



**Portsmouth and Pease International Tradeport
Drinking Water Status Report
2024 – Third Quarter**
(July 11, 2024 – November 19, 2024)

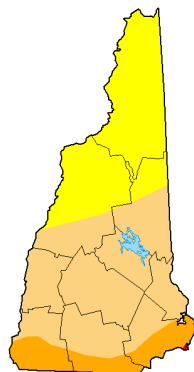
The City of Portsmouth NH water supply sources have been resilient to the effects of the drought conditions that have persisted since late summer. The surface-water source Bellamy Reservoir is currently refilling from the low levels observed in October due to recent storms and groundwater levels are within expected levels for this time of year. In order for groundwater recharge to occur before next spring, we must continue to experience above-freezing temperatures and rain events. We will continue to monitor the water supply and if drought conditions persist through the winter and spring, water use restrictions may need to be implemented next year. As always, we ask that our customers be vigilant and efficient with their water usage.

Precipitation and Weather

New Hampshire is experiencing drought conditions along with much of the U.S. As of November 19, 2024 the US Drought Monitor has identified Seacoast NH in “moderate” to “severe” drought.

U.S. Drought Monitor
New Hampshire

November 19, 2024
(Released Thursday, Nov. 21, 2024)
Valid 7 a.m. EST



Intensity:

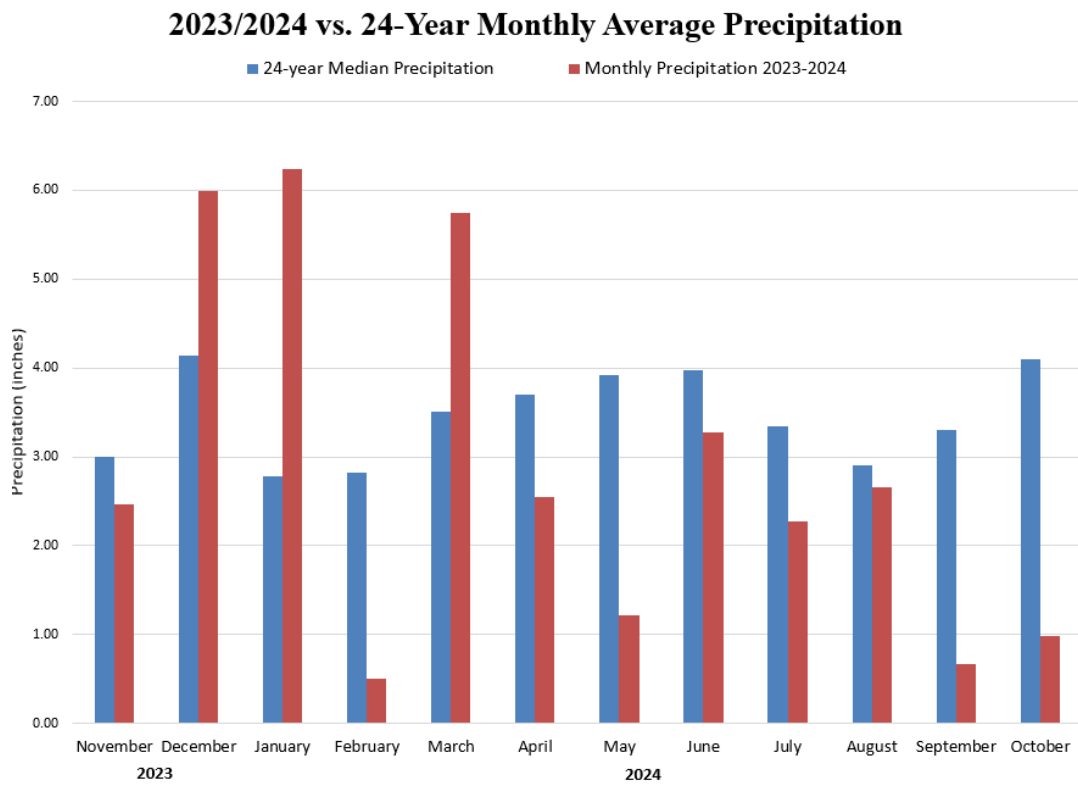
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor go to <https://droughtmonitor.unl.edu/About.aspx>

