



2018

Drinking Water Quality Report

To Our Customers,

The change of seasons provides an opportunity for fresh perspectives. While our cover photo captures a perspective of our Fresh Pond facility with a backdrop of autumn colors, the shores of our water supply offer new experiences year-round. The Water Department provides continuous improvement to the Cambridge water system by taking a fresh look to protect storage and quality. Throughout this report, we have highlighted some of these new perspectives including features on drought recovery, proactive sampling for emerging contaminants, and long-term trends in the quality of our water supply.

This report provides information on your drinking water supplied by the Cambridge Water Department, how it is treated, the quality of the water you receive, and how Cambridge water meets and exceeds all state and federal drinking water standards. It also contains key information on how you can join us to gain fresh perspectives on your water supply.

I encourage you to contact the Water Department with questions, comments, or suggestions about any aspect of the City of Cambridge's drinking water.

Sincerely,

Sam Corda, Managing Director

Cambridge Water Department | 617-349-4770



24-Hour Emergency
Customer Service:
617-349-4770



City of Cambridge Water Department

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Where Does Your Water Come From?

Reservoirs

The Cambridge Water System extends across four towns and includes four bodies of water. The Hobbs Brook Upper Reservoir flows into the Hobbs Brook Lower Reservoir and connects with the Stony Brook Reservoir. The water then flows to Fresh Pond Reservoir through an underground aqueduct. The Stony Brook Reservoir watershed extends from Weston north into the Town of Lincoln. The watershed for the Hobbs Brook Reservoirs includes areas of Waltham, Lexington, and Lincoln. The watershed for Fresh Pond Reservoir is completely within the City of Cambridge. The combined capacity of the Hobbs Brook and Stony Brook Reservoir system is 3.1 billion gallons; an additional 1.3 billion gallons of water is stored in Fresh Pond Reservoir. Our water supply is backed up by interconnections to the Massachusetts Water Resources Authority (MWRA) system. For a more detailed map of our water sources and their protection areas please visit cambridgema.gov/water

Watershed Protection

As part of our ongoing commitment to protecting the water supply, we participated with the Massachusetts Department of Environmental Protection (MassDEP) in preparing a Source Water Assessment Program (SWAP) Report completed in 2003. The SWAP Report assesses the susceptibility of our public water supply and notes the key land use and protection issues, including: Zone A Land Uses, Residential Land Uses, Transportation Corridors, Hazardous Material Storage and Use, and Presence of Oil or Hazardous Materials Contamination Sites.

A copy of the Cambridge SWAP Report can be found on the MassDEP website at mass.gov/eea/docs/dep/water/drinking/swap/nero/3049000.pdf or at the Cambridge Water Department.

Because of the developed nature and types of land uses within the Cambridge watershed, our source waters are considered as having “high” susceptibility to contamination. Susceptibility is a measure of a water supply’s potential to become contaminated due to land uses and activities within its recharge (watershed) area. If a source is susceptible to contamination, it does not necessarily mean the source has poor water quality. The Cambridge Water Department has taken the following actions to minimize contamination threats to our water supply:

- ◆ Work cooperatively with watershed towns on emergency response and stormwater management
- ◆ Placed spill kits at strategic points within the watershed
- ◆ Actively monitor source water quality throughout the watersheds, using the data to target source protection
- ◆ Work cooperatively with businesses in the watersheds to encourage source protection
- ◆ Adopted the Fresh Pond Master Plan, which includes long-term protection measures for Fresh Pond Reservoir
- ◆ Implemented storm drainage modifications to divert street runoff away from Fresh Pond Reservoir
- ◆ Dedicated staff resources to inspections, public education, and coordination of source protection efforts

In 2011, the Watershed Division of the Cambridge Water Department updated its comprehensive Source Water Protection Program. The major components of the program to ensure a continuous supply of high quality water include:

1. **Extensive monitoring** – sampling and analysis of water chemistry and microbiology
2. **Hazardous materials emergency response planning** – to reduce the potential for contamination in the watershed
3. **Partnership development** – relationship-building with other parties in the watershed with common goals
4. **Proactive site review and monitoring** – to minimize potential impacts on the watershed from construction
5. **Stormwater management** – ensuring that Best Management Practices are implemented
6. **Community outreach** – public relations and education

For questions about our source water and our protection efforts, please contact Watershed Manager **David Kaplan** at dkaplan@cambridgema.gov or 617-349-4799.

