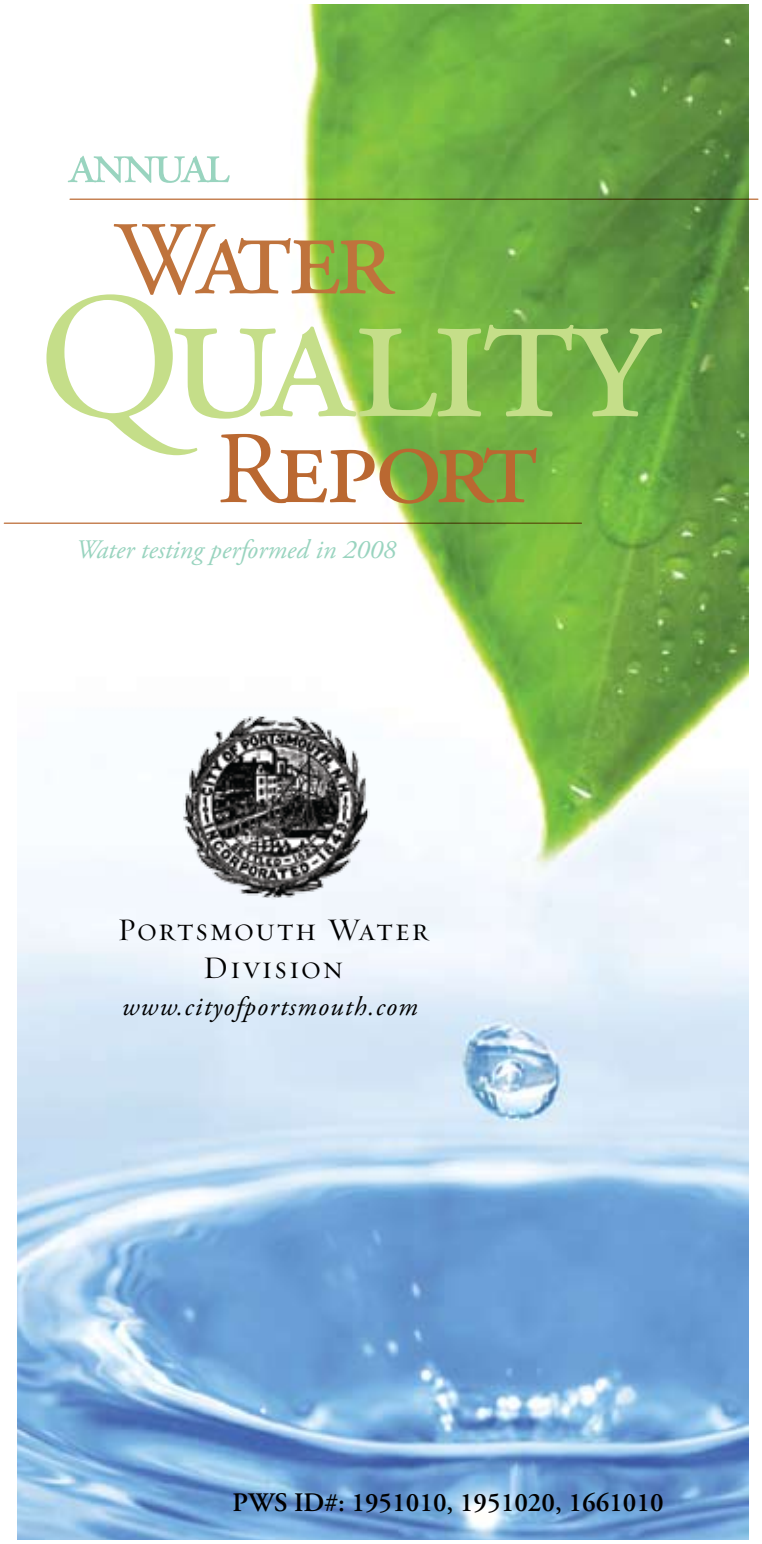
ANNUAL

WATER QUALITY REPORT

Water testing performed in 2008



PORTSMOUTH WATER DIVISION

www.cityofportsmouth.com

PWS ID#: 1951010, 1951020, 1661010

Meeting the Challenge

This annual water quality report covers all testing completed from January 1 through December 31, 2008. The city is committed to producing drinking water that meets all state and federal drinking water standards. We continually strive to adopt new and better methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Important Health Information

The USEPA requires the following standard language in our annual report. 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.