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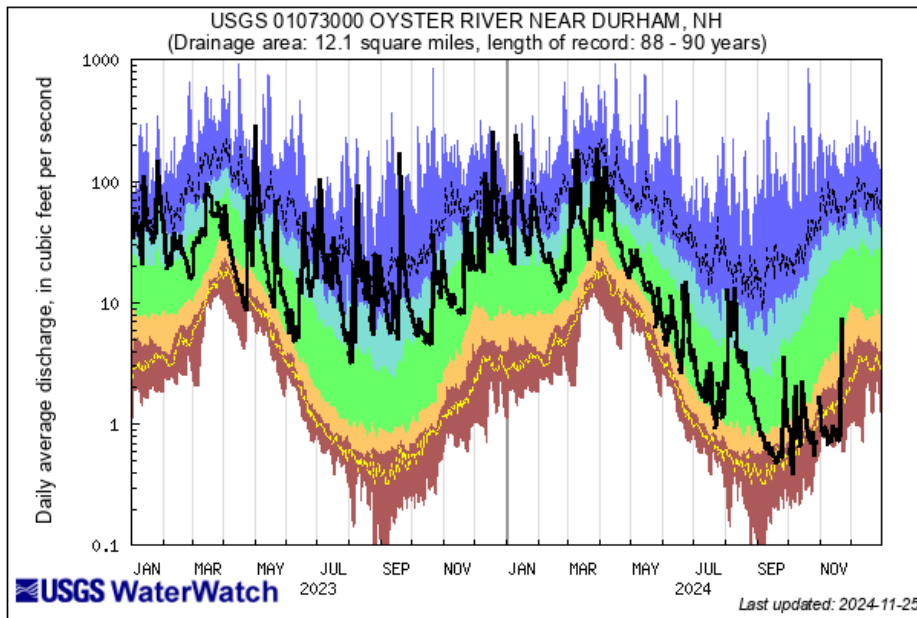
The following graph shows the variability of precipitation we have experienced in the last twelve months. After a few months of much higher-than-normal precipitation over the winter of 2023-24, the remainder of the year was much drier than normal, with September precipitation 80% below normal and October, 76% below normal.



The annual average precipitation as of October 2024 was 24% below normal at a total of 34.6 inches. Precipitation in November totaled 1.36 inches, which was still below normal for the month. With seasonal changes in weather patterns, we typically see additional precipitation events in the late-fall and winter.

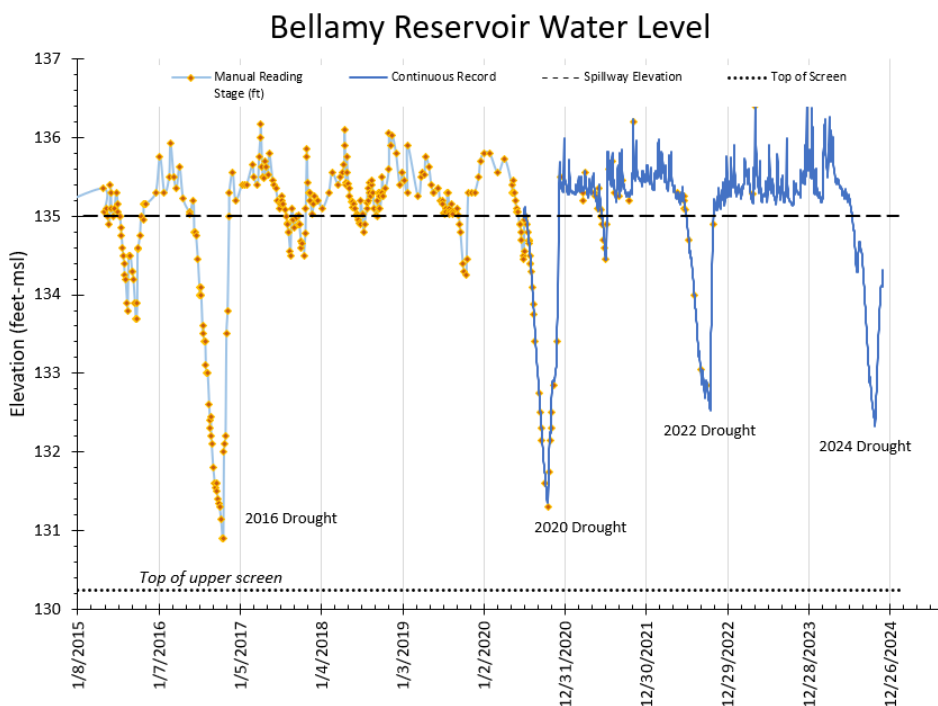
River Flows and Reservoir Levels

The following graph shows the flow trend, recorded by the gauge in Oyster River which we use to measure the flow into the Bellamy Reservoir surface water supply. Higher than normal flows persisted until May of this year and then maintained at “Normal” rates until a high flow period in early August. The flow fell rapidly to a “Much Below Normal” level in September and remained there until the early-November storms.