What a Difference a Few Years Can Make!



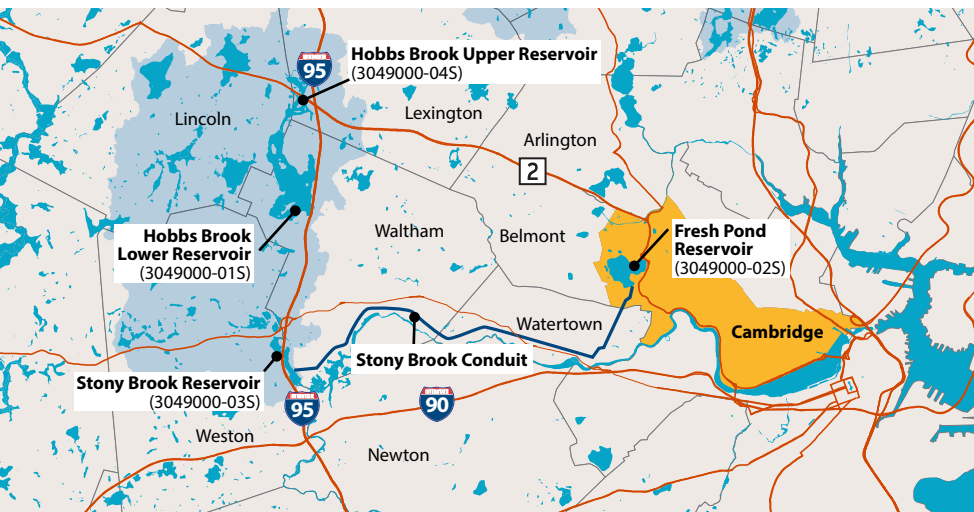
- ◆ The Cambridge reservoir system stores enough water to supply the system for 8 months without rainfall.
- ◆ We monitor our supplies very closely; when levels start to run low during a prolonged drought, we purchase a portion of our supply from the MWRA (at around twice the cost!)
- ◆ In 60 years, we have only purchased MWRA water due to a drought twice – in the mid-1960s and in 2016.
- ◆ In 2018, we received nearly twice the amount of rainfall than in 2016, and our reservoirs can’t hold all the water!

October 2016

In July 2016
MassDEP declares
a drought ...



... by April 2018
Hobbs Brook
Reservoir is
replenished



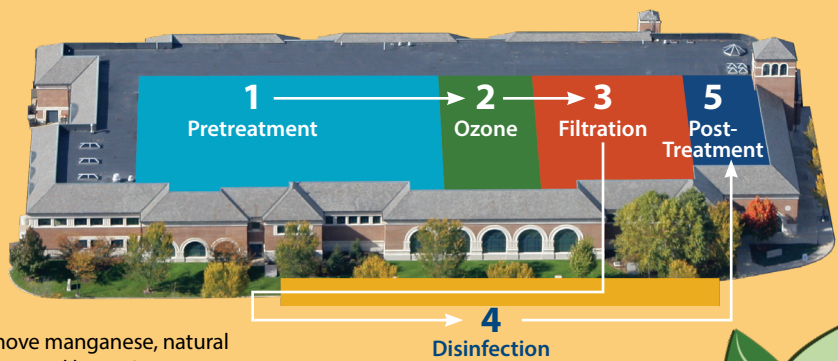
How Is Your Water Purified?

The source waters of the Cambridge reservoir system undergo extensive treatment at the *Walter J. Sullivan Water Purification Facility* at Fresh Pond Reservation before drinking water is delivered to your home or business. The water is treated to exceed all state and federal drinking water standards.

- (1) Pretreatment:** The first steps in the treatment process combine preoxidation with ozone, coagulation, and dissolved air flotation (DAF) to remove manganese, natural color, sediment and particles, algae, protozoa, viruses, and bacteria.
- (2) Ozone:** Fine bubbles of ozone are dissolved into the water to kill bacteria, viruses, and protozoa.
- (3) Filtration:** The water passes through granular activated carbon (GAC) to remove organic compounds. Filtration also acts as a “polishing step” to remove additional particles, color, and protozoa.
- (4) Disinfection:** Chlorine is used to provide the second step of disinfection for redundancy in the overall process and monochloramine is added to maintain a disinfectant residual throughout the distribution system.
- (5) Post Treatment:** The pH of the water is adjusted for corrosion control and fluoride is added for dental health.

