City of Portsmouth

Department of Public Works

July 2, 2018

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:
http://www.cityofportsmouth.com/publicworks/water/supply-status

Water Use Restrictions

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

There are currently no water restrictions in place, however, due to the below normal precipitation pattern and high water demand, Portsmouth water customers are requested to:

i. Minimize landscape watering and the use of water for other outdoor purposes such as car washing.

ii. Water use for irrigation should only occur between the hours of 10PM and 5AM to reduce evaporative losses.

As the accompanying information shows, the recent weather conditions have been very dry. This has caused lower than normal stream flows and recharge to our water supplies. If dry conditions persist, mandatory restrictions on non-essential water use may be required. They could include odd/even or two-days/week watering schedules.

We continue to ask our water customers to please use water wisely, minimize waste, and incorporate water efficient fixtures and appliances whenever possible.

Water operations staff continue to assess the supply conditions and will provide updates as needed.

Current Customer Water Demand

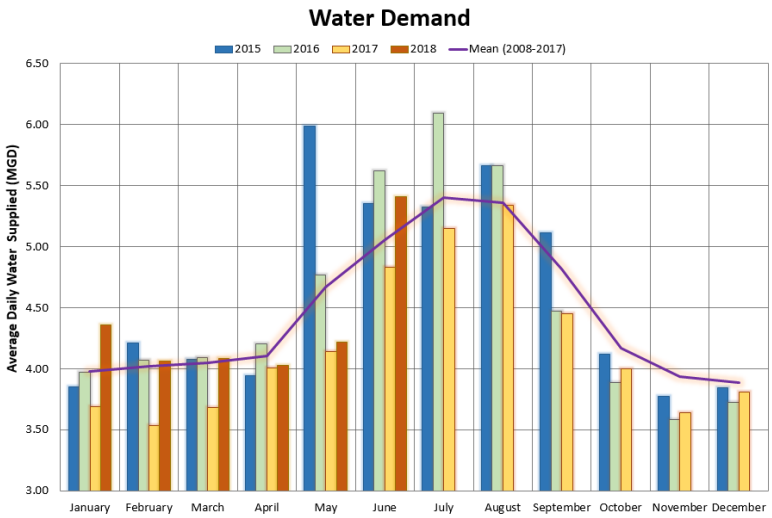
Current Water Demand
Below Normal
Normal
Above Normal
High
Very High
Historic High

Water demand is **Above Normal** for this time of year. Water demand has increased to over 5.41 MGD in June due to additional irrigation demands. This is 0.36 MGD above the typical demand of 5.05 MGD for June. Average daily water demand was 4.22 million gallons per day (MGD) in May 2018, which is 9.7% less than the 10-year average for May.

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))
May 2017	4.14	4.73
June 2017	4.83	5.15
July 2017	5.15	5.46
August 2017	5.34	5.43
September 2017	4.45	4.92
October 2017	4.00	4.19
November 2017	3.64	3.94
December 2017	3.81	3.86
January 2018	4.36	4.03
February 2018	4.06	4.15
March 2018	4.08	4.11
April 2018	4.03	4.12
May 2018	4.22	4.67
June 2018	5.41	5.05

The following chart illustrates the average daily water demand by month over the past four years.

