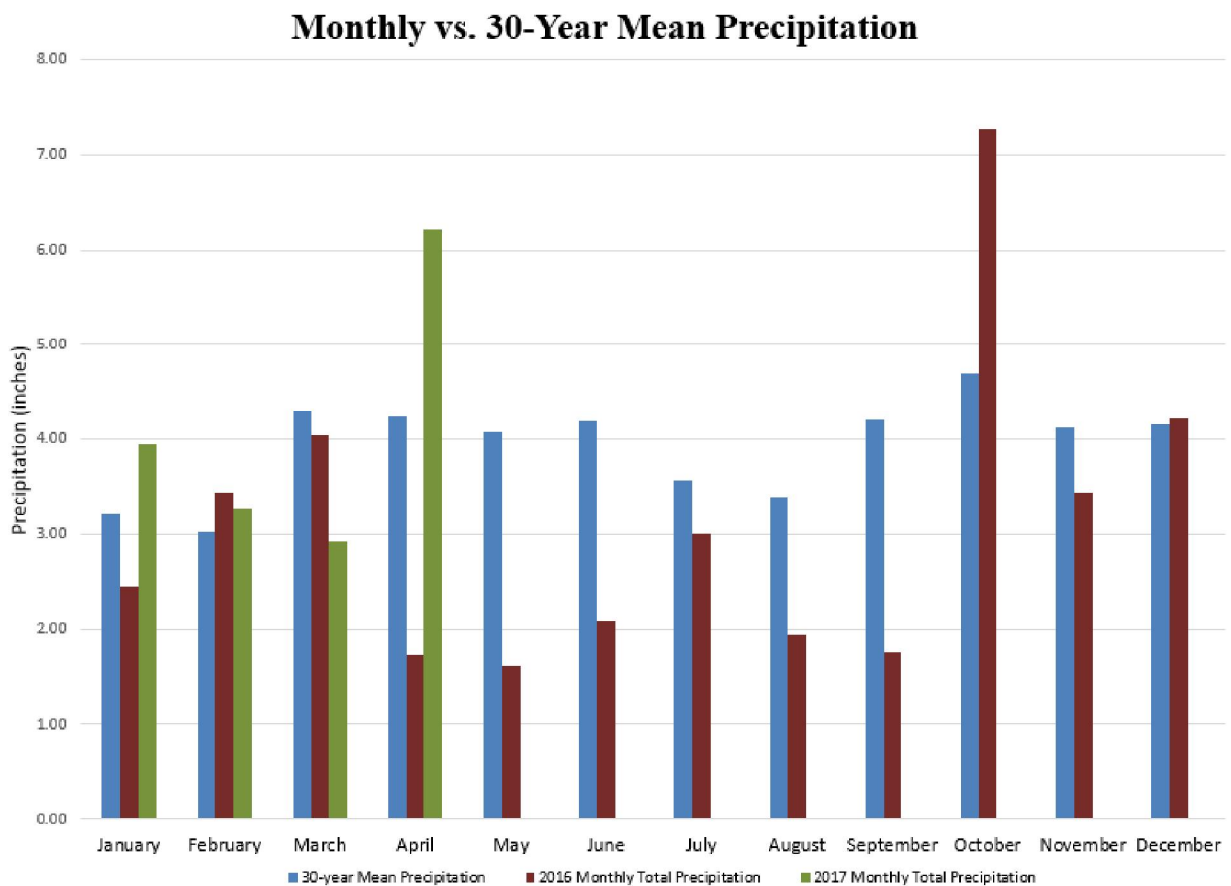
## Precipitation Status

Precipitation
Above Average
Average
Below Average
Dry
Very Dry
Drought

Total April precipitation in Portsmouth was 6.21 inches. This is 1.97 inches greater than normal for the month. Over the past three months there has been 12.40 inches of precipitation which is 7% more than the normal precipitation over this period. Storms during the first week of April yielded approximately 3.46 inches of rain which exceeds the average precipitation for the entire month of April. Storms on April 20-21 and April 25-26 yielded 0.91 inches and 1.48 inches of precipitation, respectively.

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, through April, equaled 41.67 inches. This factor remains below normal, however consideration of the past six- and three-month normal and slightly above normal precipitation, the precipitation status for this report is currently considered as Average conditions.

The following graphic illustrates the monthly deviations from average precipitation over 2016 and 2017.



## New Hampshire Drought Monitor

The following graphic summarizes the drought conditions in New Hampshire:

### U.S. Drought Monitor New Hampshire



**May 2, 2017**

(Released Thursday, May. 4, 2017)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	79.67	20.33	0.00	0.00	0.00	0.00
<b>Last Week</b> 04-25-2017	44.54	55.46	3.52	0.00	0.00	0.00
<b>3 Months Ago</b> 01-31-2017	8.41	91.59	75.35	44.60	0.00	0.00
<b>Start of Calendar Year</b> 01-03-2017	8.41	91.59	75.35	44.93	0.00	0.00
<b>Start of Water Year</b> 09-27-2016	15.33	84.67	62.44	40.49	19.27	0.00
<b>One Year Ago</b> 05-03-2016	86.55	13.45	0.00	0.00	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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

Author:

Brian Fuchs  
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

The National Drought Summary for May 2, 2017 identifies the seacoast area as abnormally dry conditions. The recent precipitation has improved the drought conditions throughout the majority of southern New Hampshire. Abnormally dry conditions at this time are primarily influenced by slow recovery in bedrock wells throughout these areas.

