

Drinking Water Quality Report

To Our Customers,

This spring we met some special new residents on the shores of our water supply at Fresh Pond, a family of great horned owls. We have followed their journey along with the many birders, photographers and residents who frequent the Fresh Pond Reservation. The Water Department is dedicated to the preservation of the Fresh Pond Reservation for water quality protection, as well as for natural green space and wildlife habitat. We take our role of environmental steward seriously, and this extends to watershed protection, energy conservation and climate change. Throughout this report, we have highlighted some of the many projects and initiatives that illustrate this commitment.

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 as an environmental steward.

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

2017



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



City of Cambridge Water Department

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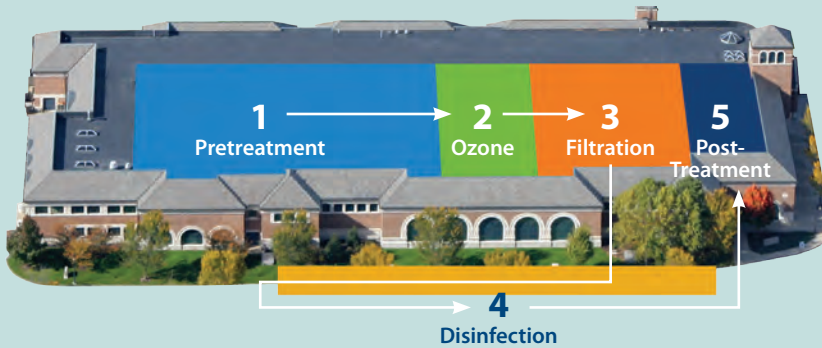
How Is Your Water Purified?

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.

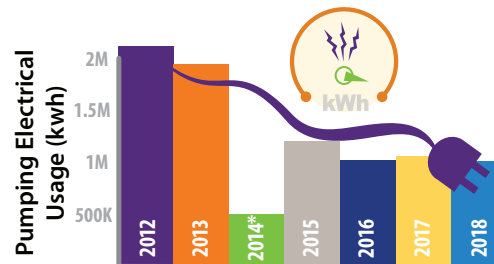
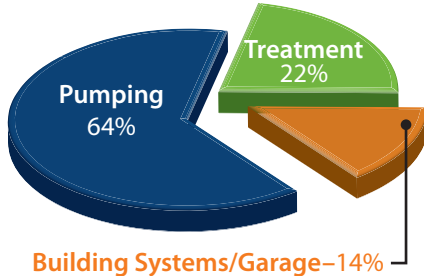
Come see it for yourself! Timothy MacDonald, Director of Water Operations, leads tours of the City’s beautiful treatment facility. Tours are scheduled for July 9, August 13, September 17, October 15, and November 5, and run from 6 p.m. to 7:30 p.m.



How Much Energy Does it Take?

- ◆ The Water Purification Facility (WPF) has the largest electrical usage for a single municipal facility in the City of Cambridge
- ◆ The WPF uses an average of 8 million kilowatt hours (kWh) of electricity per year, or enough to power over 1,000 homes[¥]
- ◆ At one time, pumping accounted for over 60% of the total energy use at the WPF. We have reduced that by over 50% since 2012!

We took a look in 2012 at how we use energy at the Water Purification Facility... and got right to work on reducing the “Biggest User”, pumping!

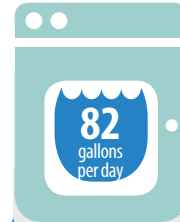


[¥] Based on 2015 report from U.S. Energy Information Administration, Massachusetts average annual electricity consumption for a residential utility customer of approximately 7000 kWh

*In 2014, water was supplied by MWRA due to construction

Did You Know?

- ◆ The City of Cambridge owns ~1,400 acres of watershed land outside the City limits
- ◆ Three of our watershed parcels are home to 11 different natural plant communities and over 160 individual native plant species
- ◆ The City has acquired 127 acres of land for water supply protection since 2012



Go Green with Your Machine

There are many ways you can save water while still getting clean clothes! Combine laundry to run only full loads, and check out the settings on your machine to select the right water levels and load selection. Also, by switching to an EPA WaterSense washing machine, you can save an average of **82 gallons per day**, which adds up to around **30,000 gallons per year**, enough to fill a Red Line train car! To learn more about EPA WaterSense, go to www.epa.gov/watersense



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 the 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 the Fresh Pond Reservoir is completely within the City of Cambridge. Storm drainage modifications were implemented to divert street runoff away from Fresh Pond Reservoir. The contributing watershed area is the first step in a multi-barrier program to protect our drinking water. 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 the Fresh Pond Reservation
- ◆ 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.

