



# ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2018



*Presented By*  
**City of Keene**

## Our Mission Continues

Once again the City of Keene is proud to present its annual water quality report, covering all testing performed between January 1 and December 31, 2018. The Public Works Operations, Laboratory, Maintenance, and Water/Sewer divisions 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 24 hours a day, 7 days a week.

### 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 two surface water reservoirs located in the town of Roxbury and from four gravel packed wells located within the City 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 made less acidic 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.

## 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 PM on the 2nd and 4th Wednesday of each month in the City Council Chambers at City Hall, 3 Washington St. 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 to attend at their next scheduled meeting.

## Source Water Assessment

In October 2002 the New Hampshire 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, one medium, and 11 low susceptibility ratings.
- The Court Street Wellfield received two high, five medium, and five low susceptibility ratings.
- The West Street well site received six high, three medium, and three low susceptibility ratings.

The complete assessment report is available for review at the Keene Public Works Department. For more information, contact Tom Moran, Assistant Public Works Director, at (603) 352-6550 or is also available online at the New Hampshire Department of Environmental Services Drinking Water Source Water Assessment Program website at <https://www.des.nh.gov/organization/divisions/water/dwgb/dwspp/dwsap.htm>.

## 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>.



## 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 at (800) 426-4791 or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).



## 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.

## Drummer Hill Tank and Booster Station Replacement Project

The Drummer Hill development will be getting a new 125,000-gallon water storage tank and pumping station in 2019 or 2020. The total cost of this project is just over \$2 million.

The existing tank and pumping station were installed in 1987 as part of the construction of the Drummer Hill development. Because of the age and condition of the infrastructure, the existing tank and pumping station were scheduled to be replaced in 2023 and 2027; however, the tank had a significant leak in 2018 and has been out of service since that time.

The new storage tank will be located in the same spot as the existing tank, will have a larger capacity, and will be taller to increase water pressure to the nearest homes on Drummer Hill. The storage tank will be equipped with mixers that improve overall water quality and help maintain compliance with water quality standards.

The existing pumping station is underground. The pumps are 32 years old and at the end of their useful life, and replacement parts are no longer available. The new pumping station will be an aboveground station equipped with online monitoring equipment and an emergency generator. The online equipment will send analytical information back to the water treatment facility and allow staff to make process control changes and optimize the treatment process.

Construction will begin in the summer of 2019 and will be completed by the summer of 2020. For more information related to this project, please feel free to contact Aaron Costa, Operations Manager, at (603) 357-9836, ext. 6507, or [acosta@ci.keene.nh.us](mailto:acosta@ci.keene.nh.us).

We remain vigilant in delivering the best-quality drinking water

## Table Talk

Get the most out of the Testing Results data table with this simple suggestion. In less than a minute, you will know all there is to know about your water:

For each substance listed, compare the value in the Amount Detected column against the value in the MCL (or AL, SMCL) column. If the Amount Detected value is smaller, your water meets the health and safety standards set for the substance.

### Other Table Information Worth Noting

Verify that there were no violations of the state and/or federal standards in the Violation column. If there was a violation, you will see a detailed description of the event in this report.

If there is an ND or a less-than symbol (<), that means that the substance was not detected (i.e., below the detectable limits of the testing equipment).

The Range column displays the lowest and highest sample readings. If there is an NA showing, that means only a single sample was taken to test for the substance (assuming there is a reported value in the Amount Detected column).

If there is sufficient evidence to indicate from where the substance originates, it will be listed under Typical Source.