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.

Substances That Could Be in Water

The U.S. EPA requires the following standard language in our annual report.

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.

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, where the pressure is boosted. 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 Haven, Smith, and Harrison wells.

How Is My Water Treated and Purified?

The treatment process consists of a series of steps. First, raw water is drawn from the Bellamy Reservoir. The water then goes to a mixing tank where polyaluminumchloride and sodium hydroxide are added. The addition of these substances causes small particles to adhere to one another (called floc), making them heavy enough to settle out of the water. Powdered activated carbon is added (seasonally) to control taste and odor. The water is then filtered through layers of fine sand. As smaller, suspended particles are removed, turbidity disappears 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.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call Peter Rice, P.E., City Engineer for the Water/Sewer Divisions, at (603) 427-1530. New Castle customers should call Brad Meade at (603) 431-6710.

What's Your Water Footprint?

You may have some understanding about your carbon footprint, but how much do you know about your water footprint? The water footprint of an individual, community, or business is defined as the total volume of freshwater that is used to produce the goods and services that an individual or community consumes or that a business provides. For example, 11 gallons of water are needed to irrigate and wash the fruit in one half-gallon container of orange juice. Thirty-seven gallons of water are used to grow, produce, package, and ship the beans in that morning cup of coffee. Two hundred and sixty-four gallons of water are required to produce one quart of milk, and 4,200 gallons of water are required to produce two pounds of beef.

According to the U.S. EPA, the average American uses about 100 gallons of water daily. In fact, in the developed world, one flush of a toilet uses as much water as the average person in the developing world allocates for an entire day's cooking, washing, cleaning, and drinking. The annual American per capita water footprint is about 8,000 cubic feet; twice the global per capita average. With water use increasing six-fold in the past century, our demands for freshwater are rapidly outstripping what the planet can replenish.

To check out your own water footprint, go to www.h2oconserve.org, or visit www.waterfootprint.org to see how the water footprints of other nations compare.

System Improvements

The City of Portsmouth has completed the design and solicited bids for construction of a new water treatment facility at the current treatment plant site in Madbury, NH. The new plant will incorporate dissolved air flotation (DAF) technology, which was tested and found to be very successful at treating the water from the Bellamy Reservoir. The new water plant will be a Leadership in Energy and Environmental Design (LEED) certified plant resulting in a 30 percent energy savings when compared to a traditional design. The new plant is designed to provide better and more reliable treatment and to ensure that the drinking water meets all current Safe Drinking Water Act Standards. Construction is expected to start by June of 2009 with a completion target of 2011.

About Our Violation

The Madbury Facility exceeded the 1 NTU level on January 16, 2008, for three minutes at 2.44 NTU. The 0.30 NTU standard for the month of January 2008 was met at 99.77 percent, which exceeds treatment regiments. This was not an emergency; at no time did customers need to boil water or take corrective action. The staff took appropriate action and rectified the situation. Disinfection is continuously monitored and at no time was disinfection compromised.

In the short term, operational staff has modified the operating procedure to improve control over the flow to the filters. The long-term plan to address this issue is to upgrade the Madbury Water Treatment Facility. The city has completed a design to replace the Madbury Water Treatment Facility.

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

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 Division's office at 680 Peverly Hill Road. Please call 766-1413 for an appointment to view the report. You may also visit the Drinking Water Source Water Assessment Program Web site at www.des.state.nh.us/dwspp.

Q: What Makes Water Hard?

A: If substantial amounts of either calcium or magnesium, both nontoxic minerals, are present in drinking water, the water is said to be hard. Hard water does not dissolve soap readily, so making lather for washing and cleaning is difficult. Conversely, water containing little calcium or magnesium is called soft water.

