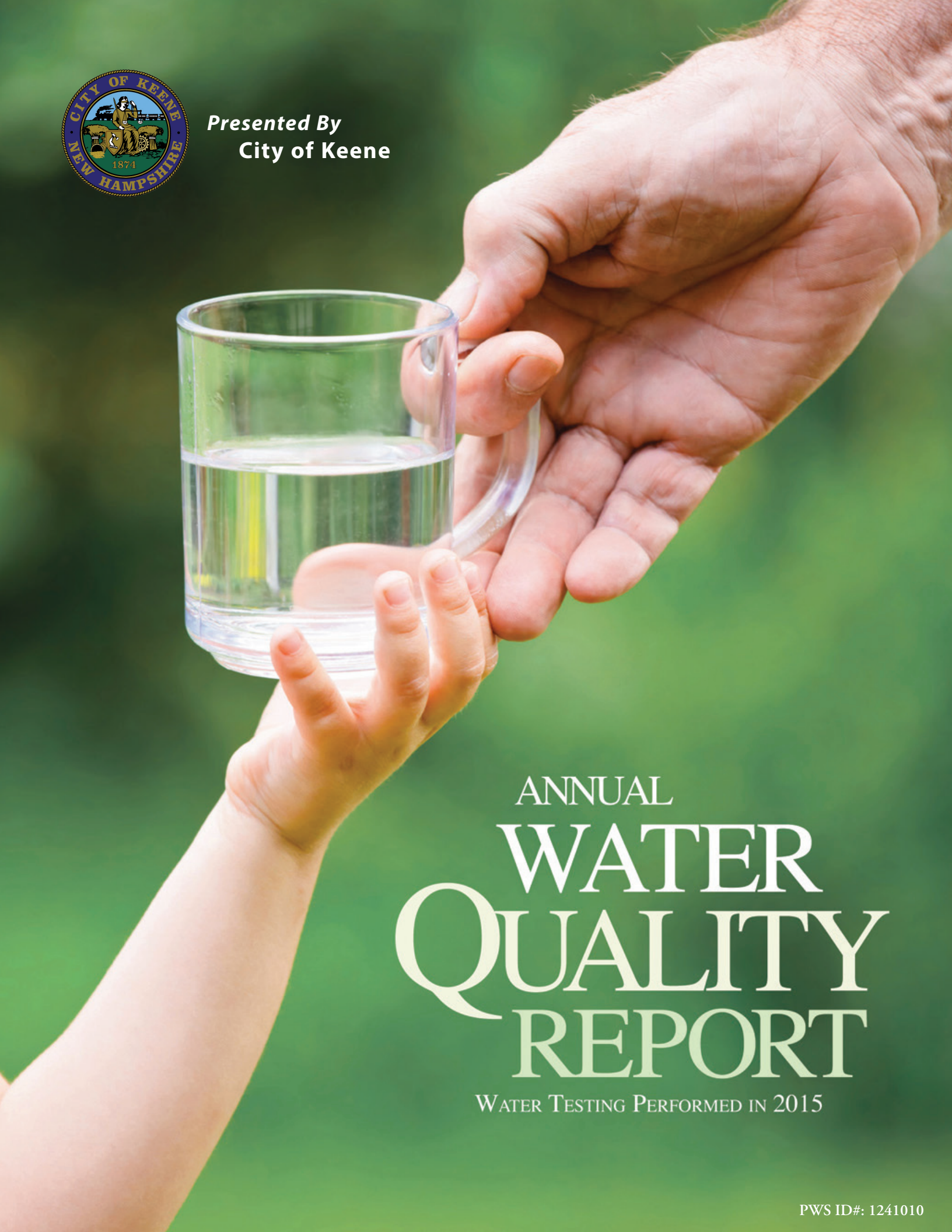


Presented By
City of Keene

ANNUAL WATER QUALITY REPORT

WATER TESTING PERFORMED IN 2015

PWS ID#: 1241010

There When You Need Us

The City of Keene is proud to present its annual water quality report, covering all testing performed between January 1 and December 31, 2015. The Public Works Operations, Laboratory, Maintenance, and Water/Sewer divisions have dedicated themselves to producing and delivering high-quality drinking water that meets all state and federal standards. As new challenges to drinking water safety emerge, the City remains vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all users.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those 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.

