



August 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: www.Cityofportsmouth.com/publicworks - water

Water Use Restrictions

Customer Water Restrictions
N/A
None
Odd # Day Watering Only
Two-Days per Week Watering
No Lawn Watering
Essential Water Use Only

Precipitation events during the last couple weeks of July considerably reduced water demands. As the accompanying information shows, this rainfall also resulted in slightly higher than normal stream flows, reservoir levels and recharge to our water supplies. Therefore, the Portsmouth water system does not have any water use restrictions in place.

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

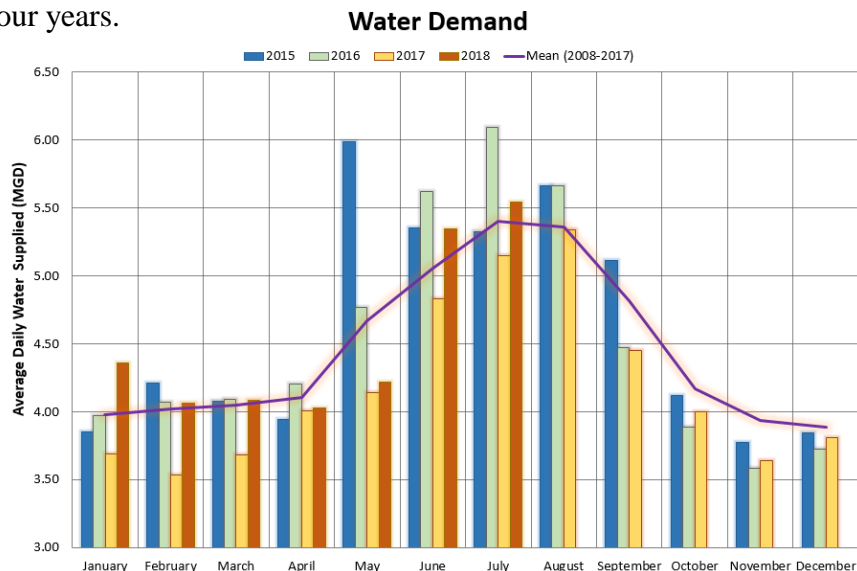
Current Water Demand
Below Normal
Normal
Above Normal
High
Very High
Historic High

Water demand during the first two weeks of July increased dramatically as a result of the hotter drier weather and associated demand for irrigation water. This demand reached an annual daily high of 6.7 million gallons per day (MGD) on July 12th. The precipitation events over the last couple weeks of July help relieve the water demands.

The average daily water demand for July was 5.55 MGD, which is about 3% higher than the 10-year average for July. 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))
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	5.35	5.05
July 2018	5.55	5.40

