



# Water Quality

## ANNUAL REPORT

### 2021 HIGHLIGHTS

- Replaced the deep water portion of the 16-inch cast iron intake pipe with a new 16-inch high density polyethylene intake pipe at Nagog Pond resulting in improved water quality.
- July 2021 was the wettest July in Massachusetts resulting in reduced outdoor water use.
- Rehabilitated Annursnac water storage tank.
- Provided 14 rebates for high efficiency toilets and clothes washers.
- Completed a leak detection survey on 74 miles of water main in the northern portion of town, during which five leaks were identified and repaired, saving ~6.57 MG/year.

### To Our Customers,

As the new Superintendent, I am pleased to provide you with this annual *Water Quality Report* issued with the intent of ensuring all customers are provided with an opportunity to review the quality of Concord's public water system.

Over the next year we look forward to completing design of the Nagog Pond Water Filtration Plant to maximize water quality and enhance our water system resilience. We will also start upgrading to automated metering infrastructure in conjunction with the Light Plant. These metering improvements will enable customers to access daily water usage to manage your water consumption and identify potential leaks proactively.

Most notably CPW's Water/Sewer and Engineering Divisions, the Town's Sustainability and other departments are developing an Integrated Water Resource Management Plan to holistically and sustainably manage the Town's water resources to strengthen our water supply resilience as we navigate extreme weather in the coming decades.

As always, if you have any questions on any of the material provided, please feel free to call our office at 978-318-3250.

Respectfully,

*Jeffrey A. Murawski*

Jeffrey A. Murawski

Concord Public Works, Water & Sewer Division, Superintendent

# Water Quality Summary (JAN.–DEC. 2021)

To ensure that tap water is safe to drink, the EPA enforces regulations that require stringent monitoring of specific contaminants within public water supply systems. Within Concord's system, over 500 tests are run each year to assess approximately 145 potential contaminants like bacteria, perchlorate, pesticides, metals, etc. Substances detected in Concord's drinking water in 2021 are listed in the summary table below. We monitor for some contaminants less than once per year, because the concentrations for those contaminants are not expected to vary significantly from year to year. As a result, some of our data is more than a year old. For those contaminants, the date of the last sample is shown in the table below. The presence of these substances does not indicate that the water poses a health risk. These substances are divided into four categories: Microbiological, Primary, Secondary, and Lead & Copper Parameters. The Primary parameters list includes contaminants and associated limits of these contaminants that can adversely affect public health and are known or are anticipated to occur in public water systems. Secondary parameters are set for aesthetic purposes and are designed to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted. We are proud to report that Concord's water quality testing program not only consistently meets EPA's requirements for drinking water, but goes above and beyond those requirements to satisfy the higher standards we have set for ourselves. Additional water quality information is available on our website at [www.concordma.gov/water](http://www.concordma.gov/water).

## MICROBIOLOGICAL PARAMETERS

| Substance       | Units      | Highest Level Detected | Range of Levels Found | Highest Level Allowed (EPA's MCL) | Ideal Goal (EPA's MCLG) | Violation | Major Sources in Drinking Water                                                |
|-----------------|------------|------------------------|-----------------------|-----------------------------------|-------------------------|-----------|--------------------------------------------------------------------------------|
| Giardia lamblia | oocyst/10L | 7.9                    | ND - 7.9              | TT                                | 0                       | No        | Discharged especially where water is contaminated with sewage or animal wastes |

## PRIMARY PARAMETERS

| Substance                     | Units | Highest Level Detected | Range of Levels Found | Highest Level Allowed (EPA's MCL) | Ideal Goal (EPA's MCLG) | Violation | Major Sources in Drinking Water                                                                          |
|-------------------------------|-------|------------------------|-----------------------|-----------------------------------|-------------------------|-----------|----------------------------------------------------------------------------------------------------------|
| Bromate <sup>2</sup>          | ppb   | 10.9 (RAA-Q2 2021)     | 8.0 - 13.0 (2020)     | 10                                | 0                       | Yes       | By-product of drinking water disinfection                                                                |
| Chlorine <sup>2</sup>         | ppm   | 0.44                   | 0.02 - 1.01           | 4 (MRDL)                          | 4 (MRDLG)               | No        | Water treatment for disinfection                                                                         |
| Fluoride <sup>1</sup>         | ppm   | 1.0                    | 0.1-1.0               | 4                                 | 4                       | No        | Erosion of natural deposits; Water additive which promotes strong teeth                                  |
| Haloacetic Acids <sup>2</sup> | ppb   | 22.5                   | 1.49-10.2             | 60                                | No Standard             | No        | By-product of drinking water disinfection                                                                |
| Nitrate                       | ppm   | 2.56                   | 0.16-2.56             | 10                                | 10                      | No        | Runoff from fertilizer use; Leaching from septic tanks; Erosion of natural deposits                      |
| Perchlorate                   | ppb   | 0.14                   | 0.14                  | 2                                 | No Standard             | No        | By-product of drinking water disinfection; Found in propellants/fireworks/munitions/blasting agents/etc. |
| Trihalomethanes <sup>2</sup>  | ppb   | 30.3                   | 9.29-37.2             | 80                                | No Standard             | No        | By-product of drinking water disinfection                                                                |
| Turbidity (2020) <sup>3</sup> | NTU   | 0.56                   | 0.31 - 0.56           | 5                                 | 1                       | No        | Suspended and colloidal particles including clay, silt, inorganic matter, algae, and microorganisms.     |

