



August 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](http://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 |

There are **no water use restrictions** at this time; however, the total July precipitation in Portsmouth was only 1.86 inches. This was 1.72 inches less than normal for the month. Daily records of water system production show that when the weather is hot and dry, customer water demand increases by 20%. Water demand in the Pease Tradeport system experiences an even higher increase than the Portsmouth system. This coupled with the continued loss of the Haven Well water supply on the Pease system puts additional stress on the overall Portsmouth water supply. Therefore, we continue to ask our water customers to please use water wisely, minimize waste, and incorporate water efficient fixtures and appliances whenever possible. In an effort to support this goal, the City offers 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.

Additional updates and tips regarding water efficiency can be accessed at the cityofportsmouth.com.

Water operations staff continue to assess the supply conditions and will provide updates at least monthly.

Current Customer Water Demand

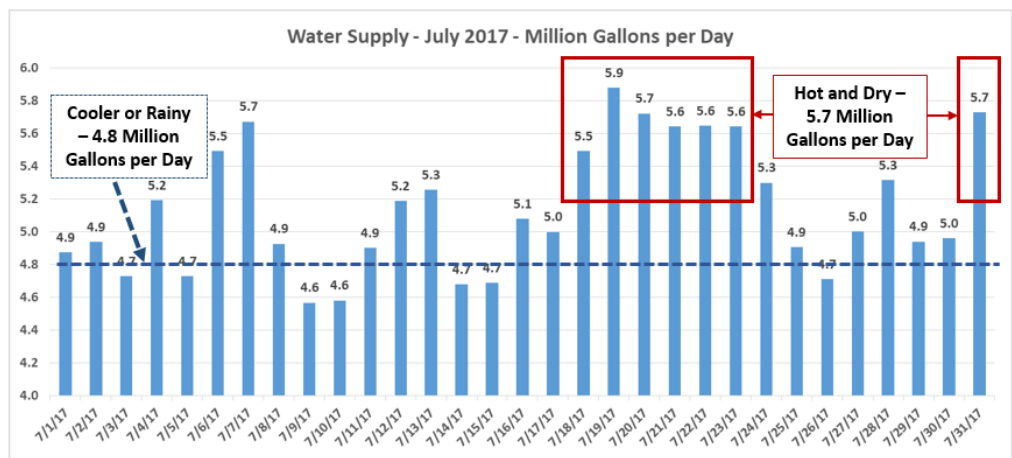
| Current Water Demand |
|----------------------|
| Below Normal |
| Normal |
| Above Normal |
| High |
| Very High |
| Historic High |

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

Generally cooler and wetter weather this spring and early summer helped keep water demand below normal for the beginning of summer. However, as the graphic below shows, when the weather gets hot and dry, water demand goes up. July water demand increased by approximately 1 million gallons a day when the weather was hot and dry.

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. Average daily water demand was 5.15 million gallons per day (MGD) in July 2017, which is 5.7% below the 10-year normal for this time of year and 0.72 MGD lower than demand in July 2016.

Impact of Hot and Dry Days on Portsmouth Water System Demand:



Precipitation Status

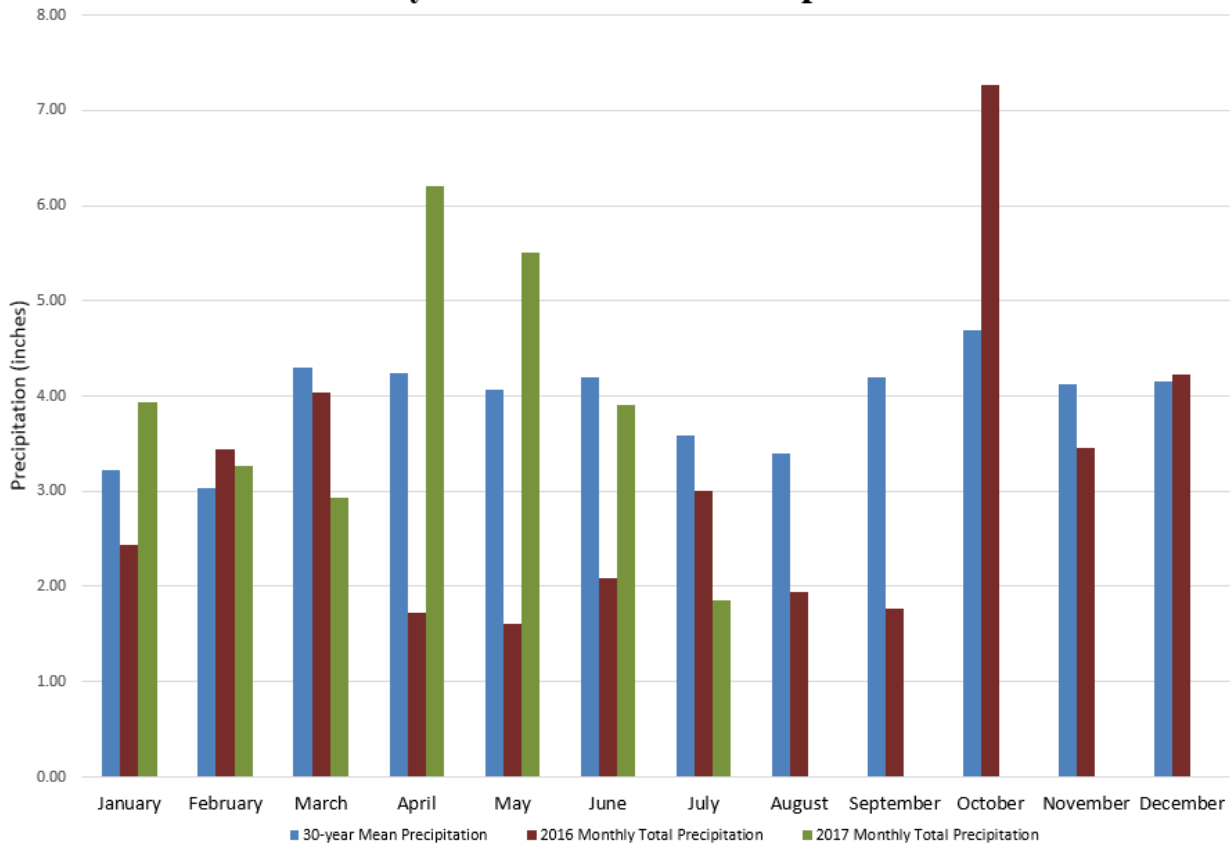
| |
|---------------|
| Precipitation |
| Above Average |
| Average |
| Below Average |
| Dry |
| Very Dry |
| Drought |

Total July precipitation in Portsmouth was 1.86 inches. This is 1.72 inches less than normal for the month. Over the past three months there has been 11.28 inches of precipitation which is 5% less than the normal precipitation over this period. Four storm events, each yielding from 0.18 to 0.77 inches, occurred in July. In terms of the water-year (October through September), the cumulative precipitation is currently 2.07 inches above the historic average for this time period.

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 July, totals 46.25 inches.

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

Monthly vs. 30-Year Mean Precipitation



Groundwater Levels

| Groundwater Levels |
|--------------------|
| Above Average |
| Average |
| Below Average |
| Low |
| Very Low |
| Drought |

Currently the groundwater levels are considered **Above Average**. Groundwater levels remain slightly above normal for this time of year. Groundwater levels peaked in mid-June and are now declining as is typically over the summer.

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.

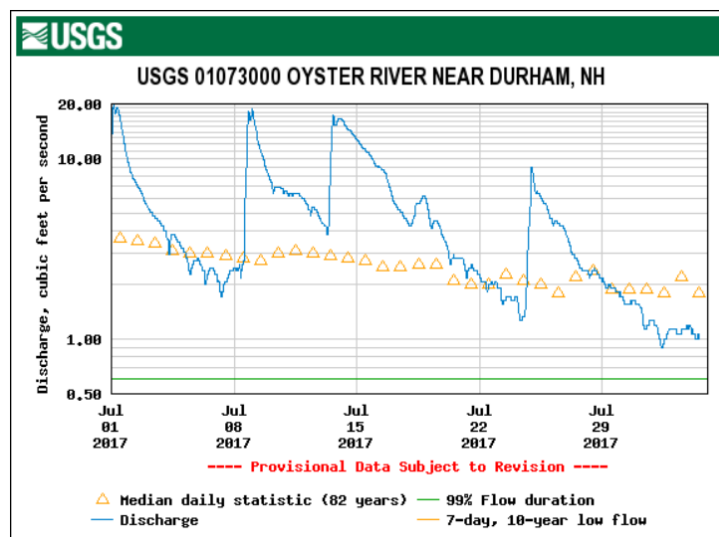
Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 34% and 45% of the water supply to Portsmouth customers, with the remaining 55% to 66% from the Bellamy Reservoir. In June 2017, 39% of the supply came from wells, 61% from the reservoir.