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
<b>Average</b>
Below Average
Low
Very Low
Drought

Currently the groundwater levels are considered **Average**. Groundwater levels have risen to levels that typically occur during this time of year.

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.

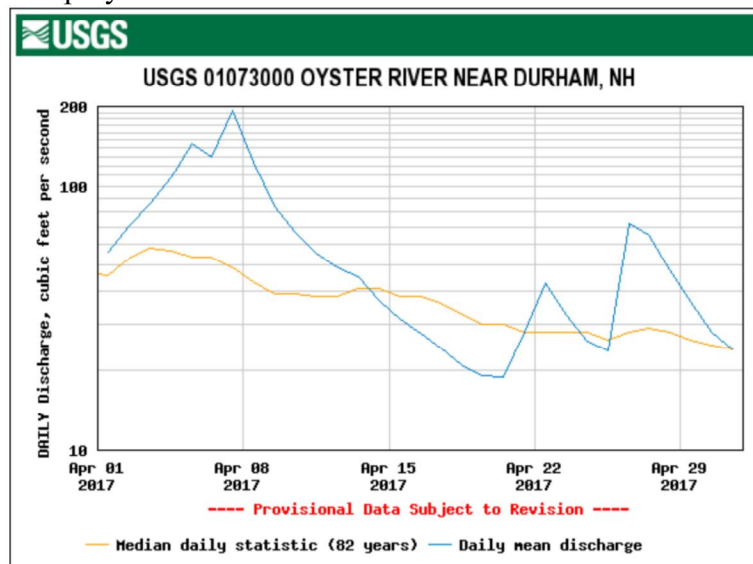
Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 34% and 45% of the water supply to Portsmouth customers, with the remaining 55% to 66% from the Bellamy Reservoir. In April 2017, 36% of the supply came from wells, 64% from the reservoir.

## River Flow

River Flow
<b>Above Average</b>
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 April resulted in considerably higher flow in the Oyster and Lamprey Rivers than those measured in March.





The monthly mean stream flow in the Oyster River at the USGS gauge was 59.8 cfs in April. This is 14.1 cfs (31%) higher than the 30-year April median flow rate of 45.8 cfs.

The monthly mean April stream flow in the Lamprey River at the USGS gauge was 811 cfs, which is 217 cfs (37%) higher than the 30-year April median flow rate of 594 cfs.

The storms in early April caused the Lamprey River flow to peak in excess of 2,000 cfs, and the Oyster River to peak in excess of 190 cfs. The current river flow conditions are considered **Above Average**.

## Reservoir Level

Reservoir Level
Above Average
<b>Average</b>
Below Average
Low
Very Low
Drought

The current stage of the reservoir is considered to be **Average** for this time of year. The precipitation that has occurred over the past six 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 0.6 feet above the spillway and the reservoir has approximately 702 million gallons of water above the surface water intake.

## Water Supply Capability

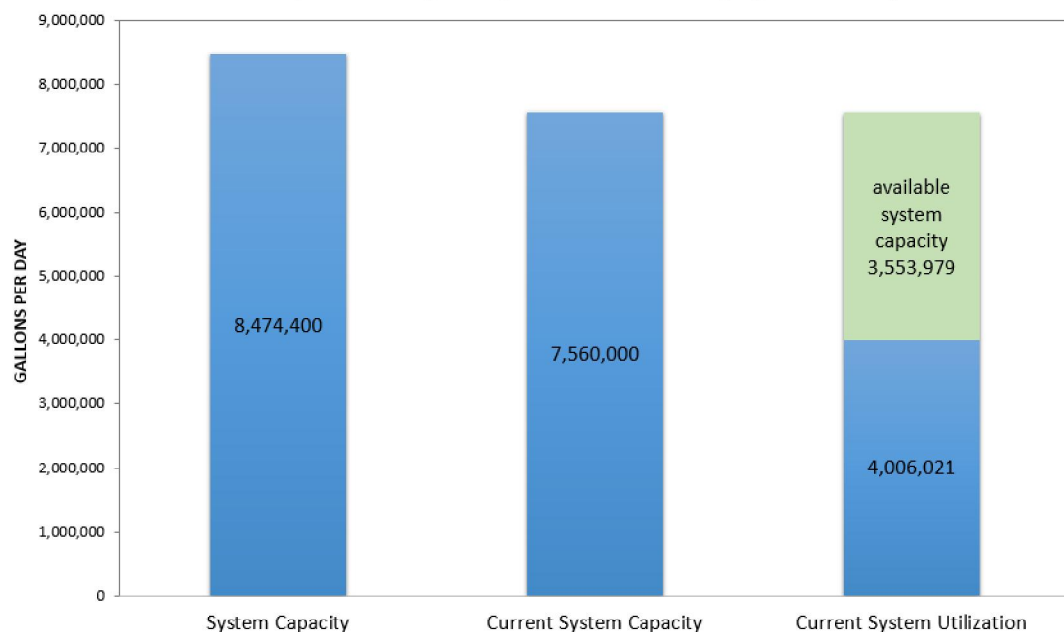
<b>Water Supply Capability</b>
Above Normal
Normal
<b>Below Normal</b>
Restrictions Necessary
Additional Restrictions Necessary
Emergency

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 53% of the current system capability.

**System Capacity & Utilization (April 2017)**



## 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.