



ANNUAL
WATER
QUALITY
REPORT

WATER TESTING PERFORMED IN 2014



Presented By
Portsmouth Water Division

Our Mission Continues

We are proud to present once again our annual water quality report covering all testing performed between January 1 and December 31, 2014. Most notably, last year marked the 40th anniversary of the Safe Drinking Water Act (SDWA). This rule was created to protect public health by regulating the nation's drinking water supply. We celebrate this milestone as we continue to manage our water system with a mission to deliver the best quality drinking water. By striving to meet the requirements of SDWA, we are ensuring a future of healthy, clean drinking water for years to come.

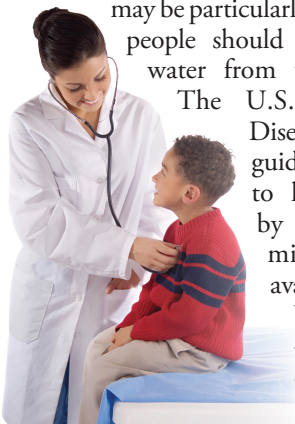
Customers of the Pease Tradeport Water System should note that the Haven Well was shut down on May 12, 2014, in response to the detection of elevated levels of the unregulated contaminant perfluorooctane sulfonic acid (PFOS) from the Haven Well, one of three wells that serves the Pease International Tradeport and the New Hampshire Air National Guard base at Pease. PFOS is one of a class of chemicals known as PFCs or perfluorochemicals. Because the level of PFOS exceeded the "provisional health advisory" set by the EPA, the well was shut down by the City of Portsmouth on May 12, 2014, and since that time it has been physically disconnected from the system. Additional information and water supply updates are posted at the [www. CityofPortsmouth.com](http://www.CityofPortsmouth.com) Web site.

Please let us know if you ever have any questions or concerns about your water.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Source Water Assessment

The New Hampshire Department of Environmental Services (NHDES) has conducted a source water assessment of our water system. A copy is available for viewing at the Portsmouth Water Divisions office at 680 Peverly Hill Road. Please call (603) 427-1530 for an appointment to view the report. You may also visit the Drinking Water Source Assessment Reports Web site at <http://des.nh.gov/organization/divisions/water/dwgb/dwspp/reports/documents/portsmouth.pdf>.

Where Does My Water Come From?

The main source of Portsmouth water is the Bellamy Reservoir located in Madbury and Dover. The water is piped to a water treatment plant in Madbury, where it is treated, filtered, and disinfected. This location is also the site of the City's Madbury Wells 2, 3, and 4. From this site, water is pumped under pressure to consumers in Madbury, Dover, and Durham and then to a booster pumping station in Newington. It is then pumped to consumers in Newington, Portsmouth, Greenland, Rye, and the New Castle Water Works. Many consumers are also served by the City's groundwater well sources. These wells include the Collins and Portsmouth Wells in Portsmouth and the Greenland Well in Greenland. The Pease International Tradeport is served by the Smith and Harrison wells, supplemented by Portsmouth water sources. All systems are monitored continuously by our certified water operations staff and tested and sampled in accordance with regulatory requirements.

Water Main Flushing

Distribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. The water entering distribution mains is of very high quality; however, water quality can deteriorate in areas of the distribution mains over time. Water main flushing is the process of cleaning the interior of water distribution mains by sending a rapid flow of water through the mains.

Flushing maintains water quality in several ways. For example, flushing removes sediments like iron and manganese. Although iron and manganese do not pose health concerns, they can affect the taste, clarity, and color of the water. Additionally, sediments can shield microorganisms from the disinfecting power of chlorine, contributing to the growth of microorganisms within distribution mains. Flushing helps remove stale water and ensures the presence of fresh water with sufficient dissolved oxygen, disinfectant levels, and an acceptable taste and smell.

During flushing operations in your neighborhood, some short-term deterioration of water quality, though uncommon, is possible. You should avoid tap water for household uses at that time. If you do use the tap, allow your cold water to run for a few minutes at full velocity before use and avoid using hot water, to prevent sediment accumulation in your hot water tank.

Please contact us if you have any questions or if you would like more information on our water main flushing schedule.

Community Participation

Please share with us your thoughts about the information in this report. After all, well-informed customers are our best allies. You are invited to voice your concerns at any regularly scheduled City Council meeting. Meetings are usually scheduled twice each month on Monday evenings starting at 7:00 p.m. at Portsmouth City Hall, 1 Junkins Avenue, Portsmouth, NH. Meeting dates can be found on our Web site at www.cityofportsmouth.com or by calling (603) 431-2000 for the date of the next meeting. New Castle Water Works customers should call (603) 431-6710 for meeting dates and times.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Albert Pratt, P.E., Water Resources Engineer, at (603) 427-1530. New Castle customers should call Steve Tabbutt at (603) 431-6710.

Lead in Home Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

How Is My Water Treated and Purified?

