



**CAMBRIDGE WATER DEPARTMENT**

MA DEP PWS ID #30490000

250 Fresh Pond Parkway

Cambridge, MA 02138

www.cambridgema.gov/cwd

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2008 ANNUAL

# DRINKING WATER QUALITY REPORT

CITY OF CAMBRIDGE WATER DEPARTMENT

DISTRIBUTED - JUNE 2009

## ECRWSS

Postal Customer

Cambridge, MA

To our Customers,

This report provides a summary of the quality of the drinking water that the Cambridge Water Department (CWD) produced in 2008. Included are details about the drinking water sources, the content and quality of the water, and how Cambridge water compares to state and federal drinking water standards.

Please take a moment and read through this important annual report. We are happy to provide this information and encourage you to contact us if you have any questions, comments or need further information about the City of Cambridge drinking water system.

Sincerely,

Stephen S. Corda (Sam)  
Managing Director  
Cambridge Water Department

### 2008 WATER DEPARTMENT ACCOMPLISHMENTS

- ◆ CWD completed a round of Lead and Copper monitoring and continues to be in full compliance.
- ◆ No total coliform bacteria were detected in routine distribution water quality samples.
- ◆ 350ft. water main restoration on Whittemore Avenue performed by CWD Distribution Department staff.
- ◆ Purchase and startup of the distribution system Hydraulic Model by the Engineering Division.
- ◆ Reduction of treatment plant energy consumption by decreasing electrical draw during peak hours, changing light fixtures and retrofitting the HVAC system.
- ◆ Switch from Potassium Hydroxide to Sodium Hydroxide for pH adjustment.
- ◆ Existing CWD water quality has enabled full compliance with Long Term Surface Water Treatment (LT2) and Disinfection By-Product (DBP) Rules without additional testing or costs.

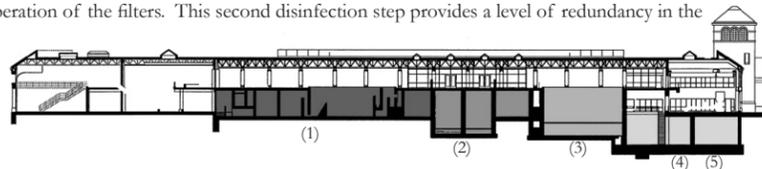
This report contains very important information about your drinking water. Please translate it, or speak with someone who understands it.

ESTE INFORME CONTIENE INFORMACION IMPORTANTE ACERCA DE SU AGUA POTABLE. HAGA QUE ALGUIEN LO TRADUZCA PARA USTED, O HEBLE CON ALGUIEN QUE LO ENTIENDA.	ESTE RELATORIO CONTEM INFORMAÇÃO MUITO IMPORTANTE SOBRE SEU QUE BEBENDO ÁGUA. POR FAVOR TRADUZA-O, OU FALA COM ALGUÉM QUEM ENTENDE-O.	QUESTA RELAZIONE CONTIENE DELLE INFORMAZIONI MOLTO IMPOTANITI DEL SUO CHE LA BENDO ACQUA. PER FAVORE TRADURRLO, O PARLARE CON QUALCUNO CHE CAPISCE ESSO.
이 보고서에는 귀하의 식수에 대한 중요한 내용이 실려있습니다. 그러므로 이 보고서를 이해할 수 있는 사람한테 번역해 달라고 부탁하시기 바랍니다.	CE RAPPORT CONTIENT DES INFORMATIONS IMPORTANTES À PROPOS DE VOTRE EAU POTABLE. DEMANDER À QUELQU'UN DE TRADUIRE CES INFORMATIONS POUR VOUS OU DISCUTER AVEC UNE PERSONNE QUI COMPREND CES INFORMATIONS.	此报告包含有关您的饮用水的重要信息。请人帮您翻译出来, 或请看懂此报告的人将内容说给您听。

### HOW DO WE TREAT YOUR WATER?

The Walter J. Sullivan Water Purification Facility at Fresh Pond Reservation changes the incoming source waters of the Cambridge reservoir system into the drinking water that is delivered to your home or business. The raw water is treated to exceed State and Federal drinking water standards.

- (1) Pretreatment:** This includes the pre-oxidation with the application of ozone, rapid mix, coagulation and dissolved air flotation (DAF). These processes and a coagulant chemical, alum, remove: manganese, natural color, particles, algae, protozoa, viruses and bacteria from the water.
- (2) Primary Ozone Disinfection:** Fine bubbles of ozone are dissolved into the water and disinfect the water by killing bacteria, viruses, and protozoa. The ozone is generated in the plant and introduced into the water in a series of chambers that allow contact and mixing of the ozone with the water.
- (3) Filtration using Granular Activated Carbon (GAC) Media:** This step follows the ozone application to help remove any organic compounds by biological action in the filters and further polish the water by removing additional particles, color and protozoa.
- (4) Chlorination/Chloramination:** Kills bacteria that may develop during the normal operation of the filters. This second disinfection step provides a level of redundancy in the overall process and provides a constant disinfection level in the distribution system.
- (5) Post Treatment Chemical Addition:** This includes the adjustment of pH for corrosion control and the addition of fluoride for dental health.