## SECONDARY PARAMETERS

| Substance                                | Units | Highest Level Detected | Range of Levels Found | SMCL        | Major Sources in Drinking Water                                                                        |
|------------------------------------------|-------|------------------------|-----------------------|-------------|--------------------------------------------------------------------------------------------------------|
| Calcium                                  | ppm   | 34.1                   | 15.7-34.1             | No Standard | Erosion of natural deposits                                                                            |
| Chloride                                 | ppm   | 220                    | 45.8-220              | 250         | Naturally present in the environment                                                                   |
| Copper                                   | ppm   | 0.051                  | 0.002-0.051           | 1.3         | Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives |
| Hardness                                 | ppm   | 123                    | 54.9-123              | No Standard | Erosion of natural deposits                                                                            |
| Iron                                     | ppb   | 132                    | ND-132                | 300         | Erosion of natural deposits                                                                            |
| Magnesium                                | ppm   | 9.33                   | 3.74-9.33             | No Standard | Erosion of natural deposits                                                                            |
| Manganese <sup>4</sup>                   | ppb   | 56.1                   | ND-56.1               | 50          | Erosion of natural deposits                                                                            |
| Methyl Tertiary-Butyl Ether or MTBE      | ppb   | 4                      | ND-4.0                | No Standard | Fuel additive; leaks and spills from gasoline storage tanks                                            |
| Potassium                                | ppm   | 47.4                   | 24.7-47.4             | No Standard | Naturally present in the environment                                                                   |
| Sodium                                   | ppm   | 120                    | 19-120                | No Standard | By-product of drinking water treatment; Naturally present in the environment                           |
| Sulfate                                  | ppm   | 34.9                   | 15-34.9               | 250         | Naturally present in the environment                                                                   |
| Total Dissolved Solids <sup>5</sup>      | ppm   | 500                    | 173-500               | 500         | Naturally present in the environment                                                                   |
| Trichlorofluoromethane (Freon 11) (2020) | ppb   | 4                      | ND-4.0                | No Standard | Discharge from use as a refrigerant                                                                    |
| Zinc                                     | ppm   | 0.0511                 | 0.0148-0.0511         | 5           | Naturally present in the environment                                                                   |

## LEAD & COPPER PARAMETERS<sup>6</sup>

| Substance     | Units | 90th Percentile Level Detected | 90th Percentile Action Level (AL) (EPA's MCL) | # samples (# exceeding AL) | Ideal Goal (EPA's MCLG) | Exceeds Action Level | Major Sources in Drinking Water                                                                                            |
|---------------|-------|--------------------------------|-----------------------------------------------|----------------------------|-------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------|
| Lead (2020)   | ppb   | 6                              | 15                                            | 30 (0)                     | 0                       | No                   | Corrosion of household plumbing systems; Erosion of natural deposits; see statement below                                  |
| Copper (2020) | ppm   | 0.28                           | 1.3                                           | 30 (0)                     | 1.3                     | No                   | Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservative; see statement below |

## PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)<sup>7</sup>

| Regulated Contaminant | Units | Detect Results or Range | Highest Quarterly Average | MCL | Violation | Major Sources in Drinking Water                                                                                                                                                                                                                                                                                                     |
|-----------------------|-------|-------------------------|---------------------------|-----|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PFAS6                 | ppt   | ND - 12.7               | 10.42                     | 20  | No        | Discharges and emissions from industrial and manufacturing sources associated with the production or use of these PFAS, including production of moisture and oil resistant coatings on fabrics and other materials. Additional sources include the use and disposal of products containing these PFAS, such as fire-fighting foams. |

## PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

| Unregulated Contaminant (CASRN)                                       | Units | Detect Results or Range | Average | ORSG | Possible Source | Health Effects |
|-----------------------------------------------------------------------|-------|-------------------------|---------|------|-----------------|----------------|
| Perfluorohexanoic Acid. (PFHxA) (307-24-4)                            | ppt   | ND-5.8                  | 3.5     | †    | —               | —              |
| Perfluorobutanesulfonic Acid. (PFBS)(375-73-5)                        | ppt   | ND-2.7                  | 2.6     | †    | —               | —              |
| N-Ethyl Perfluorooctanesulfonamidoacetic Acid. (NEtFOSAA)(2991-50-6)  | ppt   | ND-1.7                  | 1.7     | †    | —               | —              |
| N-Methyl Perfluorooctanesulfonamidoacetic Acid. (NMeFOSAA)(2355-31-9) | ppt   | ND-1.8                  | 1.8     | †    | —               | —              |



## Bromate in Drinking Water Notice

**N**agog Pond is currently used seasonally to meet increased water demand during the warmer months. When in operation, this water is treated with ozone to address taste and odor and to enhance disinfection. Ozone can react with bromide, a naturally occurring trace element in surface water, to create bromate, a disinfection byproduct. The allowable concentration of bromate in drinking water, averaged over a year, is 10 ppb. Some people who drink water containing bromate in excess of 10 ppb over many years have an increased risk of getting cancer. The average concentration of bromate in water supplied by Nagog Pond from June to August 2020 was just over 10 ppb. The Nagog Pond water supply was shut down for the season in late August 2020 and was not used during calendar year 2021. Public notice was distributed to all customers in October 2020 and June 2021.

Prior to seasonal start-up of the Nagog Pond supply, Concord Water staff will continue to work with our consulting engineers and MassDEP to evaluate existing treatment practices in an effort to reduce bromate. For additional information on bromate, please visit [www.concordma.gov/bromate](http://www.concordma.gov/bromate).

## Lead Service Line Replacement Program

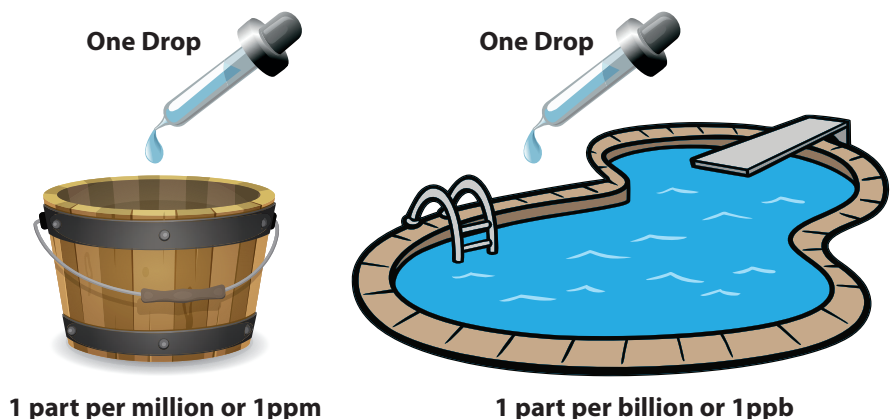
**C**PW's Water Division has made a concerted effort to develop a program to identify and eliminate existing lead service lines within Concord's distribution system. Based on a preliminary assessment of available service records, less than 5% of the active water services in Concord are believed to contain lead. According to the American Water Works Association (AWWA), the typical cost associated with a private contractor replacing a lead service line is in the range of \$5,000 to \$6,000.

In order to help incentivize lead service line replacements by significantly reducing the cost of this work, the Public Works Commission approved a Lead Service Line Replacement Program (LSLRP) in May 2017. This program enables Division personnel to perform work on private property, a practice not generally offered, and caps the cost of labor and materials at \$1,500. Participating customers are also offered an interest-free 12-month payment plan. As part of the LSLRP, a total of 36 lead service lines have been replaced since the program's inception!

While CPW provides outreach to those we believe may have lead service lines bringing water to their homes, we encourage customers who believe they may have a lead service line that are interested in taking advantage of this program to contact us for additional information. You can call our office at 978-318-3250 or find details on the LSLRP online at [www.concordma.gov/lead](http://www.concordma.gov/lead).

## What is the difference between ppm, ppb and ppt?

It can be hard to wrap our minds around what the concentration of a contaminant actually means. To help visualize different concentrations, imagine that one part per million (1 ppm) is the same as one drop of water in a bucket. At an even smaller concentration, one part per billion (1 ppb) is the same as one drop of water in an Olympic size swimming pool and one part per trillion (1 ppt) is the same as one drop of water in 20 Olympic size swimming pools!