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

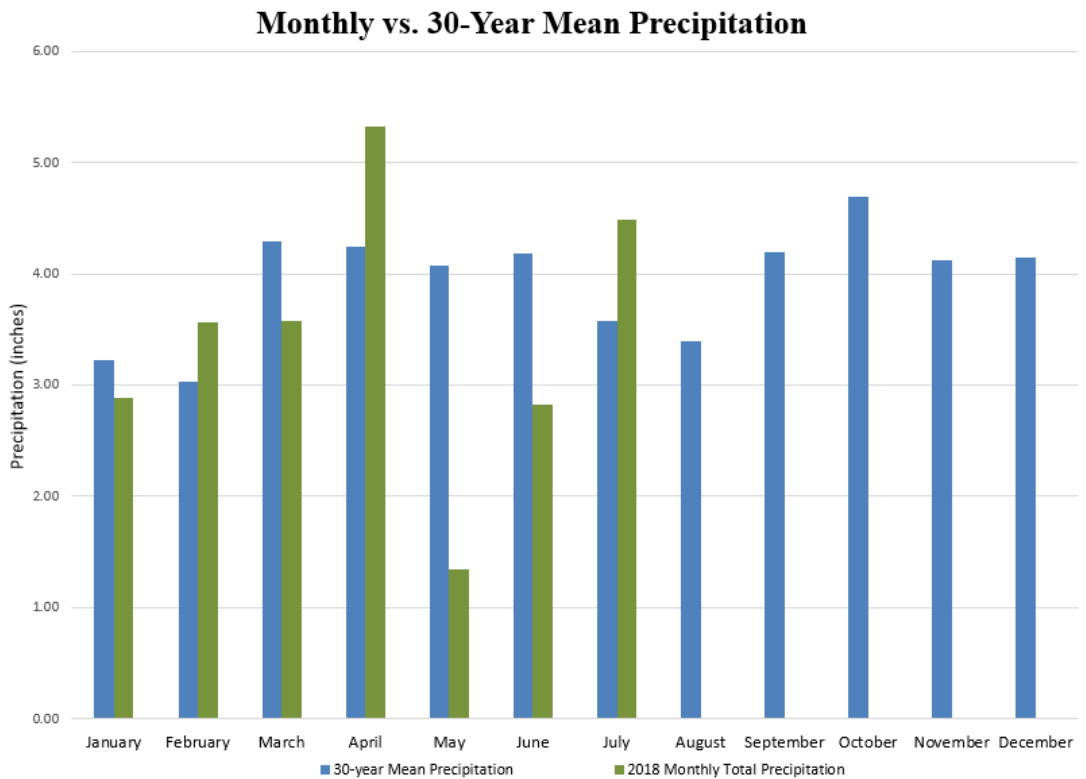


Precipitation Status

Precipitation
Above Average
Average
Below Average
Dry
Very Dry
Drought

Total July precipitation in Portsmouth was 4.49 inches. This is 0.91 inches more than normal for the month. As of July 17, only 0.72 inches of precipitation occurred; however, three storms over the last two weeks of July yielded an additional 3.77 inches. The higher than normal precipitation in July has considerably helped to reduce water demands and have helped to recharge the Bellamy Reservoir to levels slightly higher than normal for this time of year.

Precipitation over the past 12-months totaled 38.95 inches, which is 83% of the mean annual amount of 47.20 inches.



New Hampshire Drought Monitor

The following graphic summarizes the drought conditions in New Hampshire:

U.S. Drought Monitor New Hampshire

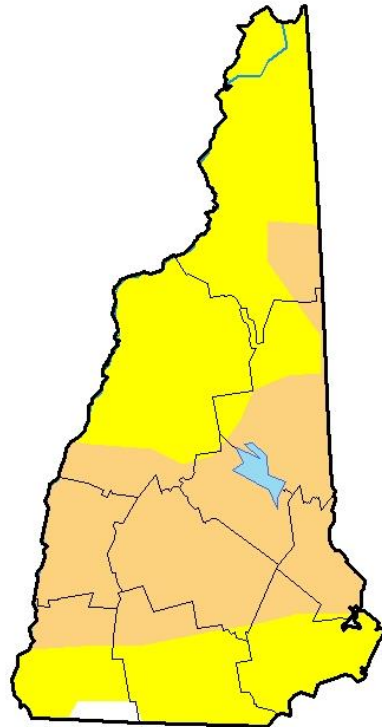
July 24, 2018

(Released Thursday, Jul. 26, 2018)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.92	99.08	43.89	0.00	0.00	0.00
Last Week 07-17-2018	0.00	100.00	62.06	0.00	0.00	0.00
3 Months Ago 04-24-2018	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year 01-02-2018	99.63	0.37	0.00	0.00	0.00	0.00
Start of Water Year 09-26-2017	88.86	11.14	0.00	0.00	0.00	0.00
One Year Ago 07-25-2017	97.85	2.15	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:

Chris Fenimore
NCEI/NESDIS/NOAA



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

The National Drought Summary for July 24, 2018 identifies portions of New Hampshire in Abnormally Dry or Moderate Drought conditions. Between July 24th and August 1st, Portsmouth received 1.72 inches of precipitation. This has relieved the abnormally dry conditions in the seacoast NH area.