You Can Save Money!

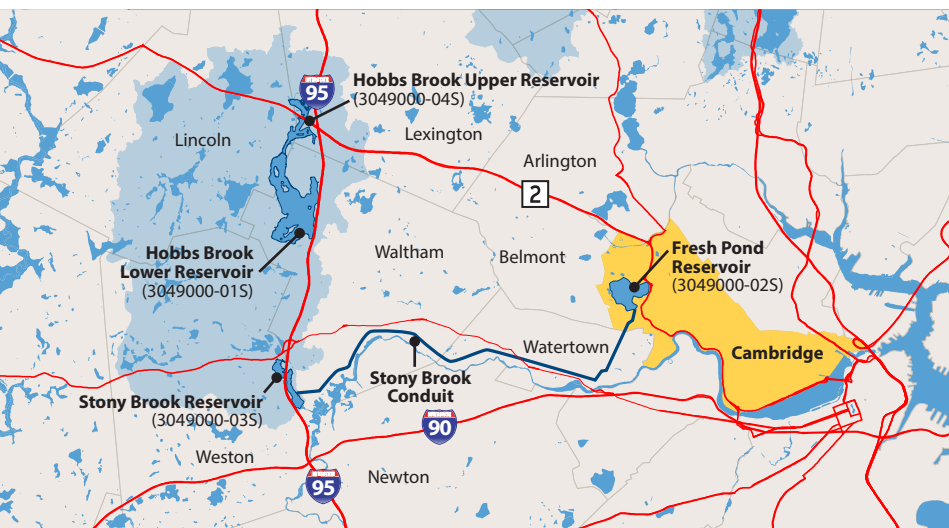
The Water Department is updating the Automated Meter Reading (AMR) System for improved service. We are replacing the Meter Transmitting Units (MTUs) so we can provide actual (not estimated) water bill readings quarterly. The MTU is the device connected to your water meter that transmits



Rooftop receiving unit for daily readings from customers' meters.

meter readings to the Water Department. This "High Read" program notifies our customers soon after we detect unusually high water usage, which is typically caused by a leak. This notification allows property owners to make repairs quickly, saving you money and conserving water!

We need property owners to update their contact information so the Water Department can notify you as soon as a "High-Read" is detected. Please call Brian McCoy at 617-349-4737 or email him at HighReads@cambridgema.gov with your name, account number, phone number, mailing address, and email address.



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 US 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 www.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