### TERMS & ABBREVIATIONS

**AL** (Action Level): The concentration of a contaminant that, 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 MCLG as is 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. MCLG's 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 expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**SMCL** (Secondary Maximum Contaminant Level): These standards are developed to protect aesthetic qualities of drinking water and are not health based.

**CFU**: colony forming units

**ND**: not detected

**NTU**: Nephelometric Turbidity Units

**ppb**: parts per billion or micrograms per liter (µg/L)

**ppm**: parts per million or milligrams per liter (mg/L)

**ppt**: parts per trillion or nanograms per liter (ng/L)

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

**RAA** (Running Annual Average): The average of four consecutive quarters of data for all samples collected.

**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.

**90th Percentile**: Out of every 10 homes, 9 were at or below this level.

### FOOTNOTES

1 **Fluoride**: 1969 Town meeting vote authorized the Concord Board of Health to order the upward adjustment of the fluoride content of the water supply available for domestic use in the Town of Concord. Drinking water fluoridation using sodium fluoride began in 1970. As of December 2015, fluoride treatment was decreased from 1.0 ppm to 0.7 ppm in accordance with the United States Department of Health and Human Services' (HHS) recommendation. Fluoride has a secondary maximum contaminant level (SMCL) of 2 ppm to better protect human health.

2 **Haloacetic Acids, Trihalomethanes, Bromate and Free Chlorine**: The highest level detected represents the highest locational running annual average (LRAA) for Haloacetic Acids and Trihalomethanes. The highest level detected represents the highest running annual average (RAA) for Bromate and Free Chlorine. The range of individual sample results could be above the MCL, but the LRAA and RAA of all sample locations is used to determine compliance.

3 **Turbidity** is a measure of the cloudiness of the water. We monitor it because it is a general indicator of water quality and treatment needs.

4 **Manganese** is a naturally occurring mineral found in rocks, soil, groundwater, and surface water. EPA and MassDEP have set an aesthetics-based SMCL for manganese of 50 ppb, as water may be discolored and have a taste to it at or above this level. Please be advised that there are no health effects associated with an exceedance of this SMCL, nor are there any violations.

5 **Total Dissolved Solids** (TDS) represents the total concentration of dissolved substances in water, and is mainly comprised of naturally occurring minerals. EPA and MassDEP have set an aesthetics-based SMCL for TDS of 500 ppm, as water may be discolored, have a taste to it, or leave deposits at or above this level. Please be advised that there are no health effects associated with an exceedance of this SMCL, nor are there any violations.

6 **Lead and Copper**: In accordance with EPA regulations, Concord Public Works tests the tap water of 30 homes in Concord for lead and copper every 3 years. Testing was last done during summer 2020 and is next scheduled for completion during summer of 2023. EPA determines whether the protection against corrosion is sufficient by requiring that at least 90% of the sampled homes have lead levels under 15 parts per billion (ppb). This is called the Action Level.

7 **Per- And Polyfluoroalkyl Substances**: Some people who drink water containing these PFAS in excess of the MCL may experience certain adverse effects. These could include effects on the liver, blood, immune system, thyroid, and fetal development. These PFAS may also elevate the risk of certain cancers.

† There is no ORS Guideline for this compound.

# Integrated Water Resource Plan

Concord Public Works is developing an Integrated Water Resource Plan (IWRP) to help holistically manage our water system. The IWRP will provide a framework and data to manage our drinking water, wastewater, and stormwater systems. The IWRP approach will increase CPW's ability to make decisions that are cost-effective, data-driven, and sustainable. With improved understanding of our water resources, Concord Public Works will be better positioned to ensure a resilient and clean water supply while continuing to balance the health and needs of the public, while protecting the environment.



## Aging Infrastructure

In Concord we can see the beautiful reminders of our history around every corner. However, underground, our infrastructure is also aging and is in need of rehabilitation. The IWRP will help CPW make systematic improvements to our infrastructure to ensure reliable service today and prepare for a future with economic growth and climate change.



## Climate Change

Concord has already experienced impacts associated with climate change, such as intense droughts, prolonged heat waves, extreme storms, and flooding. The development of the IWRP, water conservation efforts, and improvements to the stormwater drainage system all advance priorities as defined in Sustainable Concord, the Town's first climate action and resilience plan. <https://concordma.gov/2503/Climate-Action-and-Resilience-Plan>

## HELP US HELP YOU.

Sign up to receive important information via the following services.