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

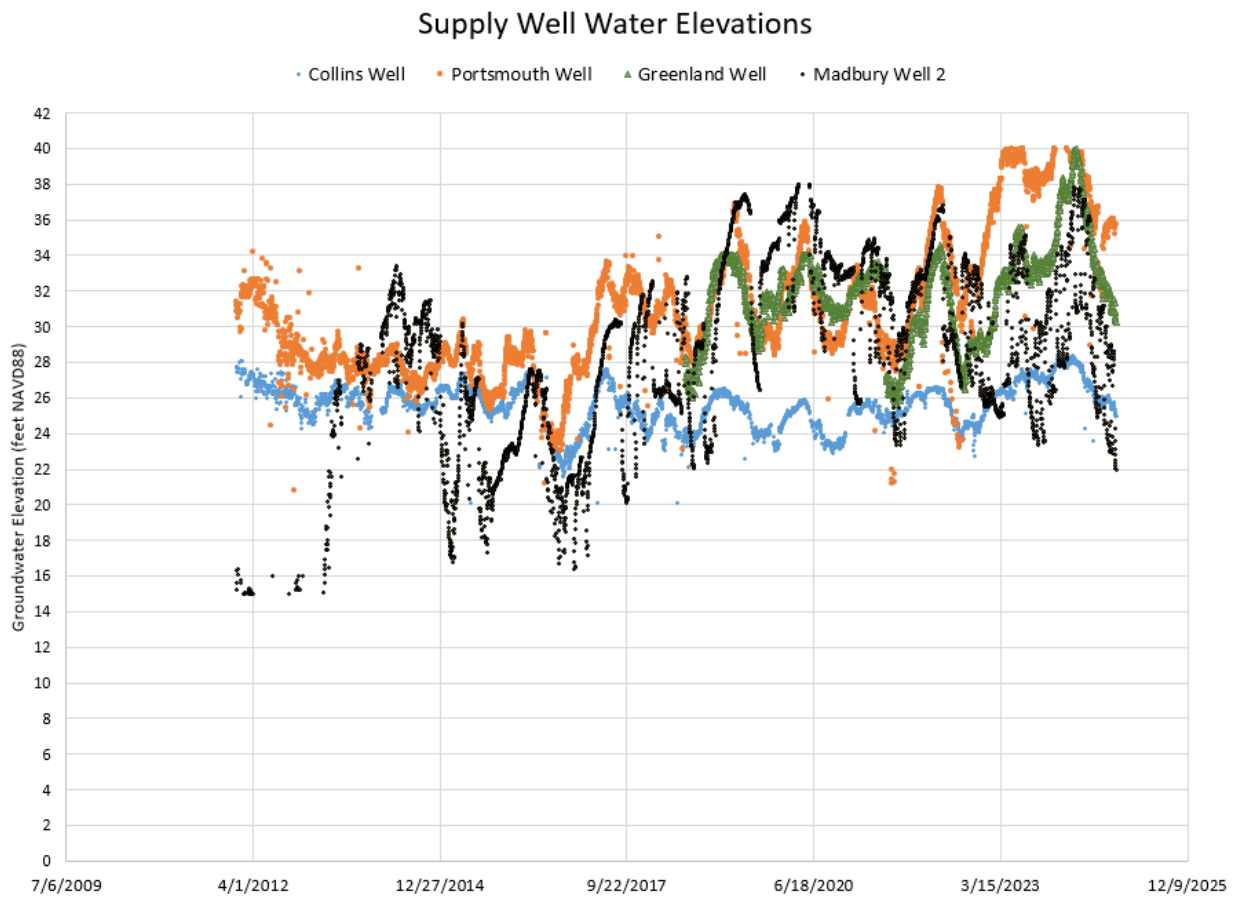
The Bellamy Reservoir trends below also compare recent 2024 drought impacts to the extreme drought experienced in 2016 and the 2020 and 2022 droughts. The Bellamy level dropped to below-2022 levels in October, but revived with the early November storms.



Groundwater Levels and Status

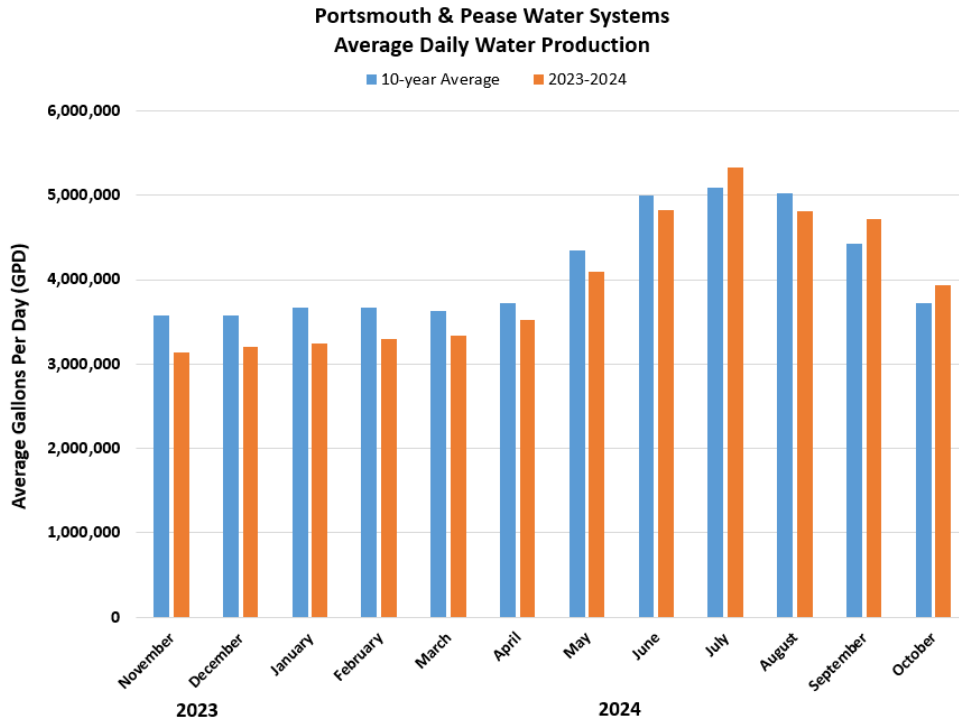
Levels in the City’s groundwater water supply wells declined over the summer and fall as expected. Spring water levels in most of the supply wells were higher than normal, so the summer and fall decline kept water levels within typical ranges. The wells in Madbury were utilized more over the late summer to balance the withdrawal from the reservoir, thus Madbury groundwater levels were slightly lower than experienced in the past six years. The anticipated typical reduction in water demands over the winter will allow operators to minimize well withdrawals and allow time for aquifers to recharge before the return of high demand next year.