The Cambridge Water Department’s state-certified laboratory continuously monitors the effectiveness of the treatment process and makes adjustments to the treatment to ensure the highest quality water.

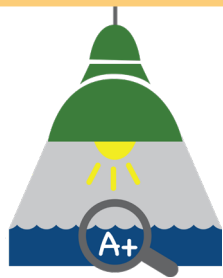
Come see it for yourself! Ed Dowling, Director of Water Operations, leads tours of the City’s beautiful treatment facility. Tours are scheduled for Mondays July 8, August 5, September 9, October 7, and November 4, and run from 6 p.m. to 7:30 p.m.



Join Us Green Your Greenery



Did you know the average U.S. household consumes more water for landscape irrigation than showering and washing machines combined? There are many ways you can save water while maintaining a beautiful yard! The Water Department installed a smart irrigation system at Fresh Pond in 2012, and by 2017, Cambridge began implementation of the technology throughout all public spaces, putting us at the forefront of municipal water conservation among New England municipalities. This new technology can be used at your home too! Green your greenery by using it in combination with other easy steps such as the right plants, healthy soils, and timing watering cycles. To learn more about water smart yards, visit [EPA WaterSense](http://epa.gov/watersense/outdoors) epa.gov/watersense/outdoors



Water Quality Spotlight

PFAS

Per- and polyfluoroalkyl substances (PFAS) are a large group of man-made organic chemicals that includes PFOA, PFOS, and GenX. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s. PFAS are found in fire fighting foams, but also found in a wide range of consumer products that people use daily such as cookware, pizza boxes, and stain repellants. There is research that shows exposure to PFAS can lead to adverse health outcomes in humans. While consumer products and food are the largest source of exposure to these chemicals for most people, drinking water can be an additional source

of exposure in communities where these chemicals have contaminated water supplies. Such contamination is typically localized and associated with a specific facility; for example, an airfield where they were used for firefighting or a facility where these chemicals were produced or used. No PFAS compounds have been detected in the Cambridge water supply. We will stay abreast of emerging contaminants including PFAS and continue proactive monitoring.

Hardness and Minerals

Water is called the “universal solvent” because it is capable of dissolving more substances than any other liquid. As your drinking water makes its journey through our source water reservoirs, treatment plant and eventually your faucet, water dissolves minerals and nutrients. Minerals are a recommended part of our diet, with examples such as calcium

helping build strong bones, chloride creating cells, and sodium helping proper nerve function and proper balance of water in the body.

The concentration of two minerals, calcium and magnesium, are combined to define water “hardness.” Many industrial and domestic water users are concerned about the hardness of their water as hard water requires more soap and synthetic detergents for home laundry and washing, and contributes to scaling in boilers and industrial equipment. Cambridge tap water is classified as slightly hard.

Want to learn more? Please visit our website at cambridgema.gov/Water/wateroperationsdivision/waterchemistryinformation/commercialwaterhardnessinformation



Important Information from EPA & MassDEP about Sources of Drinking Water and Drinking Water Contaminants

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 and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

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 stormwater 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 stormwater 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 stormwater 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, 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 small amounts of some contamination. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline: 800-426-4791.

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 Safe Drinking Water Hotline: 800-426-4791.

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. The Cambridge Water Department 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, 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 for free. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at epa.gov/safewater/lead. Home Lead Testing Kits are available at 250 Fresh Pond Parkway for Cambridge residents.

Protect Your Drinking Water at Home!