[www.concordma.gov/codered](http://www.concordma.gov/codered)  
Emergency Notification  
System Registration

[www.concordma.gov/notifyme](http://www.concordma.gov/notifyme)  
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## Wastewater Collection and Treatment

Just over a third of the Town is connected to the sewer collection system. Water that goes down a drain or toilet enters the sewer collection system and flows to the Wastewater Treatment Facility (WWTF) on Bedford St. where it is treated before being discharged into the Concord River. Wastewater from the rest of the community returns to groundwater via onsite septic systems.

**Quality:** All treated wastewater, whether at a WWTF, or via onsite septic systems, re-enters the environment through rivers, streams, and groundwater all of which support wildlife, are used for recreational activities, and are essentially recycled for drinking water supply.

**Quantity:** The Wastewater Treatment Facility is issued a NPDES permit by the EPA which provides limits for both the quantity and the quality of wastewater treated and discharged. The permit limits the amount of wastewater that can be processed through the facility. The Town is looking to see if a more holistic assessment of local water balance, made possible through an IWRP might potentially support our request to increase the volume of wastewater passed through the WWTF by offsetting this with improved stormwater and drinking water management.

For more information visit [www.concordma.gov/water](http://www.concordma.gov/water).

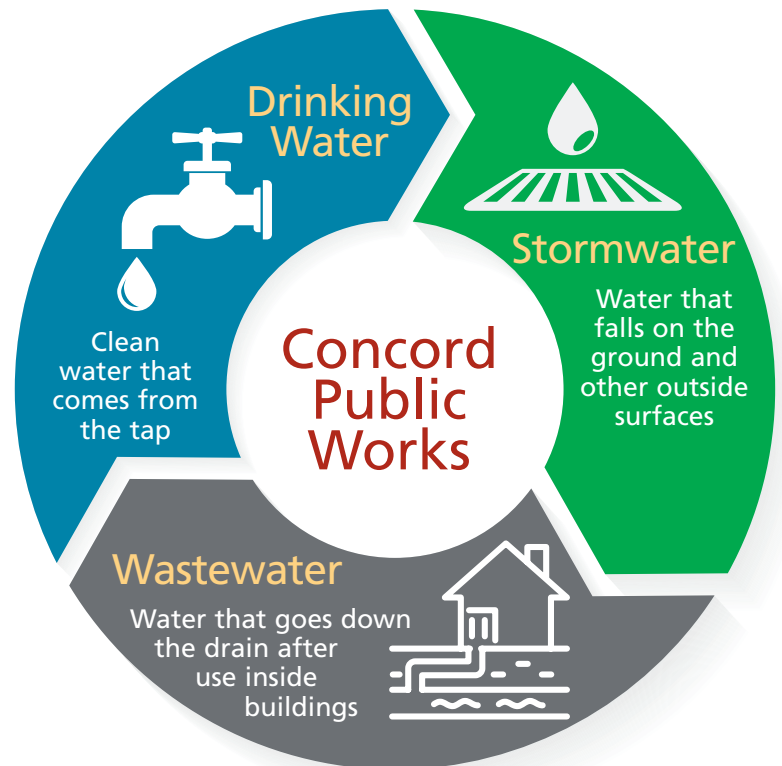
## Drinking Water Supply and Distribution

Water supply quality and availability are continually challenged by extreme weather. It is a constant struggle to fulfill customer needs during peak summer demands. To help preserve our limited drinking water resources, Concord has established a vigorous water conservation program including conservation based water rates and a seasonal water demand management plan.

**Quality:** CPW is developing a Water System Master Plan to be used in conjunction with our Risk and Resiliency Assessment to help guide how and when we use our existing water resources to ensure that the water provided to our customers is of the best quality possible.

**Quantity:** Depending on the season, all available production facilities may be called upon to satisfy system demands which fluctuate between 1.5 million gallons per day (MGD) during the winter months to over 4 MGD in the summer. The frequency and duration of droughts is likely to increase under climate change and will put greater stress on our existing ground water supplies and surface water supply, Nagog Pond.

For more information visit [www.concordma.gov/water](http://www.concordma.gov/water).



## Stormwater Management

Stormwater originates from rain or snowmelt that runs over the surface of the ground and may flow directly into waterbodies, into the stormwater collection drain, or soak into the groundwater. The Town manages the stormwater collection system through conventional drainage infrastructure with recent inclusion of “green” infrastructure sites. Because stormwater is directed to waterbodies and culverts, that allow water to pass under roadways, they are also considered stormwater infrastructure in Concord.

**Quality:** Stormwater can become polluted with a variety of harmful materials such as sand, litter, oils, and salt, as it washes over parking lots, lawns and sidewalks before flowing into the Town’s Storm Drain System. Many people don’t know that storm drains in Concord are NOT connected to the wastewater treatment facility. Storm drains are designed to empty directly into nearby rivers or ponds without treatment or cleaning.