The following graphic shows the overall water level trends associated with four wells in the City’s groundwater supply.

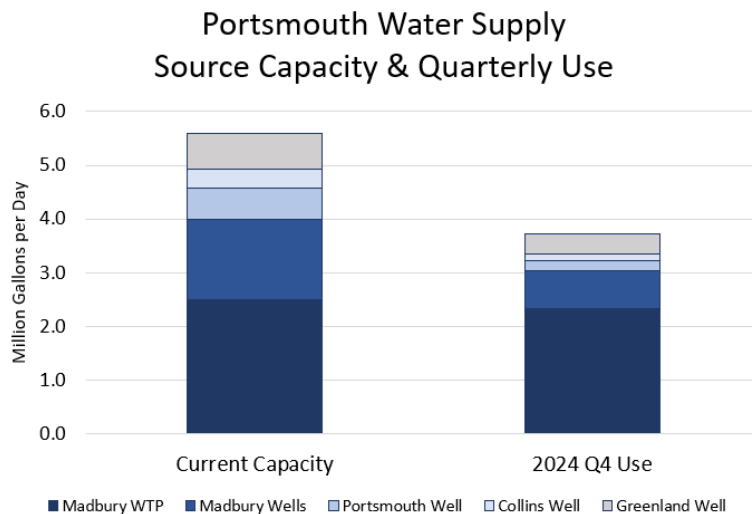


Current Water Production and Demand

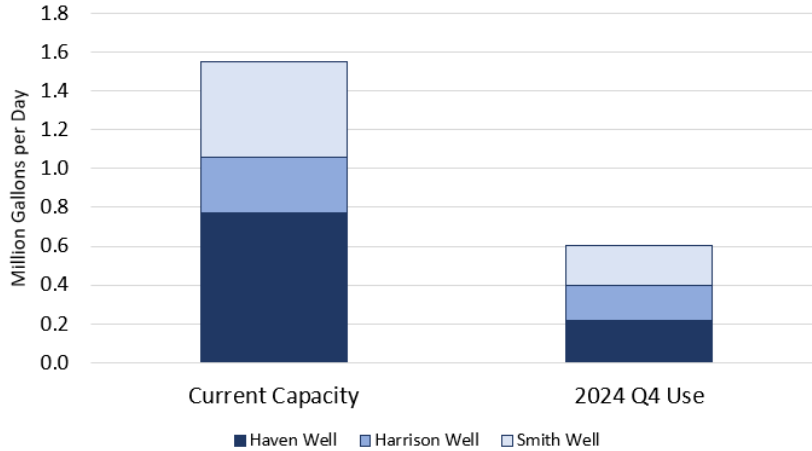
The Portsmouth and Pease Drinking Water Systems experienced slightly above-average demand in July, September and October. This followed a period of generally lower-than-average demand. The annual total water demand has remained constant at 1.4 billion gallons per year over the past five years.