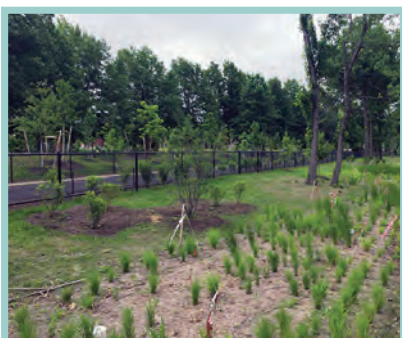


Compound	Units	Highest Level Found	Range of Detections (low-high)	Highest Level Allowed (MCL or MRDL)	Ideal Goal (MCLG or MRDLG)	Violation	How it gets in the water
Regulated Compounds							
Barium	ppm	0.06	0.06	2	2	NO	Erosion of natural deposits
Chlorine (as monochloramine)	ppm	2.3 ⁽¹⁾	1.2 - 3.4 ⁽²⁾	4	4	NO	Water disinfectant
Copper ⁽³⁾	ppm	0.026	0.001 - 0.092 (no homes exceeded the AL)	AL = 1.3	1.3	NO	Corrosion of household plumbing systems
Fluoride	ppm	0.86	0.55 - 0.86	4	4	NO	Added to water to promote strong teeth
Gross Alpha ⁽⁴⁾	pCi/L	1.18	no range, 1 sample required	15	0	NO	Erosion of natural deposits
Lead ⁽³⁾	ppb	7	ND - 122 (two homes exceeded the AL)	AL = 15	0	NO	Corrosion of household plumbing systems
Nitrate as Nitrogen	ppm	0.76	0.29-0.76	10	10	NO	Naturally present in the environment
Nitrite as Nitrogen	ppm	0.14	ND - 0.14	1	1	NO	Runoff from fertilizer use
Radium ⁽⁴⁾ (226 & 228 combined)	pCi/L	0.29	no range, 1 sample required	5	0	NO	Erosion of natural deposits
Total Haloacetic Acids	ppb	10.4 ⁽¹⁾	5.5 - 15.2 ⁽²⁾	60 ⁽⁶⁾	0	NO	Byproduct of water disinfection
Total Trihalomethanes ⁽⁵⁾	ppb	13.2 ⁽¹⁾	6.5 - 21.1 ⁽²⁾	80 ⁽⁶⁾	0	NO	Byproduct of water disinfection
Turbidity ⁽⁷⁾	NTU	0.23	0.03-0.23	TT = 0.3 NTU	N/A	NO	Suspended matter from soil runoff
Secondary Compounds							
Aluminum	ppb	30	30	200	-	NO	Erosion of natural mineral deposits
Calcium	ppm	31.5	31.5	-	-	NO	Naturally occurring minerals
Chloride	ppm	236	236	250	-	NO	Erosion of natural mineral deposits
Magnesium	ppm	6.5	6.5	-	-	NO	Naturally occurring minerals
Manganese ⁽⁸⁾	ppb	10	10	50	-	NO	Naturally occurring minerals
Sodium	ppm	135	135	20 ⁽⁹⁾	N/A	NO	Road salt
Sulfate	ppm	37.4	37.4	250	-	NO	Erosion of natural mineral deposits
Total Dissolved Solids	ppm	472	472	500	-	NO	Naturally occurring minerals

Fresh Pond Drainage and Habitat Improvements

Starting in the Spring of 2017, we have been hard at work on a complete re-visioning of the Fresh Pond Reservation area between Concord Avenue and the Water Purification Facility entrance. Guided by the Fresh Pond Master Plan, public input, and findings from a city-wide climate change vulnerability assessment, the project (open Summer 2018) addressed:

- Untreated stormwater discharges into the reservoir
- Pathway drainage issues resulting in flooding and unsafe icing conditions
- Improved universal accessibility for pathways and the new 26 plot community garden
- Invasive species and the creation of a native plant community
- Repurposing of a defunct railbed



Follow these links if you are interested in learning more!

Project page: <https://tinyurl.com/yc3xu8dy>

Climate Change Preparedness & Resilience: <https://tinyurl.com/pznebqg>

Notes

- Highest level detected is based on average of four quarterly samples.
- Highest value in range is based on individual samples, rather than averages.
- The Action Level (AL) and the highest level found are based on the 90th percentile of the 61 samples.
- Most recent gross alpha and radium results were obtained in 2014.
- No other volatile organic compounds (VOCs) were detected other than trihalomethanes.
- Highest level allowed (MCL) for this substance is based on the average of four quarterly samples.
- TT = Treatment Technique: Turbidity is a measure of treatment performance and is regulated as a treatment technique. 100% of samples met the TT requirement.
- USEPA 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 1000 ppb for acute exposure.
- An 8 ounce glass of Cambridge water contains approximately 32 milligrams of sodium, well within the FDA's "very low sodium" category.

Terms & Abbreviations

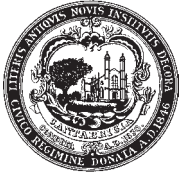
- AL: Action Level – The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.
- MCL: Maximum Contaminant Level – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible 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% of our turbidity readings each month must be below 0.3 NTU.
- 90th Percentile: 9 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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twitter.com/CambWaterDept

 or on the web at cambridgema.gov/water

Can you guess what this is? Take our quiz!



A. Smoothie Machine

B. Bread Maker

C. Jar Test Apparatus

D. Goldfish Treadmill

Go to cambridgema.gov/Water/administration/waterquiz to find out the answer and learn more about how we provide safe clean water!

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 Timothy W.D. MacDonald, Director of Water Operations at 617-349-4773

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