**Quantity:** Our region is projected to experience more frequent and intense precipitation events which may overwhelm the current stormwater drainage system and cause localized flooding. Our current stormwater systems and related impervious surfaces will likely need to be modified in order to mitigate this larger volume of water. Residents will continue to be encouraged to better utilize rainwater by disconnecting their gutters from the Town’s drainage system and funneling it into a rain barrel for their own use.

For more information visit [www.concordma.gov/MS4](http://www.concordma.gov/MS4).

## Cross Connection Control and You

Concord Public Works' Water Rules and Regulations, as well as Massachusetts' drinking water regulations, require that public water systems be protected from potential contamination resulting from cross connections.

### What is a cross connection?

A cross connection occurs whenever a potable drinking water line is directly or indirectly linked to a piece of equipment or piping containing non-potable (polluted) water.

### Why should I be concerned?

An unprotected or inadequately protected cross connection in your home or workplace could contaminate the drinking water not only in your building, but also in neighboring homes and businesses. Severe illnesses have been caused by cross connection contamination that could have been prevented.

### How does this happen?

Typically, this occurs when equipment, plumbing fixtures or attachments such as garden hoses contain chemicals or water that becomes contaminated over time. When something unexpected happens that alters water pressure in the line or the direction of water flow (like a water main break), contaminants can be sucked from the equipment and back into the drinking water line.

### Can it happen at my home?

Outdoor hose bibbs and garden hoses tend to be the most common sources of cross connections at home. The garden hose creates a hazard when submerged in non-potable water such as a swimming pool or when attached to a chemical sprayer for weed killing. Fertilizer, garden chemicals or other materials may contaminate hoses left lying on the ground. Other household cross connections can occur when irrigation systems, boilers, water filtration devices, and fire service systems are connected to the home's plumbing.

### How can I be protected?

All industrial, commercial and institutional facilities are annually surveyed to ensure that all potential cross connections are identified and eliminated or protected by a backflow preventer. We also inspect and test these backflow preventers to make sure they are providing maximum protection. At home, do not attach any chemical or non-potable liquid applicators to anything connected to your plumbing system. Outdoors, install hose bibb vacuum breakers on any outside faucet. Owners of irrigation systems are required to have an approved reduced pressure zone assembly (RPZ) installed on the system.

### What is a backflow preventer?

A backflow preventer is a mechanical device installed in the plumbing line to prevent the introduction of pollutants or contaminants into the drinking water supply. Types include reduced pressure zone assembly (RPZ), double check valve assembly (DCVA), pressure vacuum breaker assembly (PVB), and "air gap". The simplest type is the "air gap" or simply keeping the end of the water line or hose from coming into direct contact with the vessel being filled with water.

### Where can I get more information?

If you need more information, you can contact the Plumbing Inspector's office or CPW's Water & Sewer Division.

## Potential Sources of Contaminants

The sources of drinking water (both tap 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 and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or human activity.

Contaminants 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, and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- **Chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA and MassDEP prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. FDA and the Massachusetts Department of Public Health 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 certain substances which the EPA calls "contaminants." The presence of these substances does not necessarily indicate that the water poses a health risk. For example, naturally occurring dissolved minerals are commonly found in well water. More information about the substances found in drinking water and their potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791 or the Massachusetts Drinking Water Program at 1-617-292-5770.

## Get Involved

The Public Works Commission oversees the work of Concord Public Works. Their meetings provide an opportunity to become more involved in issues relating to the water system. They typically meet the second

Wednesday of each month at 4:00 pm via Zoom. Please check the PWC website for exact dates, times and locations. [www.concordma.gov/529/Public-Works-Commission](http://www.concordma.gov/529/Public-Works-Commission)

For more information regarding water quality and resource protection initiatives, or if you have a neighborhood concern in a resource protection area (depicted on the map on page 8), please contact Elaine Sahtouris, Environmental & Regulatory Coordinator at 978-318-3250 or [esahtouris@concordma.gov](mailto:esahtouris@concordma.gov)



## WATER QUALITY Lead & Copper

The detection of unacceptably high lead levels within the Flint, Michigan drinking water system began to draw national media attention in early 2015. This discovery has resulted in increased awareness and concern about drinking water quality across the country. Concord Public Works would like to reassure our customers that we take our responsibility for providing safe and reliable drinking water extremely seriously. We believe it is important to provide you with an update about Concord's ongoing lead and copper protection efforts, along with a brief explanation of what we do to prevent a similar public health crisis from occurring in Concord.