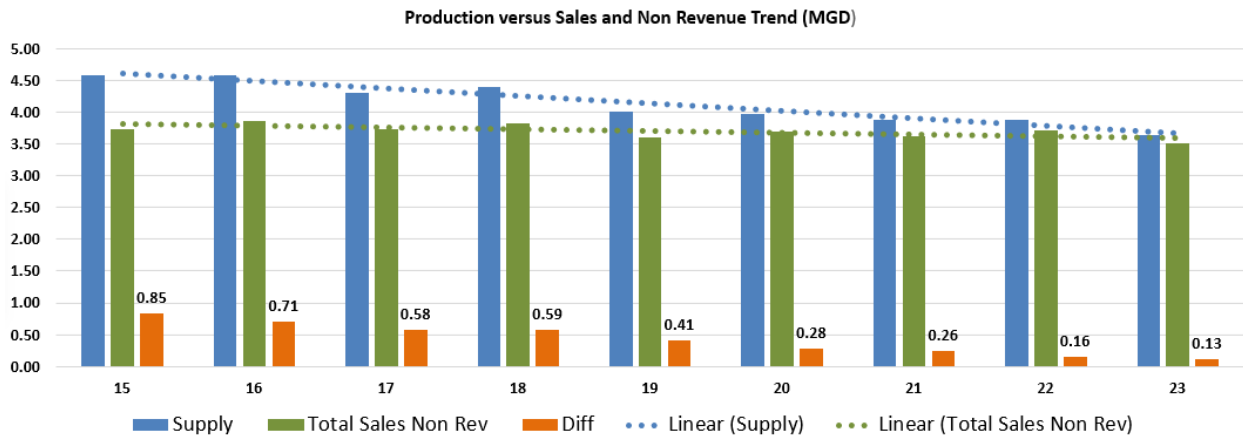
The following graphs illustrate the current Quarter’s water production relative to the current supply capability for the Portsmouth and Pease Drinking Water System supply sources. As shown, both systems are showing a good buffer of available supply versus demand. The current supply capability varies depending upon the conditions of the source including water levels and source water quality.



Pease Tradeport Water Supply Source Capacity & Quarterly Use



The next graph shows the running Water Balance for the system. This is the difference between the water both Portsmouth and Pease drinking water systems produce, versus the sales and other known uses in the system. System improvements in metering upgrades, water main replacements, and leak detection have improved the water balance considerably from where it was just a few years ago.

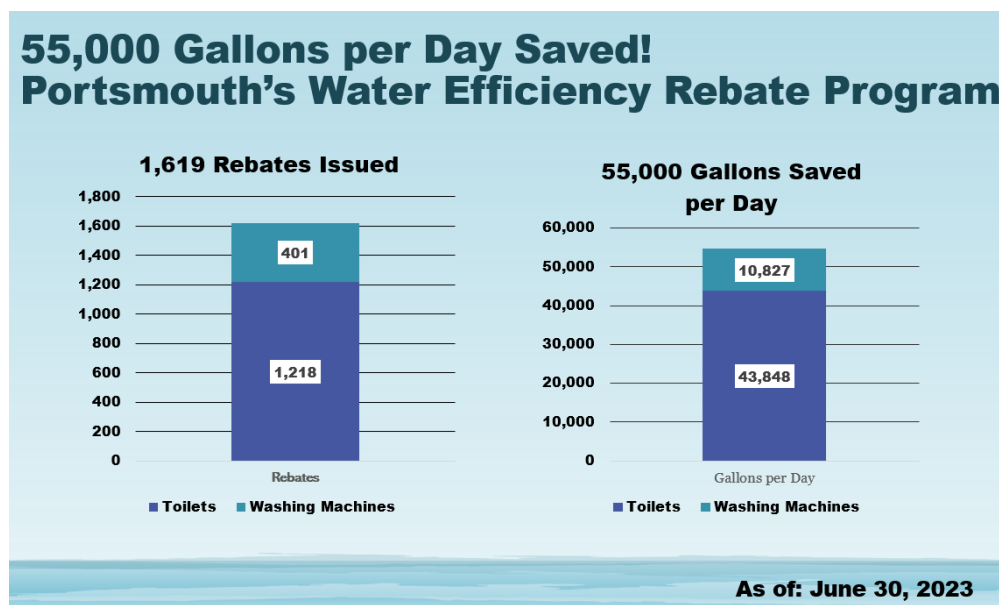


Water Efficiency

The City continues to offer water efficiency rebates of \$100 per low-flow toilet and \$150 for the purchase of a high-efficiency washing machine. These rebates are available to all residential Water customers, including multi-family customers. To date, the City has issued over 1,610 rebates. According to the NHDES Portsmouth is currently the only public water system in New Hampshire offering these rebates.

Additional information on this program can be obtained from the City’s water billing department or from the City’s website: <https://portsnh.co/water-efficiency-rebate>

The following graph breaks out the rebates issued and the estimated water savings per day, which is currently 55,000 gallons-per-day.



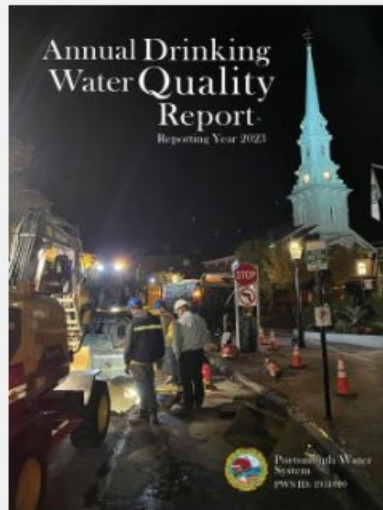
The City intends to continue the rebate program and expand outreach efforts to inform customers about ways they can be more efficient with summertime water use for irrigation and cooling needs.