Notice from the NHDES: *The New Hampshire Drought Management Team, coordinated by New Hampshire Department of Environmental Services (NHDES) and composed of state and federal agency representatives and stakeholders, met on July 19, 2018, to discuss drought conditions and impacts. Currently, the U.S. Drought Monitor categorizes 62% of the state, mostly in the southern half, as moderate drought and the remainder of the state as abnormally dry. Based on this development, the team agreed that the most important recommendation right now is for the public to be mindful about outdoor water use and conserving resources. Recommended steps to take include reducing or eliminating landscape watering, limiting any watering to between 7 PM and 5 AM, and suspending the washing down of large outdoor surfaces such as cars, homes and driveways. Currently, 47 community water systems have imposed outdoor water use restrictions and the number is expected to increase as drought persists.*

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 considered average. Groundwater levels in the Madbury aquifer are typical for this time of year. Water levels in our Portsmouth supply wells are slightly below average, but still within expected levels 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 periods.

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. At this time, 33% of the supply is coming from wells and 67% 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.

The monthly mean July stream flow in the Oyster River at the USGS gauge was 4.4 cubic feet per second (cfs), which is equal to the 30-year July median flow rate. As of July 16th, the July average stream flow was only 1.9 cfs, which was 56% lower than the 30-year July median flow rate. The precipitation events over the last couple weeks of July caused substantial increases in stream flow.

The monthly mean July stream flow in the Lamprey River at the USGS gauge was 105 cfs, which is 41 cfs (64%) higher than the 30-year July median flow rate of 64 cfs.

For this assessment, river flow conditions are considered average.

