



# Water Quality

## ANNUAL REPORT

### To Our Customers,

If you have been following the news lately, even casually, you have heard something about the Flint, Michigan water supply debacle. For a number of reasons, unacceptably high levels of lead have been detected and unmitigated for an extended period of time within their water supply. As detailed in a recently issued Water Advisory Task Force Final Report commissioned by the office of Governor Snyder, *"The Flint water crisis is a story of government failure, intransigence, unpreparedness, delay, inaction, and environmental injustice."* As a water supply professional, I have been especially interested in understanding what happened, why it happened, and most importantly, what lessons can be learned.

Concord is fortunate to have a well-funded and properly managed water system. By managed I mean appropriate checks and balances are in place to assure that operations and capital improvement projects are vetted on a number of levels including regulatory agents, local boards and committees, and ultimately an informed customer base.

Our sources of supply are well protected, our treatment systems are carefully monitored and controlled using both automation and licensed operators; our water distribution system is maintained by knowledgeable and experienced field personnel, and maintenance and capital improvements projects are managed by responsible professionals whom understand the significance of proper design, industry standards and regulatory compliance.

Concord residents and businesses value their municipal services. You have high expectations for both service and accountability. When investments are required, you are willing to make them. When seasonal water demand management strategies are called for, you respond accordingly. This is what makes your water system reliable and resilient.

This report provides one more opportunity in which I can share information as to where your drinking water comes from, its quality, treatment processes, and tips on how you can increase your water use efficiency. Most importantly, you should know that Concord's drinking water quality continues to meet or exceed all State and Federal drinking water standards.

On behalf of all of us within the Water and Sewer Division of Concord Public Works, thank you for your continued support and interest. 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,

Alan H. Cathcart, *Superintendent, Water/Sewer Division, Concord Public Works*

### 2015 HIGHLIGHTS

- **Received MassDEP 2015 Source Protection Award**
- **Replaced nearly 5,000 feet of water main and associated service laterals, hydrants, and valves along Deacon Haynes and Hunters Ridge Roads**
- **Began permitting and preliminary design of the new Nagog Pond Water Treatment Plant and associated Intake**
- **Reduced upward adjustment of fluoride from 1.0 ppm to 0.7 ppm in accordance with new national standard**
- **Completed a leak detection survey on 74 miles of water main in the northern portion of town, during which 4 leaks were identified and repaired, saving approximately 1.8MG/year**
- **Provided over 50 rebates for high efficiency toilets and clothes washers**

# Water Quality Summary

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. Only substances detected in Concord's drinking water in 2015 are listed in the summary table below. The presence of these substances does not indicate that the water poses a health risk. These substances are divided into 4 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 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
Heterotrophic Plate Count (HPC)	CFU/mL	49	49	TT	No Standard	No	Heterotrophic plate count is an indicator method that measures a range of naturally-occurring bacteria in the environment

## PRIMARY PARAMETERS

Alpha Emitters (2014)	pCi/L	5.87	ND-5.87	15	0	No	Erosion of natural deposits
Barium	ppb	38	ND-38	2000	2000	No	Erosion of natural deposits
Bromate <sup>2</sup>	ppb	6	ND-8.6	10	0	No	By-product of drinking water disinfection
Chlorine <sup>2</sup>	ppm	0.44	0.04-1.72	4 (MRDL)	4 (MRDLG)	No	Water treatment for disinfection
Fluoride <sup>1</sup>	ppm	1.2	0.01-1.2	4	4	No	Erosion of natural deposits; Water additive which promotes strong teeth
Haloacetic Acids <sup>2</sup>	ppb	11	ND-51.7	60	No Standard	No	By-product of drinking water disinfection
Nitrate	ppm	2.2	0.067-2.2	10	10	No	Runoff from fertilizer use; Leaching from septic tanks; Erosion of natural deposits
Perchlorate	ppb	0.15	ND-0.15	2	No Standard	No	By-product of drinking water disinfection; Found in propellants/fireworks/munitions/blasting agents/etc.
Combined Radium (2013)	pCi/L	1.9	ND-1.9	5	0	No	Erosion of natural deposits
Trihalomethanes <sup>2</sup>	ppb	20.5	4.9-49.6	80	No Standard	No	By-product of drinking water disinfection
Turbidity <sup>3</sup>	NTU	1.08	0.30-1.08	5	1	No	Suspended and colloidal particles including clay, silt, inorganic matter, algae, and microorganisms.