Water Quality Information

Annual Water Quality Reports for the Portsmouth and Pease Drinking Water Systems that highlight all water quality data collected throughout 2023 were issued to all customers in June 2024. Copies of these reports are also available online from the City’s website:

<https://portsnh.co/watersupply>

ANNUAL WATER QUALITY REPORTS



Portsmouth 2023



Pease 2023

The Portsmouth Water Division routinely monitors water quality parameters and performs water quality sampling and analysis as directed by the Federal Safe Drinking Water Act and the New Hampshire Department of Environmental Services. Water sources are monitored for radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. Critical water treatment parameters for turbidity, pH, chlorine, orthophosphate and fluoride are continually monitored and tracked by our system operators. The regulations require the City to monitor certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included in the report, along with the year in which the sample was taken.

PFAS Water Quality Sampling and Tracking

The City's work to track and treat PFAS contamination at the Pease International Tradeport and Portsmouth Water System continues. The term "PFAS" covers a broad group of perfluoroalkyl and polyfluoroalkyl substances found in many commercial products including firefighting foam. On September 30, 2019, the NHDES established limits on the concentrations of four per- and polyfluoroalkyl substances (PFAS) in drinking water. The NHDES maximum contaminant level (MCL) for drinking water and groundwater remains at 15 parts per trillion (ppt) for perfluorooctane-sulfonic acid (PFOS), 12 ppt for perfluorooctanoic acid (PFOA), 11 ppt for Perfluorononanoic Acid (PFNA), and 18 ppt for Perfluorohexane sulfonic acid (PFHxS). These limits were based on an annual rolling average of sample results collected throughout the state. In March 2023, the US EPA proposed and then finalized on April 10, 2024, regulations that limit acceptable concentrations of six PFAS compounds in drinking water establishing legally enforceable levels, called Maximum Contaminant Levels (MCLs), for six PFAS in drinking water. Those compounds include: PFOA, PFOS, PFHxS, PFNA, and HFPO-DA as contaminants with individual MCLs, and PFAS mixtures containing at least two or more of PFHxS, PFNA,

HFPO-DA, and PFBS. The new regulation uses a Hazard Index MCL to account for the combined and co-occurring levels of these PFAS in drinking water. EPA also finalized health-based, non-enforceable Maximum Contaminant Level Goals (MCLGs) for these PFAS. The City of Portsmouth continues to comply with all standards regulating levels of PFAS in both the Portsmouth Regional and Pease International Tradeport Drinking Water Systems. Until the EPA rule requirements go into effect in 2027, Portsmouth, along with all community water suppliers in New Hampshire, must continue to comply with the PFAS maximum contaminant levels (MCLs) established by the DES in 2019 for four PFAS compounds.

According to information provided by the NHDES on April 10, 2024:

“No immediate action by water systems is required at this time. A general summary of how and when the new regulations will impact NHDES and water systems from a regulatory standpoint based on our initial understanding is provided below:

- 1) NHDES Rulemaking: NHDES will need to adopt rules that are no less stringent than the new federal PFAS drinking water regulations within two years. The rules will not only include MCLs and MCLGs, but also parameters around the frequency and type of testing that must occur as well as specific requirements pertaining to public notification of violations.
- 2) **Water System Sampling: Applicable water systems will need to complete initial monitoring to comply with the new federal PFAS drinking water regulations within three years.** Water systems in New Hampshire have completed initial monitoring for PFAS dating back to 2019/2020 to comply with New Hampshire’s drinking water standards. Water systems that completed testing for all analytes covered by USEPA Methods 533 or 537.1 as recommended by NHDES in 2019 may have the data needed to satisfy the initial monitoring requirements of the new federal PFAS regulations. Water systems that only analyzed for the four PFAS (PFOA, PFOS, PFNA and PFHxS) that New Hampshire regulates will have to complete initial monitoring for HFPO-DA and PFBS even though these compounds very likely will not occur at a concentration that will exceed the new federal drinking water standards.
- 3) Water System Public Notification: Applicable public water systems will need to notify the public if finished drinking water exceeds the new federal PFAS drinking water regulations within three years. The notification to the public will not specifically be required and enforced by NHDES until its rulemaking (described in item 1, above) is complete. However, public water systems already have PFAS results for PFOA, PFOS, PFNA and PFHxS and can notify the public in the near future. NHDES will follow-up this email soon with recommended notification language for water systems that elect to notify the public sooner than required by the new federal PFAS regulation.
- 4) **Water System Drinking Water Quality Compliance and Violations: Applicable public water systems will need to comply with the new federal PFAS standards for the six PFAS within five years.** Public water systems that produce drinking water that will exceed the federal drinking water standards may implement corrective action sooner than five years to protect public health and avoid violations of the federal standard and the associated public notification requirements.”