CPW's Water Division treats our drinking water to reduce the natural corrosivity of our local water supplies. We do so by upwardly adjusting the pH by adding potassium hydroxide and enhancing the buffering capacity by adding polyphosphate. These activities raise the pH from slightly acidic to neutral while simultaneously creating a very thin, protective film on the interior walls of water mains and service pipes entering your home. Most importantly, these activities significantly reduce the amount of metals, including lead (if present), that could leach from your private plumbing system into the water carried through it.

These treatment activities are validated in accordance with EPA and MassDEP regulations. A total of 30 homes throughout Concord are sampled once every three years to confirm the effectiveness of our corrosion control efforts. The last round of lead and copper sampling was completed in summer 2020 and will be repeated in summer 2023. The two graphs on this page summarize the long-term effectiveness of our treatment practices, showing Concord's compliance levels for the past five sampling events. More information is available in the Water Quality Summary on page 2.

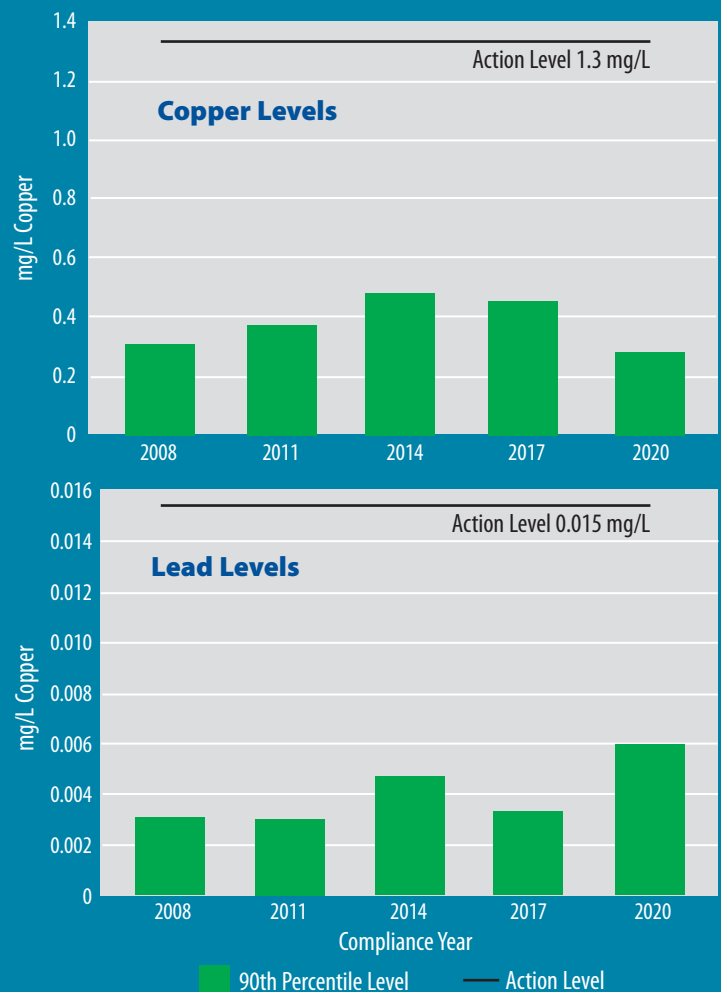
If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing fixtures, such as faucets, valves, and solder. CPW is responsible 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, such as first thing in the morning, after work, or upon returning from vacation, 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. To conserve water, other household water usage activities such as showering, washing clothes, and flushing the toilet are also effective methods for flushing pipes and allowing fresh water from the distribution system to enter household pipes.

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 EPA's Safe Drinking Water Hotline and at <http://www.epa.gov/safewater/lead>, or you can visit CPW's website at [www.concordma.gov/lead](http://www.concordma.gov/lead).

**If you would like information on your service line material, please contact CPW's Water Division at 978-318-3250.**



Most residential water service lines in Concord are made of lead, copper, or plastic. Lead service lines are generally a dull gray color and are very soft. You can identify them easily by carefully scratching the service material with a key. If the pipe is made of lead, the area you've scratched will turn a bright silver color.