Community Participation

The City Council's Municipal Services, Facilities, and Infrastructure committee is designated to address water-related issues. This committee has regular meetings at 6:00 p.m. on the 2nd and 4th Wednesdays of each month in the City Council Chambers at City Hall. If you wish to speak with them about an issue concerning your drinking water, contact the City of Keene Clerk's office at (603) 352-0133.

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 that 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 City of Keene delivers both surface and groundwater to its customers. The majority of the water comes from the surface water reservoirs located in the town of Roxbury and some from four gravel-packed wells located in Keene on Court and West Streets. Water from the reservoir flows to the Water Treatment Facility (WTF), where it is filtered, disinfected, and made less acidic before it enters the distribution system. Well water is pumped from the Court Street and West Street aquifers. It is not filtered, but it is disinfected and the pH is adjusted before it is distributed to your home. Although your water comes from more than one source, it all goes into the same distribution system, so you may receive different blends of water on different days.

Worried about perfluorochemicals in your drinking water?

You have probably heard on the news about PFOAs (Perfluorooctanoic Acids) being detected in drinking water in the Merrimack NH water system, and may be wondering if we have tested the Keene water for PFOAs. We have, and the good news is that no perfluorinated compounds were detected in our water sources. In 2014 and 2015, Keene participated in EPA's Unregulated Contaminant Monitoring Rule (UCMR3) program and tested for a variety of chemicals that the EPA is studying as emerging contaminants.

You can see Keene's water testing results in our annual Consumer Confidence Reports at: https://www.ci.keene.nh.us/services/document-central/water-quality-reports

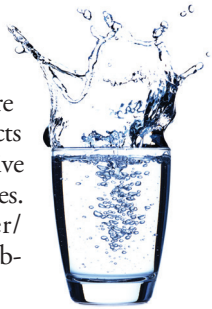
The Importance of Corrosion Control

The national news coverage of water conditions in Flint, Michigan, has created a great deal of confusion and consternation over the past year. The water there has been described as being corrosive; images of corroded batteries and warning labels on bottles of acids come to mind. But is corrosive water necessarily bad?

Corrosive water can be defined as a condition of water quality that will dissolve metals (iron, lead, copper, etc.) from metallic plumbing at an excessive rate. There are a few contributing factors but, generally speaking, corrosive water has a pH of less than 7; the lower the pH, the more acidic, or corrosive, the water becomes. (By this definition, many natural waterways throughout the country can be described as corrosive.) While all plumbing will be somewhat affected over time by the water it carries, corrosive water will damage plumbing much more rapidly than water with low corrosivity.

By itself, corrosive water is not a health concern; your morning glass of orange juice is considerably more corrosive than the typical lake or river. What is of concern is that exposure in drinking water to elevated levels of the dissolved metals increases adverse health risks. And there lies the problem.

Public water systems are required to maintain their water at optimal conditions to prevent it from reaching corrosive levels. In Keene sodium hydroxide and sodium bicarbonate are added to raise and buffer the water's pH. Rest assured that the water is tested and monitored on a routine basis to insure that what happened in Flint doesn't happen in Keene. For more information on how corrosivity impacts water quality, download this informative fact sheet from NHDES: http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-3-4.pdf.



Source Water Assessment

In October 2002, the NH Department of Environmental Services prepared Source Water Assessment Reports for our source water, assessing the sources' vulnerability to contamination. The results of the assessments are as follows:

Babbidge Reservoir received zero high-susceptibility ratings, one medium-susceptibility rating, and eleven low-susceptibility ratings.

The Court Street well field received two high-susceptibility ratings, five medium-susceptibility ratings, and five low-susceptibility ratings.

The West Street well site received six high-susceptibility ratings, three medium-susceptibility ratings, and three low-susceptibility ratings.

The complete Assessment Report is available for review at the Keene Public Works Department. For more information, contact Donna Hanscom, Assistant Public Works Director, at (603) 352-6550 or visit the NH Department of Environmental Services Drinking Water Source Water Assessment Program Web site at http://des.nh.gov/organization/divisions/water/dwgb/dwspp/dwsap.htm.

Questions?

The City encourages and welcomes participation and feedback from the public. Come see how the Water Treatment Facility works. City staff invites individuals, groups, schools, and college classes to schedule a tour of the facility.