## SECONDARY PARAMETERS

Calcium	ppm	29	6.2-29	No Standard	No Standard	No	Erosion of natural deposits
Chloride	ppm	210	37-210	250	250	No	Naturally present in the environment
Copper	ppm	0.039	ND-0.039	1.3	1.3	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Hardness	ppm	110	22-110	No Standard	No Standard	No	Erosion of natural deposits
Iron	ppb	97	ND-97	300	No Standard	No	Erosion of natural deposits
Magnesium	ppm	8.4	1.6-8.4	No Standard	No Standard	No	Erosion of natural deposits
Manganese	ppb	37	ND-37	50	No Standard	No	Erosion of natural deposits
Methyl Tertiary-Butyl Ether or MTBE	ppb	2.4	ND-2.4	No Standard	No Standard	No	Fuel additive; leaks and spills from gasoline storage tanks
Nickel	ppm	0.004	ND-0.0039	No Standard	No Standard	No	Erosion of natural deposits
Potassium	ppm	40	4.4-40	No Standard	No Standard	No	Naturally present in the environment
Sodium	ppm	96	16-96	No Standard	No Standard	No	By-product of drinking water treatment; Naturally present in the environment
Sulfate	ppm	38	ND-38	250	No Standard	No	Naturally present in the environment
Total Dissolved Solids	ppm	460	110-460	500	500	No	Naturally present in the environment
Zinc	ppm	0.034	0.0068-0.034	5	No Standard	No	Naturally present in the environment

## LEAD & COPPER PARAMETERS<sup>4</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 (2014)	ppb	4.7	15	30 (0)	0	No	Corrosion of household plumbing systems; Erosion of natural deposits; see statement below
Copper (2014)	ppm	0.45	1.3	30 (0)	1.3	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservative; see statement below

## TERMS & ABBREVIATIONS

**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. MCL's are set as close to the MCLG's 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. 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. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**CFU:** colony forming units

**ppb:** parts per billion or micrograms per liter

**ppm:** parts per million or milligrams per liter

**pCi/L:** picocuries per liter

**ND:** none detected

**NTU:** Nephelometric Turbidity Units

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

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

## 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.

**2 Haloacetic Acids, Trihalomethanes, Bromate and Free Chlorine:** The highest level detected represents the highest running annual average for these contaminants. The range of levels found may have results in excess of the MCL but the running annual average 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 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 2014 and is next scheduled for completion during summer of 2017. 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.