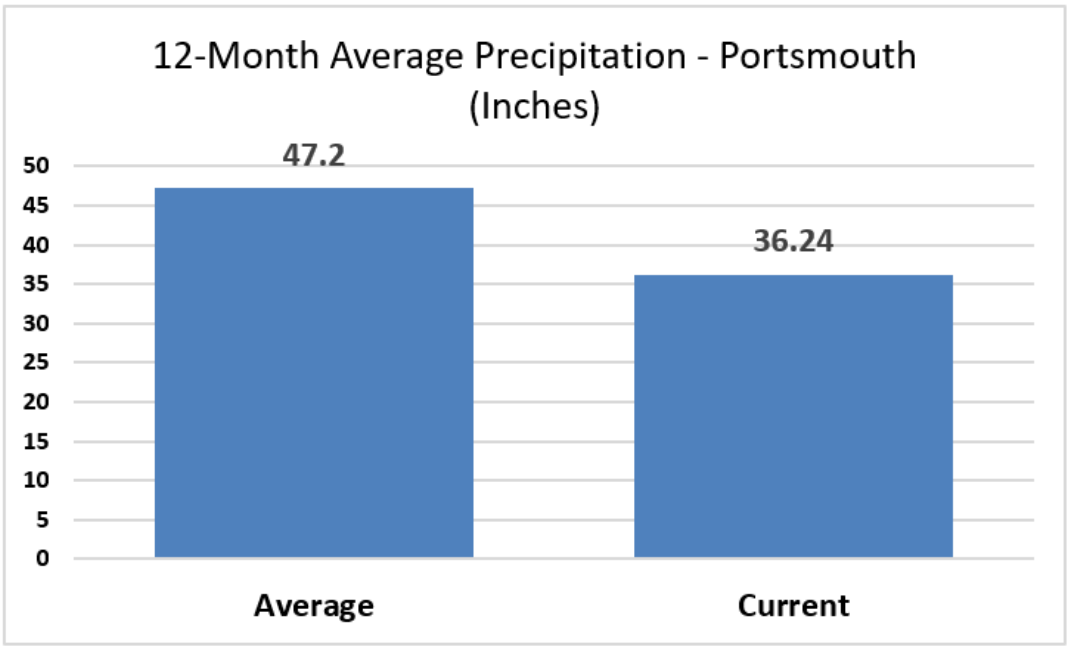


Precipitation Status

Precipitation
Above Average
Average
Below Average
Dry
Very Dry
Drought

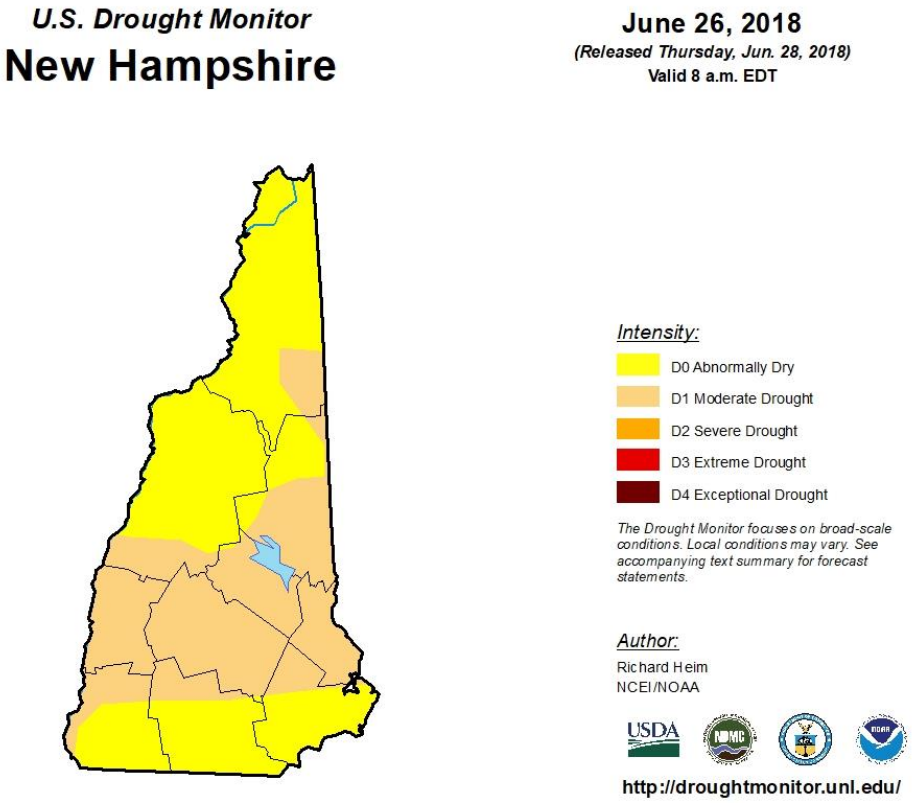
Total June precipitation in Portsmouth was 2.83 inches. This followed a dry May, which experienced only 1.35 inches of precipitation. Combined, these two months received only 50% of the normal precipitation. Over the past six months there has been a total deficit of 5.51 inches from normal, of which 5.00 inches of this deficit has occurred over the past three months. Fortunately for the water system and the Seacoast area, we received good precipitation this spring and this has contributed to recharge of our aquifers and reservoir.

