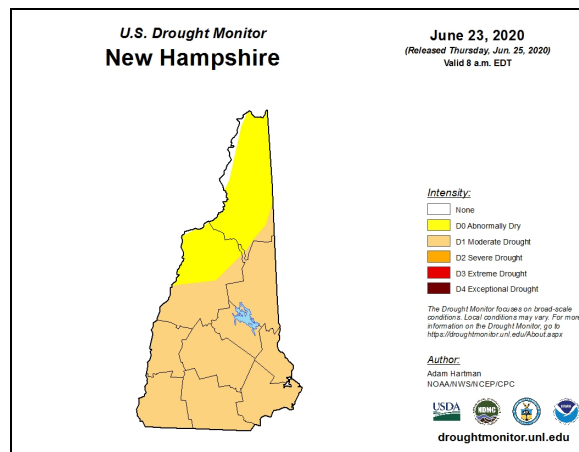




July 1, 2020

Portsmouth Water Supply Status Report



<https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?NH>

MODERATE DROUGHT DECLARED

Due to the dry weather and below normal precipitation in May and most of June, the U.S. Drought Monitor elevated the southern half of the state to **“Moderate Drought”** conditions as of June 23, 2020. However, on June 30th Portsmouth received three inches of rain, which will help our conditions considerably. It also reduced water demand from a high of 6.15 million gallons delivered on June 21, 2020 to only 3.50 million gallons on June 30th.

The New Hampshire Department of Environmental Services is implementing the State Drought Management Plan to coordinate the State Drought Management Team of state, federal, regional and municipal agencies, including the Portsmouth DPW Water Division. Ongoing actions include: assessing reservoir impacts and adjusting operations, working with drinking water systems statewide and ensuring the public is informed of the impacts and conservation measures that should be employed now to avoid serious problems later in the summer. As more households are watering lawns and new flower vegetable gardens, the DPW Water/Stormwater Division encourages residents to “Think Blue” and consider some of these water-saving measures you can practice at home:

www.cityofportsmouth.com/publicworks/water/water-efficiency-information

Currently the Portsmouth and Pease Tradeport drinking water systems are able to meet the current water supply demands. City staff are continually monitoring the weather and our water supplies and will revise projections as needed.

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

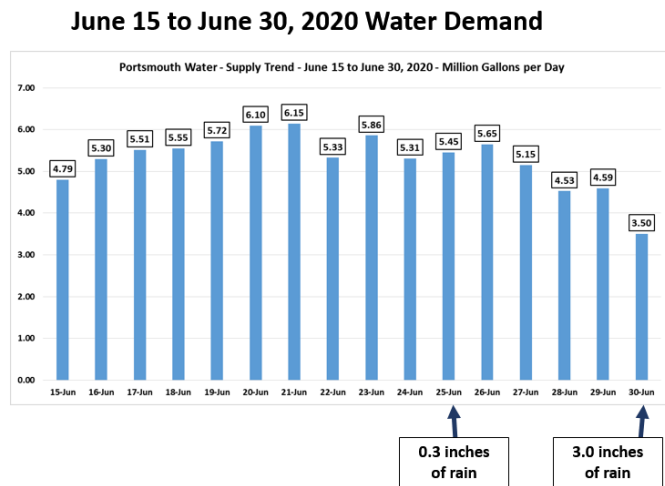
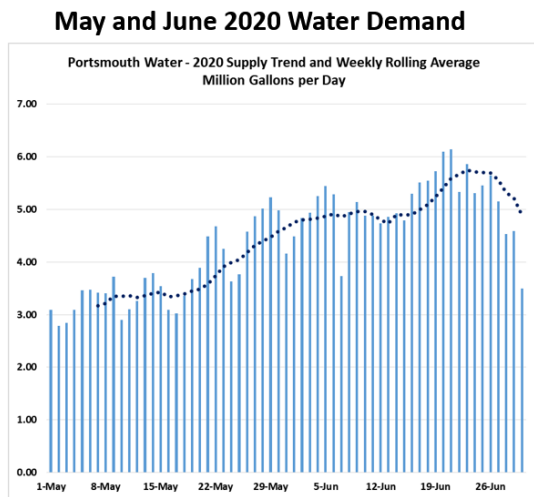
Water use restrictions are currently not in effect. However, as the accompanying information shows, prior to the rainfall on June 30th, recent weather conditions have been very dry. This has caused lower than normal stream flows and recharge to our water supplies. If dry conditions persist, mandatory 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

The following graphics show how water demands in our combined systems increased during the dry May and June period. The graphic on the right shows the effect of the rainfall on water demand near the end of June.