The City has tracked, sampled and responded to PFAS regulation since these compounds were first discovered in the Pease drinking water sources in May 2014. The City of Portsmouth maintains a multi-pronged approach to addressing PFAS in water supplies. Actions include:

- Sampling all Portsmouth drinking water sources quarterly for PFAS compounds to assess the 12-month rolling averages for the four New Hampshire regulated compounds. Working with regulators and other waterworks professionals to track and respond to the evolving water quality information, regulations and treatment technologies related to PFAS compounds.
- Evaluating the need for and piloting effective treatments that may be necessary at any other drinking water sources of supply serving the City’s drinking water system.
- Designing and constructing a dual resin and granular activated carbon treatment system for the Pease water system wells that removes the PFAS compounds. We have also been working with the Air Force monitoring and responding to PFAS compounds in the water sources in the Pease southern wellfield aquifer.
- Recommending and securing approval from City Council to budget \$2.5 million to design and install treatment on the Greenland Well, which is currently just over the 4 parts per trillion level of PFOA. An engineer is currently engaged in this design work, with bidding and construction anticipated later this year.
- Undertaking preliminary design of treatment for the Portsmouth and Collins wells.

The City samples for PFAS in its water supply sources quarterly and periodically posts this data on the City’s website at: <https://portsnh.co/PFASTesting>

**PFAS Average – 12 Month Rolling
New Hampshire Regulated Compounds
- All Sources In Compliance (Oct. 2023-Sep. 2024)**

12-MONTH ROLLING AVERAGE 2024 Q3		EPA MCL (2024)	NH MCL	RAW*	MADBURY WTP FINISHED	MADBURY WELL 2	MADBURY WELL 3	MADBURY WELL 4	MADBURY WELL 5	PORTSMOUTH WELL	COLLINS WELL	GREENLAND WELL
Perfluorohexanesulfonic acid (PFHxS)	ng/L	10	18	0.0	0.0	0.0	0.0	0.0	0.0	5.6	1.9	0.0
Perfluorooctanesulfonic acid (PFOS)	ng/L	4	15	0.0	0.0	0.0	0.0	0.0	0.0	5.0	4.2	2.9
Perfluorooctanoic acid (PFOA)	ng/L	4	12	2.6	2.6	2.7	2.9	1.1	3.0	7.5	3.4	4.6
Perfluorononanoic acid (PFNA)	ng/L	10	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	10		0.0	0.0	0.0	0.0	0.0	0.7	1.0	2.4	0.6
Perfluorobutanesulfonic acid (PFBS)	ng/L			0.0	0.0	0.0	0.0	0.0	3.2	4.9	9.1	2.3
Hazard Index*		1		0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.4	0.1

* Hazard Index MCL = (HFPO-DA/10)+(PFBS/2000)+(PFNA/10)+(PFHxS/10)

According to the City’s ongoing monitoring, the following water sources have detection averages above the EPA’s proposed MCLs:

- Portsmouth well: 5.0 ppt of PFOS, 7.5 ppt of PFOA
- Collins well: 4.2 ppt of PFOS
- Greenland well: 4.6 ppt of PFOA
- No sources are currently over the Hazard Index
- The Pease Water Treatment Facility continues to remove these compounds from the system’s supply wells

The Pease Tradeport’s dual treatment system of ion exchange and granular activated carbon continues to perform very well. After three years of operation and nearly 630 million gallons of water treated, the levels of the regulated compounds remain “Non Detect.”

Total Trihalomethanes (TTHMs)

Total Trihalomethanes (TTHMs) are disinfection byproducts (DBPs) which are created when added chlorine disinfectant (sodium hypochlorite) reacts with natural organic matter in the water. On average, the Water Treatment Facility in Madbury removes about 71% of the total organic carbon (TOC) through the treatment process. The EPA Disinfectants and Disinfection Byproducts Rules (Stage 1 and Stage 2) requires TOC removal of 50% for the type of water that is typical from the Bellamy Reservoir. The TOC that remains in the water after treatment reacts with the chlorine and creates DBPs. Historically the TTHM concentration in the Portsmouth Water System averaged 56 parts per billion (ppb).

A storage tank mixer and aeration system were installed at the Newington Booster Pumping Station as part of the upgrade to that facility in September 2019. These improvements were designed to reduce the concentrations of trihalomethanes in the water distribution system. So far, the highest average TTHM in the distribution system in 2024 is 33 ppb. The Pease system has near “Non-Detect” for TTHM due to the source water quality and the Pease Water Treatment system which includes granular activated carbon.