The treatment process consists of a series of steps. First, source water is drawn from the Bellamy Reservoir. Before mixing, coagulation chemicals are added. The addition of these substances cause small particles to adhere to one another (called floc), making them easier to float to the surface in the Dissolved Air Floatation (DAF) system where they are skimmed off and sent to a drying bed. The water is then filtered through layers of anthracite to remove smaller suspended particles and turbidity (which is a measure of the cloudiness of the water) and clear water emerges. Sodium hypochlorite (bleach) is added at this point for disinfection. We carefully monitor the amount of sodium hypochlorite, adding the lowest quantity necessary to protect the safety of your water without compromising taste. Finally, sodium hydroxide (used to adjust the final pH and alkalinity), fluoride* (used to prevent tooth decay) and a corrosion inhibitor (used to protect distribution system pipes) are added before the water is pumped to water storage tanks and into your home or business.

*Based on new information from the Center of Disease Control, the language in the 2012 Consumer Confidence Report (CCR) needs to be clarified regarding the exclusive use of fluoridated water for infant formula. The statement in the 2012 CCR should have read as follows with no qualifying language: "Your public water supply is fluoridated. According to the Centers for Disease Control and Prevention, if your child under the age of 6 months is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased chance of dental fluorosis. Consult your child's health care provider for more information."

About Our Violation

The locational running annual average (LRAA) is determined by averaging all the samples collected at each sampling location for the past 12 months. The LRAA standard for Total Trihalomethanes (TTHM) is 80 ppb. Testing results for the third quarter of 2014 showed that the Portsmouth system exceeded the maximum contaminant level (MCL) LRAA of 80 ppb for TTHM at one of our four sample locations. In the third quarter of 2014, the LRAA of one of our four monitoring sites was 83 ppb. The three other sites tested were all within acceptable limits. This violation did not apply to the Pease or the New Castle systems.

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

In response to this violation, the City of Portsmouth's Water Division engaged the services of an engineering consultant with expertise in water supply, treatment, and quality to assist our water operations staff with optimizing water treatment parameters to address elevated TTHMs. Staff have since implemented the consultant's recommendations. These changes included optimizing our water treatment coagulation strategy and reducing the free chlorine concentration leaving the Madbury Water Treatment Plant. Subsequently, sampling results taken in the fourth quarter show that these changes reduced the TTHM concentrations in the Portsmouth water system and the Portsmouth system was back in compliance with the TTHM regulation for the fourth quarter of 2014.

Sampling Results

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state requires us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

We participated in the 3rd stage of the EPA's Unregulated Contaminant Monitoring Regulation (UCMR3) program by performing additional tests on our drinking water. UCMR3 benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if EPA needs to introduce new regulatory standards to improve drinking water quality.

REGULATED SUBSTANCES											
				Portsmouth Water Division		New Castle		Pease Tradeport			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Arsenic (ppb)	2013	10	0	1.4	ND–1.4	NA	NA	NA	NA	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2014	2	2	0.0176	0.0066–0.176	NA	NA	NA	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium (ppb)	2014	100	100	0.72	ND–0.72	NA	NA	NA	NA	No	Discharge from steel and pulp mills; Erosion of natural deposits
Haloacetic Acids [HAA]–Stage 2 (ppb)	2014	60	NA	30	17–50	28	18–32	7	3.5–10	No	By-product of drinking water disinfection
Nitrate (ppm)	2014	10	10	3.4	0.062–3.4	NA	NA	1.6	1.2–1.6	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes]–Stage 2 (ppb)	2014	80	NA	82.5	27–117	76	36–98	15	4.5–26	Yes	By-product of drinking water disinfection
Total Coliform Bacteria (# positive samples)	2014	1 positive monthly sample	0	1	NA	NA	NA	NA	NA	No	Naturally present in the environment
Total Organic Carbon (ppm)	2014	TT	NA	2.9	1.8–2.9	NA	NA	NA	NA	No	Naturally present in the environment
Turbidity ¹ (NTU)	2014	TT	NA	0.46	0.03–0.46	NA	NA	NA	NA	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2014	TT=95% of samples <0.3 NTU	NA	99.95	NA	NA	NA	NA	NA	No	Soil runoff
Uranium (ppb)	2014	30	0	2	ND–2	NA	NA	NA	NA	No	Erosion of natural deposits
Tap water samples were collected for lead and copper analyses from sample sites throughout the community											
				Portsmouth Water Division		New Castle		Pease Tradeport			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2013	1.3	1.3	0.11	2/30	0.099 ²	0/10	0.6	0/10 ²	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2013	15	0	0	2/30	1	0/10	1 ²	0/10 ²	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

				Portsmouth Water Division		New Castle		Pease Tradeport			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2014	1.0	NA	0.0614	0.0056–0.0614	NA	NA	0.0292	0.0253–0.0292	No	Corrosion of household plumbing systems; Erosion of natural deposits
Manganese (ppb)	2014	50	NA	31.8	8.4–31.8	NA	NA	ND	NA	No	Leaching from natural deposits

UNREGULATED SUBSTANCES (PORTSMOUTH WATER DIVISION)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH
Nickel (ppm)	2014	0.0051	ND–0.0051
Chlorate (ppb)	2014	180	ND–180
Strontium (ppb)	2014	380	34–380
Chromium-6 (ppb)	2014	0.46	ND–0.46

¹ Turbidity is a measure of the cloudiness of the water. It is monitored by surface water systems because it is a good indicator of water quality and thus helps measure the effectiveness of the treatment process. High turbidity can hinder the effectiveness of disinfectants.

² Sampled in 2012.

Definitions

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.