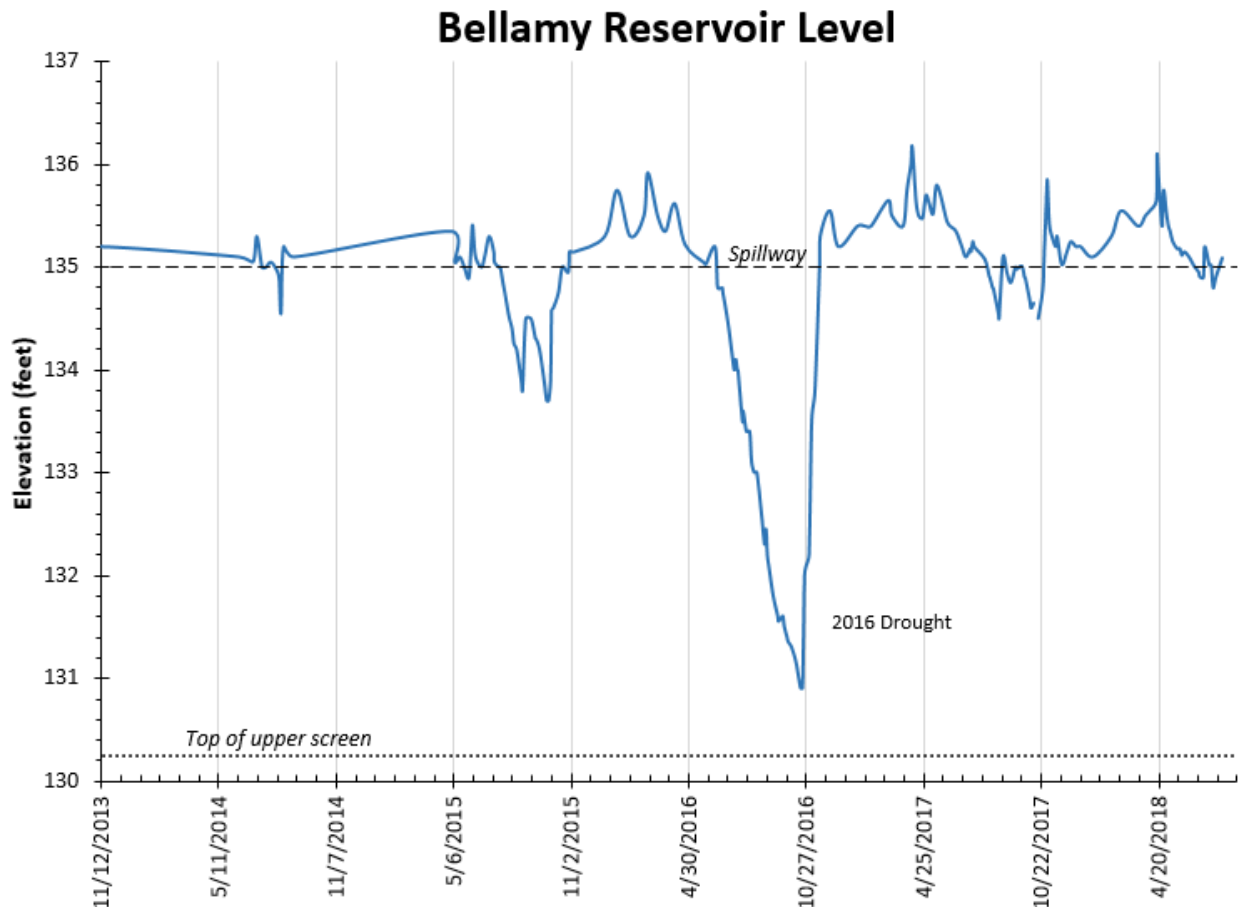
Reservoir Level

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, but due to storms in late June the reservoir overtopped the spillway for a week and a half in early July. Again in late July, the precipitation events caused the reservoir to rise and flow over the spillway.

At the end of July the reservoir was 0.35 feet above the spillway. The reservoir currently has approximately 670 million gallons of water above the lower surface water intake.



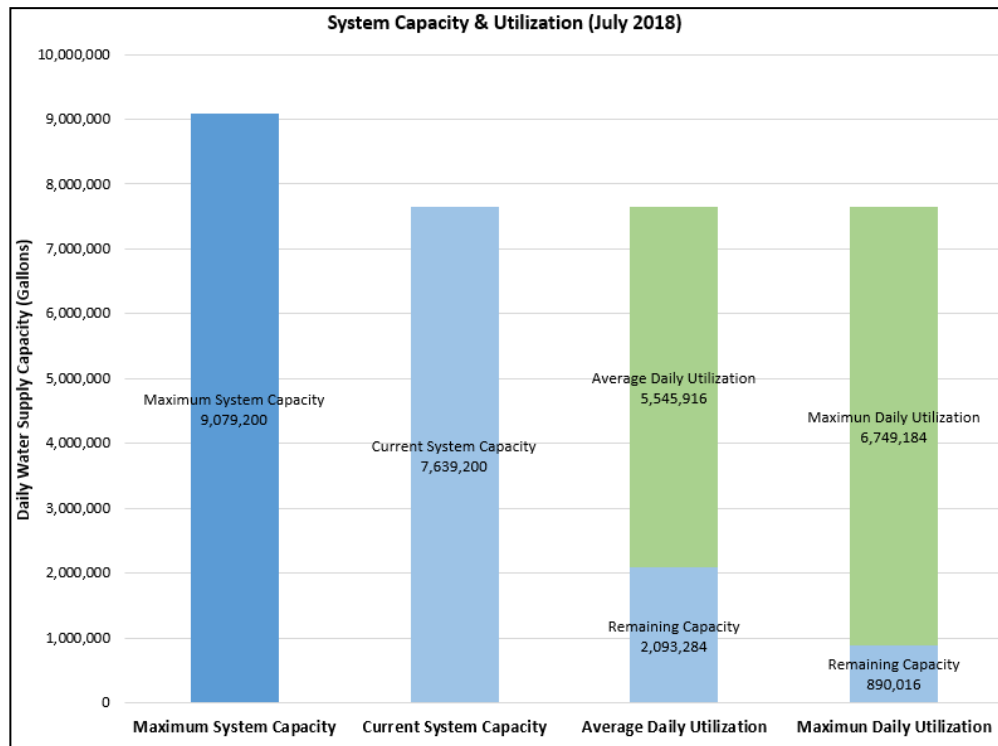
Water Supply Capability

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. Average daily demand was 73% of the current system capability in July. Peak daily demand due to irrigation and cooling water were higher than normal during early July. The peak daily demand in July was 6.7 MGD, which equates to approximately 88% of the current maximum system capacity.



Further Updates and Information

This information will be distributed electronically on the City of Portsmouth's website in the Department of Public Works > Operations > Water section. If anyone needs additional information or has questions contact Al Pratt, Water Supply Operations Manager at 520-0622