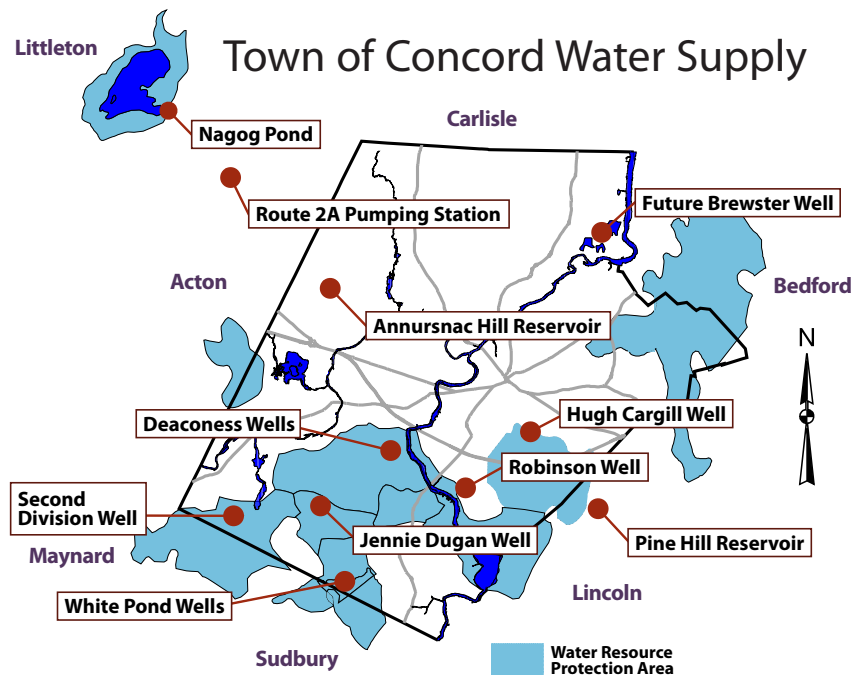


## Water Supply

Concord's water system consists of six groundwater supplies located in Concord and one surface water supply located on the Acton/Littleton town line. In addition, it has associated pumping stations, two storage reservoirs with a 7.5 million gallon total capacity, approximately 130 miles of water main, and over 1,250 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 over 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 a 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 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, Acton, MA	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 and Corrosion Control	•	•	•	•	•	•	•
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/eea/docs/depl/water/drinking/swap/nero/3067000.pdf>.

# Water Conservation

## In-ground Irrigation System . . . Friend or Foe

There are currently more than 600 in-ground irrigation systems installed at single family residential properties throughout Concord. The average home in town with an in-ground irrigation system uses 2.5 times more water than a home without one, which translates to a water bill of \$250 for a home with irrigation as opposed to a bill of only \$75 for a home without.

### Sustainable design

Think about how you use your yard:

- Do you have a large area of grass in front of your home that is rarely used for active play?
- Do you have an area of lawn that you are struggling to grow grass in?
- Do you want to spend less time maintaining your lawn?

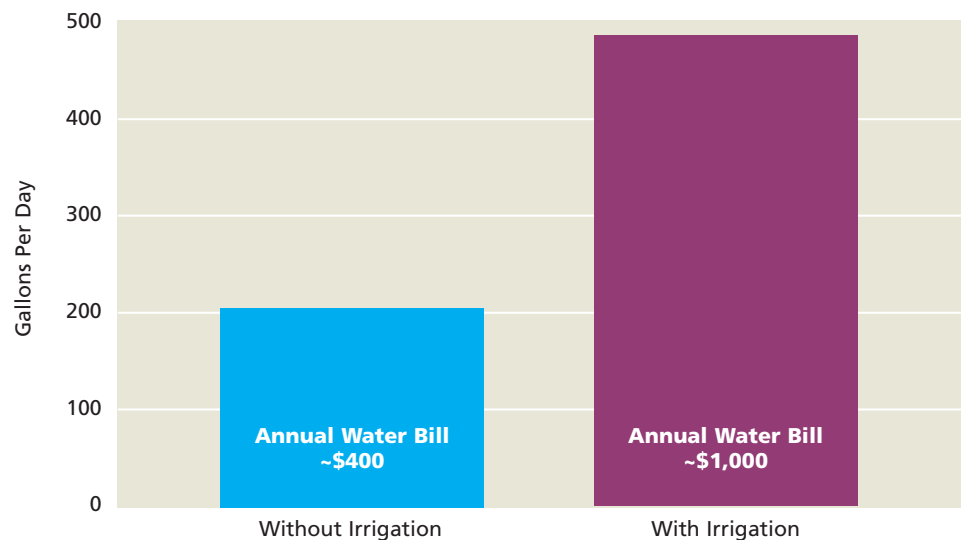
### Timing is everything

Give your investment the best chance to succeed by planting grass, gardens, and/or landscaping in the spring or the fall—before or after the hot, dry summer weather. The natural weather patterns associated with spring and fall supplemented by infrequent soaking watering will help to establish a strong, deep root system that is able to withstand the natural variations in precipitation during the summer months. Avoid installing any new plantings from June through August when plants that aren't yet established have difficulty surviving the dry, hot summer weather.

### Asset or liability

Most homeowners view their in-ground irrigation system as an investment or as a modern convenience, but public water suppliers like Concord Public Works' (CPW) Water Division instead view these systems as a liability. The convenience factor of an in-ground irrigation system often leads to over-watering,

Average Daily Summer Water Use in Single Family Homes



which is detrimental to both your plantings and the public water supply. By intentionally watering plantings by hand or physically turning on the hose, you have an active role in keeping your investment and the environment healthy. Your irrigation system won't know that your lawn doesn't actually need watering this morning because it is forecast to rain tonight; luckily, you will know this, and if you are actively in control of when your lawn is being watered, you can avoid watering when it is not necessary.