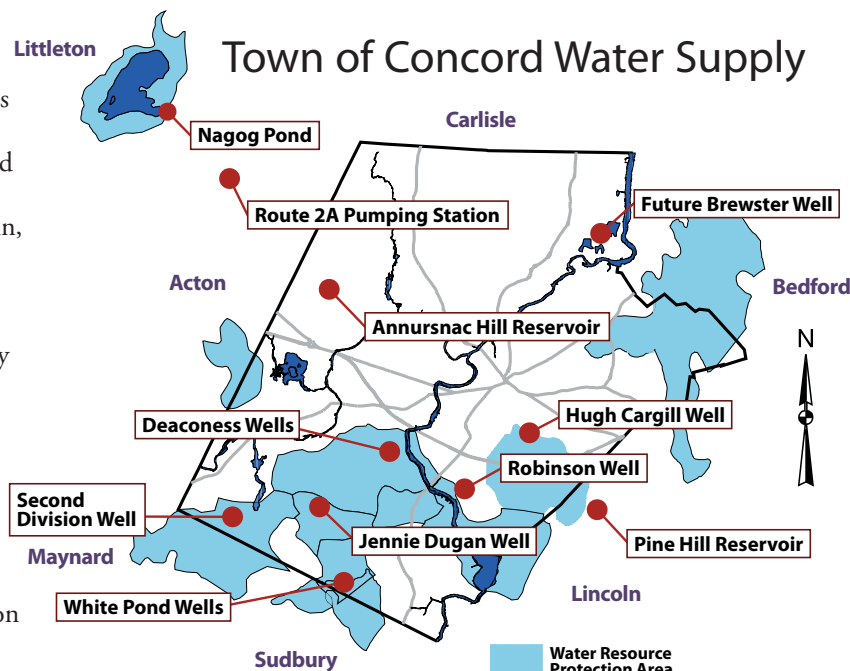


## Water Supply

Concord's water system consists of six groundwater supplies located in Concord and one surface water supply located on the Acton/Littleton line. In addition, there are associated pumping stations, two storage reservoirs with a 7.5 million gallon total capacity, approximately 134 miles of water main, and over 1,300 fire hydrants. Depending on the season, all available production facilities may be called upon to satisfy system demands which may fluctuate between 1.5 million gallons per day (MGD) during the winter months to nearly 4 MGD in the summer. Concord's public water system is interconnected with Acton and Bedford for emergency backup, if ever needed.

## Water Treatment

In accordance with State and Federal drinking water requirements, Concord's water is treated before it gets to your tap. Treatment includes: *disinfection*—via the addition of liquid chlorine at all supplies plus ozone/UV light at the Nagog Pond water supply; *corrosion control*—via the addition of potassium hydroxide and polyphosphate to raise the natural pH of the water and reduce its corrosiveness to household plumbing; *fluoridation*—via the addition of sodium fluoride to help in the prevention of tooth decay; *iron sequestration*—performed by adding polyphosphate to reduce the frequency of discoloration events; and *iron and manganese removal*—performed by pressure filtering the Deaconess and White Pond wells. Due to the high level of water quality in Nagog Pond, the Town continues to operate this source under a filtration waiver. Chemical adjustments and disinfection are provided as noted in the Source Treatment Table (below) to ensure that safe drinking water is delivered to customer's taps.



## Drinking Water and People with Weakened Immune Systems

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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 can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline (1-800-426-4791).

## SOURCE TREATMENT

|                                                           | Nagog Pond | Jennie Dugan Well | Deaconess Wells | White Pond Wells | Second Division Well | Robinson Well | Hugh Cargill Well |
|-----------------------------------------------------------|------------|-------------------|-----------------|------------------|----------------------|---------------|-------------------|
| Source ID                                                 | 01S        | 01G               | 03G, 10G        | 04G, 08G, 09G    | 05G                  | 06G           | 07G               |
| Potassium Hydroxide to Adjust pH for Corrosion Control    | •          | •                 | •               | •                | •                    | •             | •                 |
| Ultra-Violet Light for Disinfection                       | •          |                   |                 |                  |                      |               |                   |
| Chlorine for Disinfection                                 | •          | •                 | •               | •                | •                    | •             | •                 |
| Ozone for Disinfection                                    | •          |                   |                 |                  |                      |               |                   |
| Fluoride to Promote Strong Teeth                          | •          | •                 | •               | •                | •                    | •             | •                 |
| Polyphosphate for Iron & Manganese Treatment              | •          | •                 | •               | •                | •                    | •             | •                 |
| LayneOx™ Pressure Filtration for Iron & Manganese Removal |            |                   | •               | •                |                      |               |                   |
| Source Water Protection (SWAP) susceptibility rating*     | High       | Moderate          | High            | High             | High                 | High          | High              |

\* Susceptibility ratings were developed as a part of the SWAP report and reflect the proximity of potential contaminant sources like farms, golf courses and residential houses to water supplies. The complete swap report is available at 135 Keyes Road or online at <http://www.mass.gov/doc/concord-water-department-swap-report>.

**For questions about this report or to learn more about protecting Concord's water supply, contact Melissa Simoncini, Senior Environmental and Regulatory Coordinator at 978-318-3250.**