## Count on Us

Delivering high-quality drinking water to our customers involves far more than just pushing water through pipes. Water treatment is a complex, time-consuming process. Because tap water is highly regulated by state and federal laws, water treatment plant and system operators must be licensed and are required to commit to long-term, on-the-job training before becoming fully qualified. Our licensed water professionals have a basic understanding of a wide range of subjects, including mathematics, biology, chemistry, and physics. Some of the tasks they complete on a regular basis include:

- Operating and maintaining equipment to purify and clarify water;
- Monitoring and inspecting machinery, meters, gauges, and operating conditions;
- Conducting tests and inspections on water and evaluating the results;
- Maintaining optimal water chemistry;
- Applying data to formulas that determine treatment requirements, flow levels, and concentration levels;
- Documenting and reporting test results and system operations to regulatory agencies; and
- Serving our community through customer support, education, and outreach.

So, the next time you turn on your faucet, think of the skilled professionals who stand behind each drop.



## 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.

For more information about this report, to schedule a tour, or for any questions relating to your drinking water, please contact Aaron Costa, Operations Manager, at (603) 357-9836, ext. 6507, [acosta@ci.keene.nh.us](mailto:acosta@ci.keene.nh.us) or Benjamin Crowder, Water Treatment Facility Manager, at (603) 357-8483, ext. 2, [bcrowder@ci.keene.nh.us](mailto:bcrowder@ci.keene.nh.us).

## Sampling Results

During the past year, staff collected hundreds of water samples in order to assess 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 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 fourth stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR4) program by performing additional drinking water tests. UCMR4 benefits the environment and public health by providing the U.S. EPA with data on the occurrence of contaminants suspected to be in drinking water. This information is used by the U.S. EPA to help determine if new regulatory standards to improve drinking water quality are needed. Please contact Mary Ley, Laboratory Manager, 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)	2018	[4]	[4]	0.74	0.05–1.46	No	Water additive used to control microbes
Haloacetic Acids [HAAs] (ppb)	2018	60	NA	34.6	8.6–58.7	No	By-product of drinking water disinfection
Nitrate (ppm)	2018	10	10	1.1	0.2–1.7	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2018	80	NA	43.9	3.8–76.9	No	By-product of drinking water disinfection
Total Organic Carbon <sup>1</sup> (ppm)	2018	TT	NA	1.21	0.5–2.3	No	Naturally present in the environment
Turbidity <sup>2</sup> (NTU)	2018	TT	NA	0.43	0.02–0.43	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2018	TT = 95% of samples meet the limit	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 %ILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2018	1.3	1.3	0.20	0/64	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2018	15	0	3	0/64	No	Lead service lines, corrosion of household plumbing systems, including fittings and fixtures; Erosion of natural deposits
SECONDARY SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)	2018	200	NA	39	NA	No	Erosion of natural deposits; Residual from some surface water treatment processes
pH (Units)	2018	6.5–8.5	NA	7.8 (mode)	7.2–9.4	No	Naturally occurring
Sulfate (ppm)	2018	250	NA	3.3	NA	No	Runoff/leaching from natural deposits; Industrial wastes

## UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppm)	2018	4.3	NA	By-product of drinking water disinfection
Chloroform (ppm)	2018	39.8	NA	By-product of drinking water disinfection
Sodium (ppm)	2018	13	NA	Naturally occurring

## UNREGULATED CONTAMINANT MONITORING RULE - PART 4 (UCMR4)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Chloride (ppm)	2018	7.6	NA	Runoff/leaching from natural deposits
HAA5 Group (ppb)	2018	19.5	1.2–44	By-product of drinking water disinfection
HAA6Br Group (ppb)	2018	1.7	0.5–3.3	By-product of drinking water disinfection
HAA9 Group (ppb)	2018	21.1	2.3–47.1	By-product of drinking water disinfection
Manganese (ppb)	2018	10.1	0.59–32.9	Naturally occurring

<sup>1</sup>The value reported under Amount Detected for Total Organ Carbon (TOC) is the lowest ratio of percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

<sup>2</sup>Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

## Definitions

**90th %ile:** The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

**AL (Action Level):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which 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 the highest 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.

**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):** These standards are developed to protect aesthetic qualities of drinking water and are not health based.

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