For more information about this report, to schedule a tour, or for any questions relating to your drinking water, please call Aaron Costa, Operations Manager, at (603) 357-9836 Ext: 6507 or acosta@ci.keene.nh.us, or Benjamin Crowder, Water Treatment Facility Manager, at (603) 357-8483 or bcrowder@ci.keene.nh.us.

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 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.

Fourth-Grade Water Science Fair

On Saturday, April 30th, fourth-grade students from Jonathan Daniels, Wheelock, Franklin, Fuller, and Symonds elementary schools presented their water science fair projects at the 20th annual City of Keene Fourth-Grade Water Science Fair at the City's Drinking Water Treatment Facility. A panel of judges listened as enthusiastic and well-informed students explained their projects, all of which centered around the common theme of water. There were many, many very good projects at the school fairs, and many students became fourth-grade experts on their subjects!

This year, approximately 100 Keene students completed water science fair projects and presented them at their schools. The top three from each school advanced to the city fair. The top four projects at the City Fair were invited to participate at the State of NH finals on May 4th in Dover. This year, something very unusual happened. The top four from the Keene City Fair were also the top four at the NH State Fair!

The City of Keene has been coordinating Water Science Fairs for Keene fourth-grade students since 1997. Over the past 20 years, students at the City Fair have consistently impressed judges, teachers, and parents with the quality of their projects and the level of understanding that they are able to demonstrate. We applaud their curiosity, the tremendous amount of effort and enthusiasm that they put into their work, and their academic achievement.

The NH State 4th Grade Water Science Fair top 4: (left-right) Ben Greenwald, Franklin School, 4th; Ethan Gray, Symonds School, 3rd; Jacob Friedman, Fuller School, 2nd; Jack Fuller, Wheelock School, 1st.

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 we 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/lead.

Sampling Results

During the past year, staff collected hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below show only those contaminants that were detected in the water. The state requires the City to monitor for 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, along with the year in which the sample was taken.

The city participated in the 3rd stage of the EPA's Unregulated Contaminant Monitoring Rule (UCMR3) program by performing additional drinking water tests. UCMR3 benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water. This information is used by the EPA to help determine if new regulatory standards to improve drinking water quality are needed. Please contact Mary Ley, Laboratory Supervisor, at (603) 357-9836 Ext. 6502 for more information on this program.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chlorine (ppm)	2015	[4]	[4]	0.77	0.0–1.42	No	Water additive used to control microbes
Gross Alpha (pCi/L)	2015	15	0	0.1	NA	No	Decay of naturally occurring radioactive elements
Haloacetic Acids [HAAs] (ppb)	2015	60	NA	28.3	17.0–50.3	No	By-product of drinking water disinfection
Nitrate (ppm)	2015	10	10	1.75	0.8–3.7	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2015	80	NA	34.7	16.1–56.5	No	By-product of drinking water disinfection
Total Organic Carbon (ppm)	2015	TT	NA	1.26	0.50–1.8	No	Naturally present in the environment
Turbidity[1] (NTU)	2015	TT	NA	0.12	0.02–0.49	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2015	TT = 95% of samples < or = 0.3 NTU	NA	99.9%	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2013	1.3	1.3	0.42	0/51	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2013	15	0	1.6	0/51	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
pH (Units)	2015	6.5–8.5	NA	7.4	5.8–9.3	No	Naturally occurring

UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2015	3.7	NA	By-product of drinking water disinfection
Chloroform (ppb)	2015	45	NA	By-product of drinking water disinfection

UNREGULATED CONTAMINANT MONITORING RULE PART 3 (UCMR3)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Chlorate (ppb)	2015	59	36–80	By-product of drinking water disinfection
Chromium (ppb)	2015	0.26	0.24–0.27	Naturally occurring metallic element
Chromium, Hexavalent (ppb)	2015	0.066	0.030–0.094	Naturally occurring in the environment from erosion of chromium deposits; Produced by industrial processes
Strontium (ppb)	2015	34	7.7–64	Naturally occurring metal

[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.

Definitions

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

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as LRAAs.

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

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).

SMCL (Secondary Maximum Contaminant Level): SMCLs are established to regulate the aesthetics of drinking water like appearance, taste and odor.

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