Lead and Drinking Water

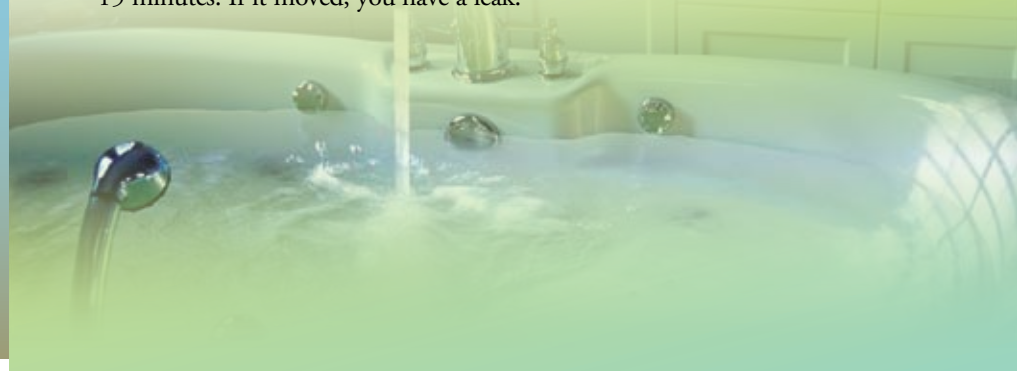
The U.S. EPA requires the following standard language in our annual report.

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. Portsmouth Water Division is 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.

Water Conservation

You can play a role in conserving water and save yourself money in the process by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever you can. It is not hard to conserve water. Here are a few tips:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak. Fix it and you can save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances. Then check the meter after 15 minutes. If it moved, you have a leak.



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.

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
Alpha Emitters (pCi/L)	2006	15	0	1.2	ND–2.78	NA	NA	NA	NA	No	Erosion of natural deposits
Arsenic[1] (ppb)	2007	10	0	2.1	ND–2.1	NA	NA	1.1[2]	ND–1.1[2]	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2008	2	2	0.0194	ND–0.0194	NA	NA	0.0148	0.00119–0.0148	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Combined Radium (pCi/L)	2006	5	0	1.73	0.57–2.8	NA	NA	NA	NA	No	Erosion of natural deposits
Haloacetic Acids [HAA] (ppb)	2008	60	NA	34	7.3–45	49	29.9–67	NA	NA	No	By-product of drinking water disinfection
Methyl-t-butylether [MTBE] (ppb)	2008	13	13	1	ND–1	NA	NA	NA	NA	No	Gasoline additive. Fueling spills, leaking underground storage tanks
Nitrate (ppm)	2008	10	10	3.2	0.11–3.2	NA	NA	2.7	0.16–2.7	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2008	80	NA	44	11.3–69.9	69	38–83.2	NA	NA	No	By-product of drinking water chlorination
Total Organic Carbon (% removal)	2008	45-50	NA	70.9	54.4–80.6	NA	NA	NA	NA	No	Naturally present in the environment. Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection by-products
Turbidity[3] (NTU)	2008	TT	NA	2.44	0.03–2.44	NA	NA	NA	NA	Yes	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2008	TT	NA	98.96	NA	NA	NA	NA	NA	No	Soil runoff
Uranium (pCi/L)	2006	30	0	2.37	ND–2.47	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)	2007	1.3	1.3	0.185	0/30	0.116[2]	0/10[2]	0.624	0/10	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	2007	15	0	5	0/30	5[2]	0/10[2]	5	0/10	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

				Portsmouth Water Division		Pease Tradeport			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2008	1.0	NA	NA	NA	0.0544	ND–0.0544	No	Corrosion of household plumbing systems; Erosion of natural deposits
Manganese (ppb)	2008	50	NA	47.2	ND–47.2	134	ND–134	No	Leaching from natural deposits

UNREGULATED SUBSTANCES (PORTSMOUTH WATER DIVISION RESULTS)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2008	1.4	ND–1.4	By-product of drinking water disinfection
Chloroform (ppb)	2008	7.8	ND–7.8	By-product of drinking water disinfection

Footnotes:

[1] Portsmouth Water Division: Only one compliance sample collected in 2008 was at the WTP and no arsenic was detected.

[2] Sampled in 2008.

[3] 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.

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.