### The challenges ahead

Concord's Water Division is actively working with Massachusetts regulators on the details of our new water withdrawal permits. Our updated permit will likely contain more limitations on the amount of water that we can provide to you, our customers. We encourage you to plan your investments accordingly, keeping in mind that there will likely be increased water use restrictions in the future, especially in regards to the use of in-ground irrigation.

### We can help

There are many ways that you can utilize water-efficient landscaping to enhance the beauty of your property that does not involve the use of in-ground irrigation. Email us at [watersmart@concordma.gov](mailto:watersmart@concordma.gov) if you are interested in additional information or to schedule a free at-home conservation consultation.

### Do you have water or seepage in your basement?

You may benefit from installing a rain barrel or redirecting your downspout(s) to a rain garden. A rain garden looks just like a regular flower bed and can be located where grass doesn't like to grow.



## Conservation Consultations

CPW's Water Division is excited to once again offer complimentary *Conservation Consultations* to those customers that are interested in learning more about their water usage patterns and ways to reduce their water waste and save money on their water bills. These 30+ minute consultations will address potential indoor and outdoor water savings at your home and will provide information on how to read your water meter to manage water use and check for leaks.


Information about any available water saving rebates will be provided, and water-saving devices such as low-flow showerheads and bathroom and kitchen aerators will be available free of charge.

Conservation consultations will be scheduled on a first-come, first-served basis and appointments will be available the third Friday of every month from April through September from 8am–12pm.

To schedule your complimentary *Conservation Consultation* now, please email [watersmart@concordma.gov](mailto:watersmart@concordma.gov).

## Seasonal Water Demand Management Plan

Town of Concord, Massachusetts

	Seasonal Water Conservation Advisory	Outdoor Water Use Restriction	Outdoor Water Use Emergency
	Best Management Practices	Residential Water Conservation Rates in Effect May 1–September 30	State of Water Supply Conservation—Declaration by Public Works Commission
<b>OUTDOOR WATER ACTIVITIES</b>			
Lawn Watering	<b>Recommended<sup>1</sup></b> Max 2 Day per Week (before 9am)	<b>Restricted<sup>2</sup></b> Max 2 Day per Week (before 9am)	<b>Prohibited<sup>2</sup></b>
Swimming Pools	<b>OK</b> Filling or Topping Off	<b>Restricted<sup>2</sup></b> Topping Off Only	<b>Prohibited<sup>2</sup></b>
Washing Car/Truck/Boat	<b>OK</b>	<b>Recommended</b> Bring to Commercial Car Wash	<b>Prohibited<sup>2</sup></b> Bring to Commercial Car Wash
Flower Beds & Vegetable Gardens	<b>OK</b>	<b>Recommended</b> Handheld Watering Only	<b>Restricted<sup>2</sup></b> Handheld Watering Only

<sup>1</sup> Unless otherwise advised by qualified lawn care specialist.



<sup>2</sup> Enforceable with fines (\$50, 1st offense. \$100, subsequent offenses).

April 2012

**You can help conserve water indoors all year long by utilizing the following recommended practices:**

Only wash full loads in your laundry and dish washing machines.  
Keep showers short and remember that showers use less than baths.

**Visit [concordma.gov](http://concordma.gov) for current State of Demand Management**

Sign up for Water and Sewer Division email updates by subscribing to News and Notices on the [concordma.gov](http://concordma.gov) homepage.



## 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 may 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, contaminants are then sucked from the equipment and 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 lawn 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 in-ground irrigation systems are required to have an operable backflow preventer 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 principal assembly, (RPBP) double check valve assembly (DCVA), pressure vacuum breaker assembly (PVB) and "air gap". The most simple type is the "air gap" or simply keeping the end of the water line or hose from coming in 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

Contaminants that may be present in source water include:

- **Microbial contaminants**, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, such as salts and metals, can be naturally occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.
- **Pesticides and herbicides** may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.
- **Organic chemical contaminants** include synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.
- **Radioactive contaminants** can be naturally occurring or be the result of oil and gas production, and mining activities.