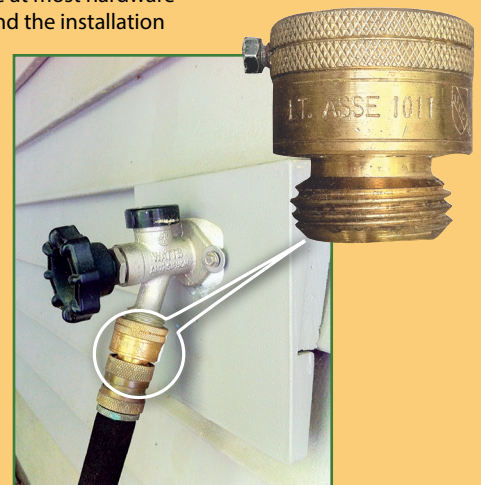
A "cross connection" is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For instance, you're going to spray fertilizer on your lawn. You hook up your hose to the sprayer that contains the fertilizer. If the water pressure drops (say, because of fire hydrant use in the City) when the hose is connected to the fertilizer, the fertilizer may be sucked back into the drinking water pipes through the hose. Over half of cross-connection incidents involve unprotected garden hoses.

Here are some simple steps that you can take to prevent cross-connection hazards:

- ◆ Never submerge a hose in soapy water buckets, pet watering containers, pools, tubs, sinks, drains, or chemicals
- ◆ Install a hose bibb vacuum breaker on every threaded water fixture. This inexpensive device is available at most hardware stores and home-improvement centers, and the installation is as easy as attaching a garden hose to a spigot
- ◆ Buy appliances and equipment that come with a built-in backflow preventer

For additional information on cross connections and on the status of Cambridge's cross connection program, please contact:

John Blouin
Cross Connection Supervisor
Cambridge Water Department
617-349-4025 or
jblouin@cambridgema.gov
or visit our website at
cambridgema.gov/Water/administration/crossconnectioncontrol



Compound	Units	Highest Level Found	Range of Detections (low-high)	Highest Level Allowed (MCL or MRDL)	Ideal Goal (MCLG or MRDLG)	Violation	How it gets in the water
Regulated Compounds							
Barium	ppm	0.06	0.06	2	2	NO	Erosion of natural deposits
Chlorine (as monochloramine)	ppm	2.3 ⁽¹⁾	1.4 - 3.3 ⁽²⁾	4	4	NO	Water disinfectant
Copper ⁽³⁾	ppm	0.026	0.001 - 0.092 (no homes exceeded the AL)	AL = 1.3	0	NO	Corrosion of household plumbing systems
Fluoride ⁽⁴⁾	ppm	0.81	0.18 - 0.81	4	4	NO	Added to water to promote strong teeth
Gross Alpha ⁽⁵⁾	pCi/L	1.18	no range, 1 sample required	15	0	NO	Erosion of natural deposits
Lead ⁽³⁾	ppb	7	0 - 122 (2 homes exceeded the AL)	AL = 15	0	NO	Corrosion of household plumbing systems
Nitrate as Nitrogen	ppm	0.71	0.29 - 0.71	10	10	NO	Naturally present in the environment
Nitrite as Nitrogen	ppm	0.07	ND - 0.07	1	1	NO	Runoff from fertilizer use
Radium ⁽⁵⁾ (226 & 228 combined)	pCi/L	0.29	no range, 1 sample required	5	0	NO	Erosion of natural deposits
Total Haloacetic Acids	ppb	14.9 ⁽¹⁾	3.4 - 28.0 ⁽²⁾	60 ⁽⁷⁾	0	NO	Byproduct of water disinfection
Total Trihalomethanes ⁽⁶⁾	ppb	13.5 ⁽¹⁾	7.5 - 21.8 ⁽²⁾	80 ⁽⁷⁾	0	NO	Byproduct of water disinfection
Turbidity ⁽⁸⁾	NTU	0.18	0.05 - 0.18	TT = 0.3 NTU	N/A	NO	Suspended matter from soil runoff
Secondary Compounds							
Aluminum	ppb	20	no range, 1 sample	200	-	NO	Erosion of natural mineral deposits
Calcium	ppm	29	no range, 1 sample	-	-	NO	Naturally occurring minerals
Chloride	ppm	235	no range, 1 sample	250	-	NO	Erosion of natural mineral deposits
Hardness	ppm as CaCO3	72	no range, 1 sample	-	-	NO	Naturally occurring minerals
Magnesium	ppm	6.1	no range, 1 sample	-	-	NO	Naturally occurring minerals
Manganese ⁽⁹⁾	ppb	4	no range, 1 sample	50	-	NO	Naturally occurring minerals
Potassium	ppm	3	no range, 1 sample	-	-	NO	Naturally occurring minerals
Sodium	ppm	129 ⁽¹⁰⁾	no range, 1 sample	20	-	NO	Road salt
Sulfate	ppm	33	no range, 1 sample	250	-	NO	Erosion of natural mineral deposits
Total Dissolved Solids	ppm	469	no range, 1 sample	500	-	NO	Naturally occurring minerals