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 throughout July caused flows in the Oyster River and the Lamprey River to generally remain higher than historic averages.



The monthly mean stream flow in the Oyster River at the USGS gauge was 5.3 cfs in July. This is 0.95 cfs (22%) higher than the 30-year July median flow rate of 4.4 cfs.

The monthly mean July stream flow in the Lamprey River at the USGS gauge was 93 cfs, which is 29 cfs (45%) higher than the 30-year July median flow rate of 64 cfs.

The current river flow conditions are considered **Above Average**.

Reservoir Level

| |
|----------------------|
| Reservoir Level |
| Above Average |
| Average |
| Below Average |
| Low |
| Very Low |
| Drought |

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 current stage of the reservoir is considered to be **Above Average** for this time of year. The precipitation that has occurred over the past nine months has recharged the reservoir and maintained its level above the spillway through July.

Flow over the dam spillway ceased on August 1st. This typically occurs at the beginning of July. At this time the Bellamy Reservoir water level is at the spillway elevation. Water flow past the dam is controlled by an outlet valve. The flow into the Bellamy River is adjusted to rates that correlate with the Oyster River flow rate. The reservoir currently has approximately 637 million gallons of water above the lower surface water intake.

Water Supply Capability

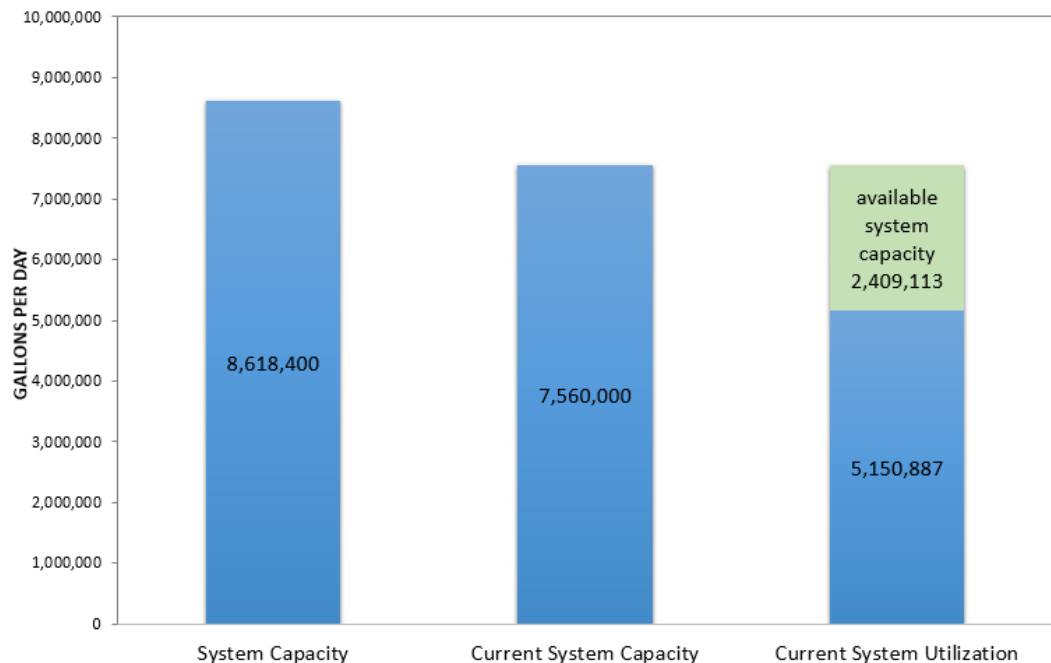
| Water Supply Capability |
|-----------------------------------|
| Above Normal |
| Normal |
| Below Normal |
| Restrictions Necessary |
| Additional Restrictions Necessary |
| Emergency |

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 facility 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 68% of the current system capability.

System Capacity & Utilization (July 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.