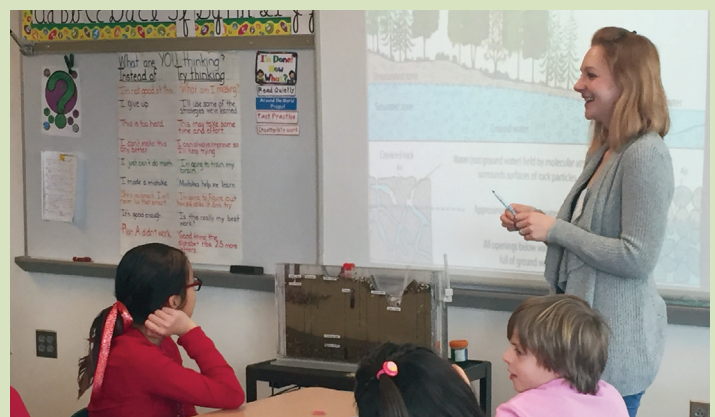
In order to ensure that tap water is safe to drink, the Department (MassDEP) and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. FDA and the Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least some 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 7:15 pm. Please check the PWC website for exact dates and location. [www.concordma.gov/Pages/ConcordMA\\_Publicworks/commission](http://www.concordma.gov/Pages/ConcordMA_Publicworks/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 3), please contact Melissa Simoncini, Senior Environmental & Regulatory Coordinator at 978-318-3250 or [msimoncini@concordma.gov](mailto:msimoncini@concordma.gov).



# WATER QUALITY

## Lead & Copper

The recent detection of unacceptably high lead levels within the Flint, Michigan drinking water system has drawn national attention. This 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. Because of the recent media attention, 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.

For the last 30 years, CPW's Water Division has been treating 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.

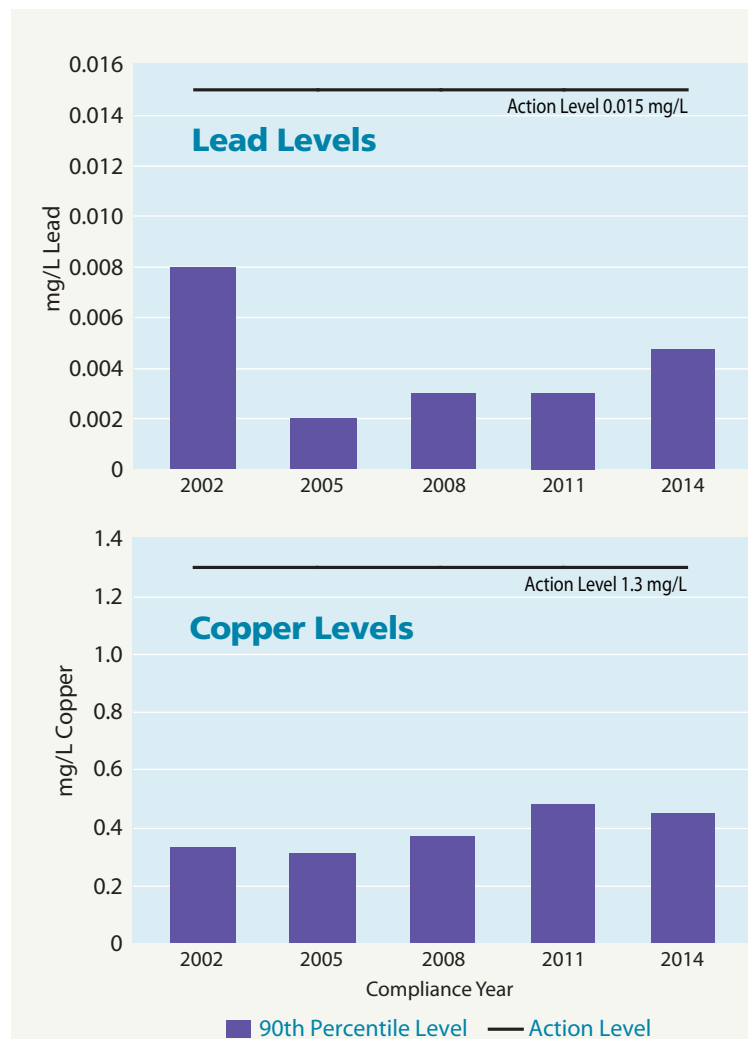
These treatment activities are validated in accordance with U.S Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MassDEP) regulations. A total of 30 homes throughout Concord are sampled once every three years to confirm the effectiveness of our corrosion control efforts. The last round of lead and copper sampling was completed in late summer 2014 and will be repeated in late summer 2017. 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. Concord Public Works 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 at <http://www.epa.gov/safewater/lead>, or you can visit the Concord Public Works website at [www.concordma.gov/water](http://www.concordma.gov/water). Additionally, if you would like information on your service line material, please contact Concord Public Works 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 with a key. If the pipe is made of lead, the area you've scratched will turn a bright silver color.