Notes

1: Highest level detected is based on average of four quarterly samples.
2: Range is based on individual samples, rather than averages.
3: The highest level found is the Action Level (AL), and is based on the 90th percentile of the 61 samples. Most recent lead and copper results were obtained in 2017.
4: Fluoride also has a secondary contaminant level (SMCL) of 2 ppm.
5: Most recent gross alpha and radium results were obtained in 2014.
6: No other volatile organic compounds (VOCs) were detected other than trihalomethanes.
7: Highest level allowed (MCL) for this substance is based on the average of four quarterly samples.

8: TT= Treatment Technique: Turbidity is a measure of treatment performance and is regulated as a treatment technique. 100 percent of samples met the TT requirement.
9: EPA and MassDEP have established public health advisory (HA) levels for manganese of 300 ppb to protect against concerns of potential neurological effects and a one-day HA of 1,000 ppb for acute exposure.
10: An 8 ounce glass of Cambridge water contains approximately 31 milligrams of sodium, well within the FDA's "very low sodium" category.



Our Partnership with the MWRA

Cambridge is a full member of the MWRA, which provides a redundant source of drinking water for our community. The MWRA (PWS# 6000000) supplies wholesale water to local water departments in 48 cities and towns in greater Boston and MetroWest, and three in Western Massachusetts. MWRA water comes from the Quabbin Reservoir, about 65 miles west of Boston, and the Wachusett Reservoir, about 35 miles west of Boston. The Water Department purchased 9.28 million gallons of water from the MWRA on August 5, 2018. For the full MWRA Water Quality Report that includes test results for 2018 and other important information about your tap water follow this link: mwra.com/annual/waterreport/2018results/partial-all.pdf

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 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.

N/A: Not Available – An ideal goal has not been established by EPA or MassDEP for this compound.

ND: Not Detected
NTU: Nephelometric Turbidity Unit – A measure of the turbidity (or clarity) of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

pCi/L: Picocuries per liter. A measure of radiation.

ppb: Parts per Billion or micrograms per liter (ug/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. Turbidity is a measure of treatment performance and is regulated as a treatment technique. 95 percent of our turbidity readings each month must be below 0.3 NTU.

90th Percentile: Nine out of every 10 homes were at or below this level.



Cambridge Water Department
250 Fresh Pond Parkway
Cambridge, MA 02138

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ECRWSS



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Cambridge, MA

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twitter.com/CambWaterDept

or on the web at cambridgema.gov/water

Join Our
Conversations!



Follow us on social media!

At the Cambridge Water Department, we love to talk about what we do and invite you to gain fresh perspectives through conversation!

- ◆ Learn more about our system as our staff talks water: cambridgema.gov/Water/aboutus/newaskthecityandtapingintothesource
- ◆ Come see us in person during one of our Monday night water treatment plant tours: cambridgema.gov/Water/wateroperationsdivision/touropportunities
- ◆ Get involved at the beautiful green space and wildlife habitat that surrounds our water source at: cambridgema.gov/Water/freshpondreservation



MassDEP Notification: All water systems are required to provide copies and certification of their annual water quality reports to MassDEP and other agencies each year by July 1. In 2018, we provided this information just slightly past the July 1 deadline, and therefore received a Notice of Non-Compliance (NON) and Return to Compliance.

This report contains very important information about your drinking water. Please translate it, or speak with someone who understands it.

Este informe contiene información muy importante acerca de su agua potable. Pídale a alguien que traduzca esta información a usted o hablar con alguien que entiende esta información.

本报告含有关于您所在社区的水质的重要信息。请您找人翻译一下或请能看懂这份报告的朋友给您解释一下。

Ce rapport contient des renseignements très importants sur votre eau potable. Demander à quelqu'un pour traduire cette information à vous ou à parler avec quelqu'un qui comprend cette information.

If you have any additional questions about your water supply, please contact Ed Dowling, Director of Water Operations at 617-349-4773



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