Precipitation over the past 12-months totaled 36.24 inches, which is 77% of the mean annual amount of 47.20 inches.



New Hampshire Drought Monitor

The following graphic summarizes the drought conditions in New Hampshire:

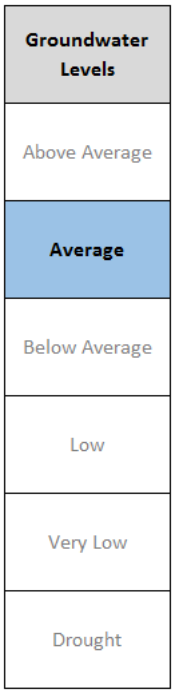


The National Drought Summary for June 26, 2018 the Seacoast of New Hampshire as either being Abnormally Dry or in Moderate Drought.

Stacey Herbold, Water Conservation and Water Use Program Coordinator at NHDES, states that, "When conditions are abnormally dry and drought indicators predict a likely drought looming, it is time to take action. While hundreds of homeowners' wells went dry during the 2016/2017 drought and a handful of public water systems struggled, the majority of public water systems worked very hard to manage their supplies successfully with a major player in that success being the help of the public limiting outdoor water use. By taking action now we delay any impending shortages and create a buffer of time to prepare for reduced supplies."

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*.

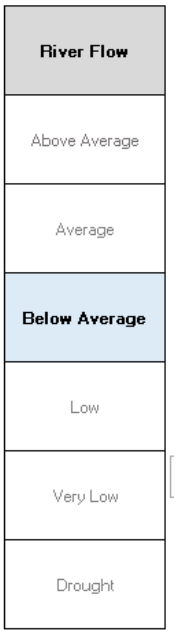
Groundwater Levels



Currently the groundwater levels are considered **Average.** Groundwater levels in the Portsmouth and Madbury aquifers are at levels that are typical for this time of year. By utilizing a greater proportion of surface water from the Bellamy Reservoir during the winter and spring, we have been able to reserve the groundwater for the drier summer period. We are entering the summer with considerable storage of groundwater.

Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 23% and 42% of the water supply to Portsmouth customers, with the remaining 58% to 77% from the Bellamy Reservoir. In May 2018, 39% of the supply came from wells, 61% from the reservoir.

River Flow



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.

The monthly mean May stream flow in the Oyster River at the USGS gauge was 13.6 cfs, which is 8.4 cfs (38%) lower than the 30-year May median flow rate of 22.0 cfs. The mean flow in June, as of the 22nd, is 4.18 cfs, which is 63% lower than the 30-year June median flow rate.

The monthly mean May stream flow in the Lamprey River at the USGS gauge was 207 cfs, which is 107 cfs (34%) lower than the 30-year May median flow rate of 314 cfs. The mean flow in June, as of the 22nd, is 56.5 cfs, which is 66% lower than the 30-year June median flow rate.

The recent storm event during the last week of June and in May caused slight, temporary increases in stream flow, but the decline in flow generally persisted over the month of May and continued to be very low for most of June.