# Top Indoor Residential Water User Dethroned!

On average, approximately 70 percent of the water used each day by a typical American family is used indoors, with bathroom activities accounting for the largest percentage of indoor water use. For several decades, toilets were undoubtedly the largest indoor water user, with models from the 1950's–1980 using as much as 7 gallons of water per flush! The introduction of federal efficiency mandates, a growing customer conservation ethic, and increasing availability and popularity of water-saving fixtures and appliances has led to a widespread decline in indoor residential water use in recent history, as well as changing indoor water use patterns. In homes that practice conservation measures and have replaced older water-guzzling appliances with newer, water-efficient models, toilets have been dethroned as the top indoor water user by another bathroom fixture—the showerhead!

Prior to 1992, some showerheads used as much as 5.5 gallons of water per minute. When you consider that the average American shower lasts for 8.2 minutes, you begin to see that older showerheads sent a lot of water, energy, and money straight down the drain! Since that time, a federal standard has been imposed to ensure that new showerheads don't use more than 2.5 gallons per minute (gpm). Showerheads that bear the WaterSense label go above and beyond the federal standard and have a maximum flow rate of only 2.0 gpm! Replacing a higher volume showerhead with a WaterSense labelled one and keeping

The graphic features the text "ShowerBetter" in large blue font. Below it, "Switch your showerhead..." is written in a smaller blue font. The word "SAVE" is prominently displayed in large, bold, blue letters. To the left of "SAVE" are three icons: a blue water drop, an orange electrical plug, and a green dollar sign, each followed by a plus sign. To the right of "SAVE" is a blue square containing the text "look for" above a circular "WaterSense" logo. The logo includes a green leaf and the text "Meets EPA Criteria".

your shower to just 5 minutes can drastically reduce the amount of water used in your home, lower both your water and energy bills, and reduce your environmental impact, all without sacrificing performance. Additionally, installing a shut-off valve to your shower is another water saving alternative that allows you to stop the flow when lathering or shaving without losing your desired water temperature when you turn the flow back on!

**Stop by CPW's Water and Sewer Division office weekdays from 7:00–3:30 to pick up your complimentary low-flow showerhead and other water saving devices!**

A photograph of a white Nebia showerhead mounted on a wall. The showerhead is spraying a fine mist of water, creating a soft, ethereal glow against a dark background.

## WATER CONSERVATION REIMAGINED

# Innovative Shower Designs

As water scarcity continues to make both national and global headlines, several entrepreneurs have reimagined the traditional showerhead in surprising ways that deliver substantial water savings without sacrificing comfort or performance. Here are some of the latest and greatest tech savvy ways to save water in the shower.

**MISTING TECHNOLOGY:** The Nebia showerhead incorporates technology used in aeronautical applications to atomize water into millions of droplets, creating 10 times more surface area than a traditional shower. This showerhead can reduce shower water use by up to 70%, and is 13 times more thermally efficient than a traditional shower. You can preorder a Nebia showerhead for \$349 at [www.nebia.com](http://www.nebia.com) for shipping fall 2016.

**RECIRCULATING TECHNOLOGY:** Orbital Systems has used space nanotechnology to build a revolutionary shower that can save 90% of the water and 80% of the energy required by traditional showers by collecting, purifying, and recirculating shower water rather than sending it down the drain. The Shower of the Future system requires replacing your current shower set-up entirely, and pricing starts at \$4,795 for a residential unit (not including installation costs). Although the unit itself is fairly expensive, you can save substantial amounts of water, energy, and money on these bills by transitioning from a traditional shower to the Shower of the Future. If you're considering a bathroom remodel, you can learn more at [www.orbital-systems.com](http://www.orbital-systems.com).

Shown above: The Nebia showerhead.  
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**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.**