Annual Water Quality Report

Water testing performed in 2006

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Portsmouth
Water Division

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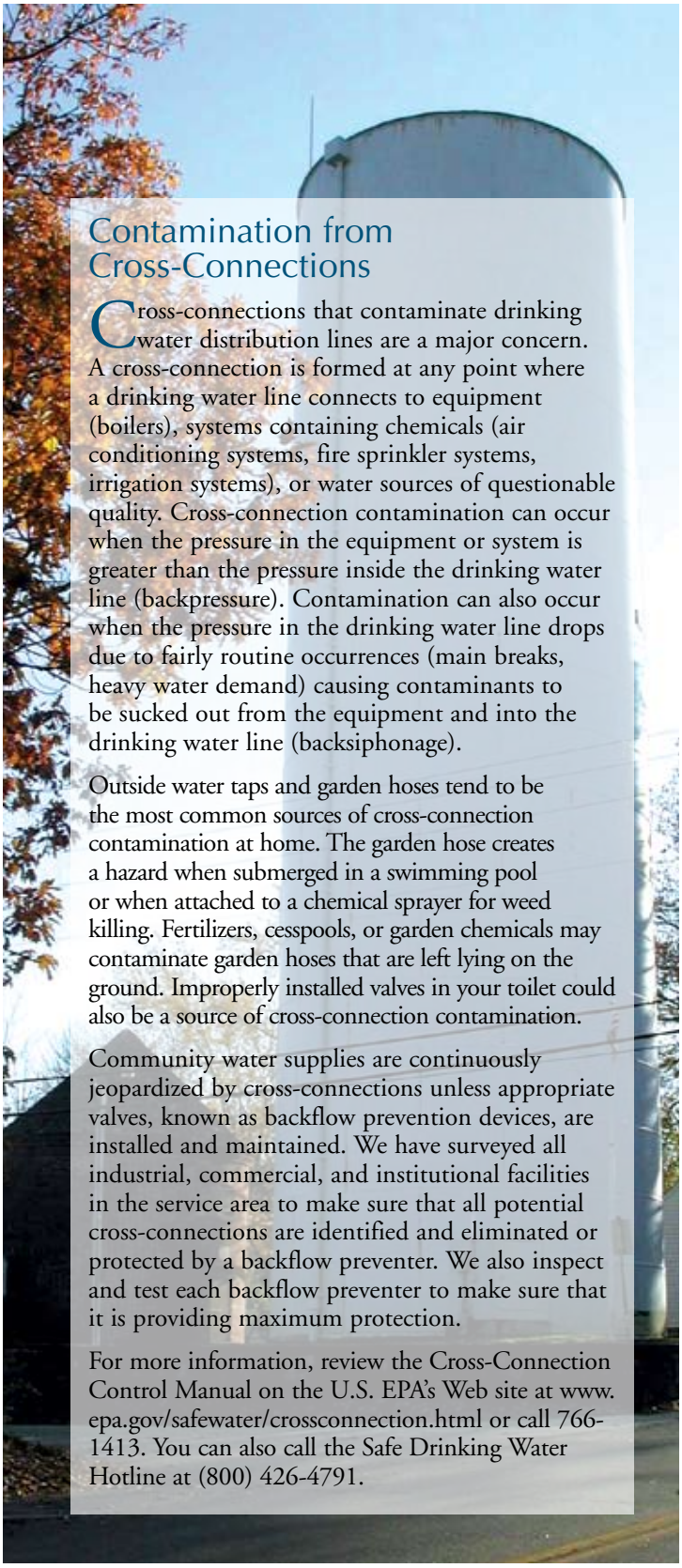

Contamination from Cross-Connections

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems), or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand) causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Fertilizers, cesspools, or garden chemicals may contaminate garden hoses that are left lying on the ground. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed all industrial, commercial, and institutional facilities in the service area to make sure that all potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test each backflow preventer to make sure that it is providing maximum protection.

For more information, review the Cross-Connection Control Manual on the U.S. EPA's Web site at www.epa.gov/safewater/crossconnection.html or call 766-1413. You can also call the Safe Drinking Water Hotline at (800) 426-4791.

Continuing Our Commitment

Once again we present our annual water quality report. This edition covers all testing completed from January 1, 2006 through December 31, 2006. As in the past, we are committed to delivering the best-quality drinking water. To that end, we continue to work towards improving source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

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.

Community Participation

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, One Junkins Avenue, Portsmouth, New Hampshire. 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.

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.

Where Does My Water Come From?

The main source of Portsmouth's 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 to 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.

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.

Water Treatment Plant Design

The City of Portsmouth has begun design of a new water treatment plant to replace the existing plant built in the 1950s. The new plant will be designed using technologies that have been tested to best treat the water we receive from the Bellamy Reservoir. The new water treatment plant will be equipped to meet new and future drinking water-quality regulations.

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 smallest 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 sanitized, underground reservoirs, water towers, and into your home or business.

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. Although all of the substances listed here are under the Maximum Contaminant Level (MCL), we feel it is important that you know exactly what was detected and how much of the substance was present in the water.

The state allows 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	3.0401	ND–17.4	NA	NA	NA	NA	No	Erosion of natural deposits
Arsenic (ppb)	2004 & 2005	10	0	0.6	ND–2.1	NA	NA	NA	NA	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2004 & 2005	2	2	0.0336	0.0083–0.155	NA	NA	0.0125[1]	0.0113–0.0143	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Combined Radium (pCi/L)	2006	5	0	1.249	ND–2.05	NA	NA	NA	NA	No	Erosion of natural deposits
Haloacetic Acids [HAA] (ppb)	2006	60	NA	27	ND–62	41	32–55	NA	NA	No	By-product of drinking water disinfection
Nitrate (ppm)	2006	10	10	NA	NA	NA	NA	2.75	1.1–4.2	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2006	80	NA	42	4.57–85.9	57	31.6–90.5	NA	NA	No	By-product of drinking water chlorination
Turbidity[2] (NTU)	2006	TT = 1	NA	1.85	0.05–1.85	NA	NA	NA	NA	Yes[3]	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2006	TT > 95	NA	98.53	NA	NA	NA	NA	NA	No	Soil runoff
Uranium (pCi/L)	2006	30	0	0.7777	ND–2.47	NA	NA	NA	NA	No	Erosion of natural deposits

Tap water samples were collected from sample sites throughout the community

				Portsmouth Water Division		New Castle		Pease Tradeport			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	ACTION LEVEL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2006	1.3	1.3	0.194	0	0.245	0	0.605	0	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	2006	15	0	5	1	5	0	5	1	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES (PORTSMOUTH WATER DIVISION RESULTS)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2006	1.4	ND–1.4	Disinfection by-products
Chloroform (ppb)	2006	1.2	ND–8.6	Disinfection by-products
MtBE[4] (ppb)	2006	0.42	ND–0.8	Gasoline additive

[1] Barium was sampled from two sources in 2004 and from one source in 2006.
[2] 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.
[3] Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses and parasites, which can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
[4] The Portsmouth Water Division did not exceed the New Hampshire standard of 13 ppb for MTBE.

About Our Turbidity Violation

During July 2006, while performing maintenance on a process of the facility, water flow to the plant's filters were surged with an instantaneous flow which overloaded the filters' capacity for three minutes. This flow increase resulted in the high turbidity readings. The maintenance procedure has been reviewed to avoid this situation in the future.

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.

Lead in Drinking Water

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline at (800) 426–4791.

Substances That Might Be in Drinking 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.

Table 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.