Precipitation Status

According to the Pease NOAA data, precipitation in Portsmouth was 3.85 inches in May, with three inches occurring on June 30th. Some locations in the City received higher volumes of rain on June 29th and 30th. The rain gauge we track at City Hall recorded over 5 inches of rain over this period of time. This is typical of the nature of the sporadic showers we can experience on the Seacoast in the summer. High volumes of water can fall in one area during a shower while, at the same time, little precipitation might fall just a few miles away. Typically, 4.19 inches of precipitation occurs in June. For the year so far, 2020 remains fairly dry with only April precipitation being above normal for the month.

Currently, precipitation over the past 12-months totals 40.79 inches, which is 85% of the mean annual amount of 48 inches.

Precipitation	Status Criteria	Explanation
Above Average	Above 110% Rolling 12-month	Total precipitation over a rolling 12-month period is compared to the normal annual precipitation in Portsmouth of 48.19" to evaluate deviations and support the evaluation of the water sources with respect to groundwater and reservoir levels. Precipitation is a factor that also assists with the prediction of seasonal variations in source water storage. The categories are divided by percentage of the normal annual precipitation. Average conditions are considered to exist between 90% and 110% of the annual normal.
Average	90 to 110% Rolling 12-month	
Below Average	80 to 90% Rolling 12-month	
Dry	70 to 80% Rolling 12-month	
Very Dry	60 to 70% Rolling 12-month	
Drought	Below 60% Rolling 12-month	

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

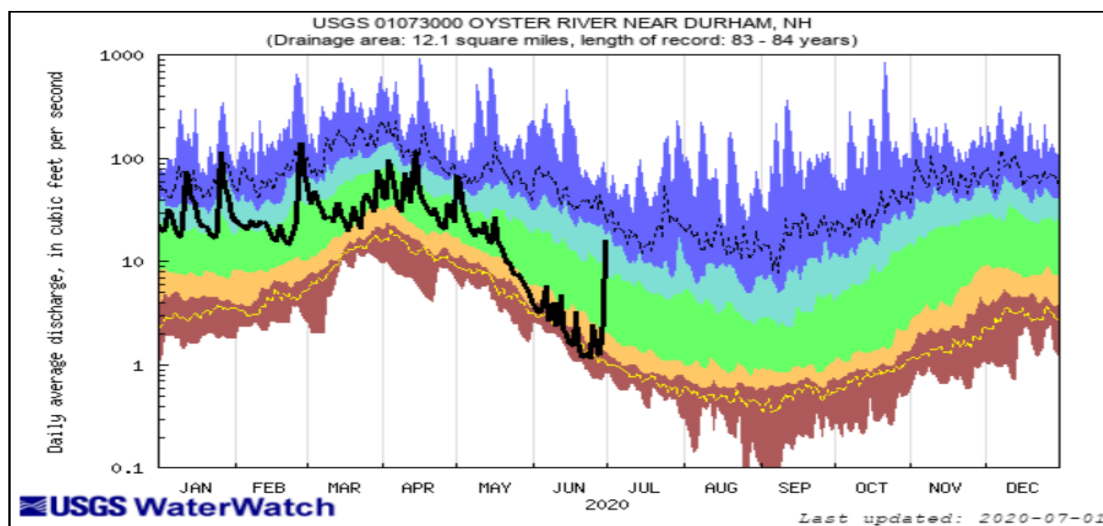
Currently the groundwater levels are considered **Average**. Groundwater levels in the Portsmouth and Greenland aquifers are at levels that are typical for this time of year and in some cases, a little bit above average. The groundwater levels in the Madbury wells are higher than average. By utilizing 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 2020, 44% of the supply came from wells, 56% 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 18.6 cfs, which is 3.4 cfs (15%) lower than the 30-year May median flow rate of 22.0 cfs. The mean flow in June was tracking 75 to 95% lower than the 30-year June median flow rate until the rainfall on June 30th. The following graphic shows the effect of that rain. As of July 1st, flows are currently above normal due to this rainfall:



Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile - highest
Much below Normal		Below normal	Normal	Above normal		Much above normal
						Flow

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 3rd. This is a month earlier than typical. It may begin flowing again in the future due to the recent rains.

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



Bellamy Reservoir and Dam on June 29, 2020

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. Average daily demand was 68% of the current system capability based on June data.

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 Brian Goetz, Deputy Director of Public Works at 766-1420 or Al Pratt, Water Resource Manager at 520-0622.