TTHM Running Average – 2024 – Portsmouth Water System

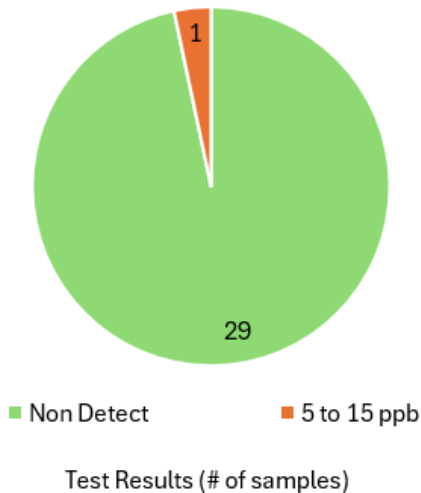
DATE	SITE	MCL's =>	TTHM	HAA5
Quarter IV 2024		Reference	80	60
ID #			ppb	ppb
Q4	Locational Running Average		Locational Running Average	Locational Running Average
321	30 SPINNAKER WAY		30	38
325	1550 WOODBURY PLAZA		26	34
323	120 SPAULDING TURNPIKE		27	36
324	WATER STREET		30	36

Lead Sampling

The City of Portsmouth implemented a Lead & Copper Corrosion Control Program in 2003 and remains in compliance with its requirements. The general purpose of the Corrosion Control Program is to minimize the potential for water supplied by the City to leach potentially harmful metals such as lead and copper from pipes, fixtures and solder containing lead into drinking water. Because the City of Portsmouth water supply sources that are regularly monitored do not contain measurable quantities of lead, the primary source of any lead and copper in drinking water is therefore internal household plumbing systems, plumbing components within other privately owned buildings and the service lines feeding these properties.

Sampling conducted in 2024 throughout the Portsmouth water system found one location with measurable concentrations of lead out of 30 residential locations. This one detection of lead was reported at a concentration of 6.6 ppb, which is less than half of the “action level exceedance” concentration of 15 parts per billion (ppb). This left a total of 29 water samples with no traces of lead (see figure below).

2024 Portsmouth Lead Monitoring Results



Lead is not present in the water when it leaves the City’s well and treatment facilities, or in the water mains that run below the streets. However, lead can be present in old service line connections that tie homes to the water system or plumbing inside homes and businesses. Due to the age of many homes in Portsmouth and surrounding towns, built before leaded solder was banned in 1986, and the associated potential for leaded plumbing components, the City encourages customers to have their water tested by a certified laboratory, especially if there are children under six or pregnant women in the household. The City actively adjusts the water chemistry at the treatment facility and well facilities according to the established Corrosion Control Program, to reduce the potential for lead in households to dissolve into the water and end up at the tap. But if lead is present in private plumbing system, and is in contact with water, some risk remains. Information about the Corrosion Control Program can be accessed on the City website: <https://portsnh.co/LeadCopperProgram>

Service Line Inventory Efforts

The U.S. Environmental Protection Agency (EPA) Lead and Copper Rule Revision required that all public water suppliers including the City of Portsmouth submit by October 16, 2024 an inventory of every service line and their material makeup. The City of Portsmouth Water Division has submitted this inventory for the Portsmouth and Pease Tradeport Water Systems and has notified customers whose water service line material was identified as galvanized steel or whose service line material has not been identified. No lead services lines have been identified in the Portsmouth or Pease Water Systems. These notifications are intended to raise awareness of service line materials and help customers avoid possible exposure to lead in their drinking water.

Customers who receive a notification letter are being asked to assist the City by following the directions outlined in the notice.

The information letters include:

- A statement that the service line material is either galvanized steel and requires replacement, or is unknown;
- Information on replacing galvanized steel service lines requiring replacement;
- Actions to take if the material of the water service line is unknown;
- An explanation of the health effects of lead; and
- Steps to reduce any exposure to lead.

In accordance with the federal regulation, letters must be sent to property owners on an annual basis until service lines that might contain lead are removed, or the public water system is able to verify that a service line does not contain lead. Anyone not receiving a letter by the end of the year should be assured that the Water Division has determined that their service line material does not contain lead.

More detailed information about this inventory effort can be found on the City website:

<https://portsnh.co/servicelineinventory>.

Safe Water Advisory Group (SWAG)

The Safe Water Advisory Group was created by the Mayor and City Council on October 5, 2020. Its mission is to review and communicate the latest science on the health and environmental effects of drinking water contaminants (with a heavy focus on PFAS), to monitor federal and state level legislative changes and to anticipate policy changes that could impact the City of Portsmouth.

The SWAG has met three times this year. The public is invited to attend future meetings and encouraged to be involved with the community and informed of all aspects of the City's water supply. The next quarterly meeting is scheduled for December 5, 2024. Video recordings, information, meeting agendas and minutes, and annual reports of the SWAG are posted on the City's website: <https://portsnh.co/safe-water-advisory-group>

Further Updates and Information

This Report is posted on the City of Portsmouth's website: <https://portsnh.co/watersupply>.
For additional information or inquiries, please contact Al Pratt, Water Resource Manager at 520-0622.