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

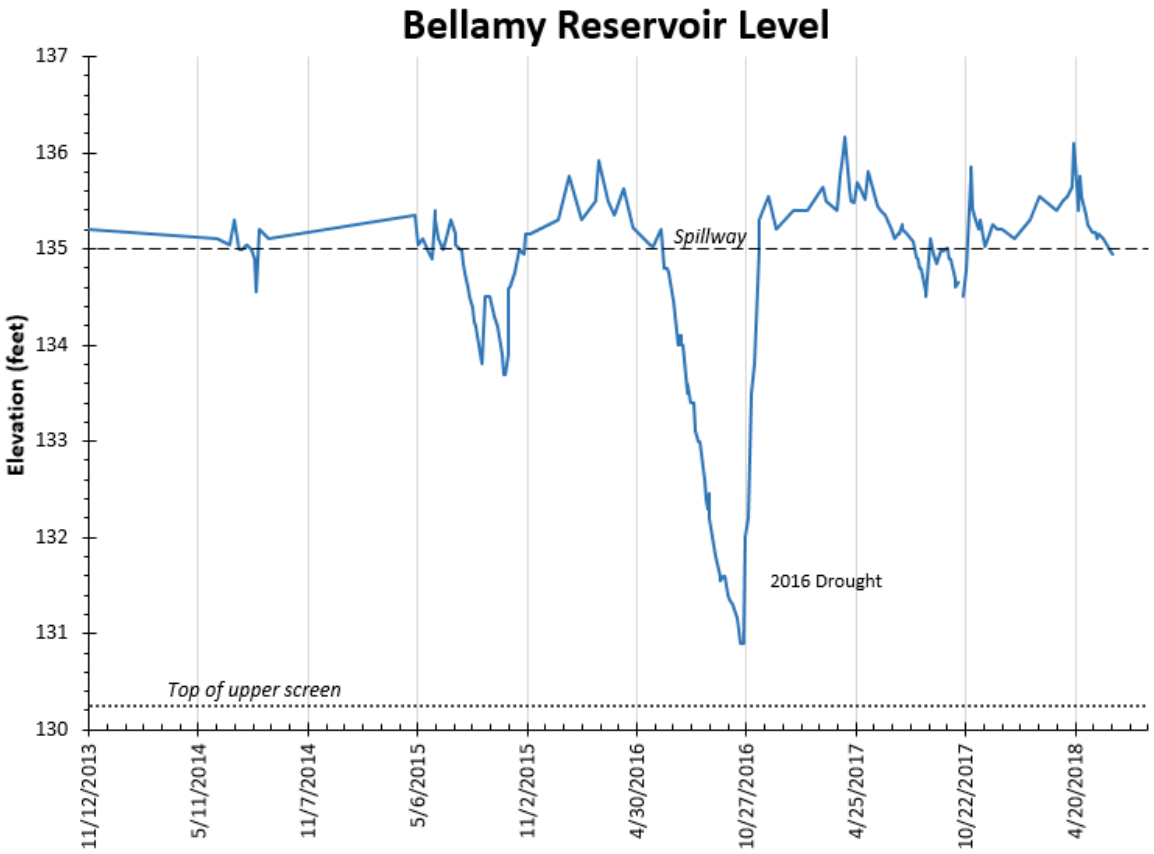
Reservoir Level

Reservoir Level
Above Average
Average
Below Average
Low
Very Low
Drought

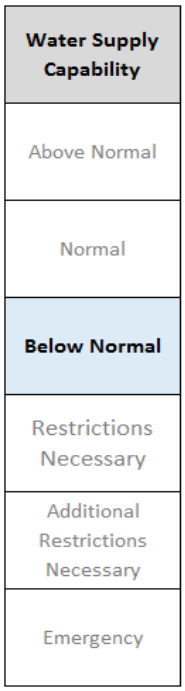
As the surface water source for the Madbury Water Treatment Facility, the Bellamy Reservoir is monitored to assess and predict the overall amount of water available for the Treatment Facility. Reservoir water levels are compared to typical monthly levels to assess the reservoir conditions.

The current stage of the reservoir is considered to be **Average** for this time of year. Water ceased flowing over the dam spillway on June 15th, however, due to 1 ½ inches of rain last week water is currently overflowing the spillway.

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 600 million gallons of water above the lower surface water intake.



Water Supply Capability



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.

Further Updates and Information

This information will be distributed electronically on the City of Portsmouth's website at:
http://www.cityofportsmouth.com/publicworks/water/supply-status

Water Quality Updates can be accessed at:
http://www.cityofportsmouth.com/publicworks/water

Water Infrastructure and Construction project updates can be found at:
http://www.cityofportsmouth.com/publicworks/projects

If anyone needs additional information or has questions contact Al Pratt, Water Supply Operations Manager at 520-0622.