The water quality of our system is constantly monitored by CWD's State certified laboratory and by the DEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.

#### CROSS CONNECTION INFORMATION

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 town) when the hose is connected to the fertilizer, the fertilizer may be sucked back into the drinking water pipes through the hose. Using an attachment on your hose called a backflow-prevention device can prevent this problem.

The Cambridge Water Department recommends the installation of backflow prevention devices, such as a low cost hose bib vacuum breaker, for all inside and outside hose connections. You can purchase this at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system in our city!

For additional information on cross connections and on the status of our water system's cross connection program, please contact John Blouin, Cross Connection Supervisor, at the Cambridge Water Department at 617 349-4025 or jblouin@cambridgema.com

#### TOILETS RUN BUT THEY CAN'T HIDE!

AUTOMATED METER READING (AMR) "HIGH READ" PROGRAM

#### LET AMR "HIGH-READ" HELP YOU FIND LEAKS AND SAVE MONEY

The Cambridge Water Department's "High Read" notification program, allows the Water Department to contact property owners soon after an incident of high usage is detected. Speedy notification will allow property owners to repair any leaks that may cause the high read, thus minimizing the impact on the Water and Sewer Bill.

The program needs customers to update contact information so the Water Department is able to contact property owners as soon as a "High Read" is detected. Please call Brian McCoy at 617-349-4771 or email him at HighReads@cambridgema.gov with your account number, phone number, mailing address and email address.



### THIS 2008 ANNUAL DRINKING WATER REPORT INCLUDES

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**24 HOUR EMERGENCY/CUSTOMER SERVICE**  
**PHONE NUMBER 617-349-4770**

## 2008 WATER QUALITY DATA SUMMARY

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. The table below contains a summary of detected contaminants.

COMPOUND	UNITS	LEVEL DETECTED	RANGE OF DETECTIONS	MCL	MCLG	VIOLATION	HOW IT GETS IN THE WATER
<b>Regulated - Inorganic Compounds</b>		<b>Highest Level Det.</b>					
Barium	ppm	0.044	0.029 - 0.044	2	2	NO	Erosion of natural deposits.
Fluoride	ppm	1.20	0.9 - 1.2	4	4	NO	Additive to promote strong teeth.
Nitrate as Nitrogen	ppm	0.746	0.272 - 0.746	10	10	NO	Runoff from fertilizer use.
Nitrite as Nitrogen	ppm	0.012	0.004 - 0.012	1	1	NO	Runoff from fertilizer use.
<b>Regulated - Volatile Organic Compounds</b>		<b>Highest Average</b>					
TTHM	ppb	8.3	7.8 - 8.3	80 (4 Qtr Avg)	0	NO	By-product of water chlorination.
THAA	ppb	8.5	0 - 8.5	60 (4 Qtr Avg)	0	NO	By-product of water chlorination.
<b>Disinfectant</b>		<b>Highest Average</b>		<b>MRDL</b>	<b>MRDLG</b>		
Chlorine as Chloramine	ppm	3.1	1.5 - 3.1	4	4	NO	Additive used to control microbes.
<b>Turbidity</b>		<b>Highest</b>		<b>Monthly Compliance</b>			
Turbidity	NTU	0.28	0.04 - 0.28	TT = 0.3 NTU 100% of Samples < 0.3 NTU	n/a	NO	Suspended matter from soil runoff.
<b>Unregulated Contaminants<sup>1</sup> - Inorganic</b>		<b>Average</b>		<b>MADEP Secondary Std</b>			
Sulfate	ppm	34	25 - 34	250ppm	n/a	NO	Erosion of natural deposits.
Sodium	ppm	86	58 - 86	20ppm	n/a	NO	Road salt.
<b>Unregulated Contaminants<sup>1</sup> - Organic</b>		<b>Average</b>					
Bromodichloromethane	ppb	2.6	0.99-5.29			NO	By-product of drinking water chlorination
Bromoform	ppb	0.7	nd-1.4			NO	By-product of drinking water chlorination
Chloroform	ppb	1.9	0.53-5.17			NO	By-product of drinking water chlorination
Dibromochloromethane	ppb	2.5	1.7-4.19			NO	By-product of drinking water chlorination

COMPOUND	UNITS	90% VALUE	RANGE OF DETECTIONS	ACTION LEVEL (90%)	MCLG	VIOLATION	# OF SITES EXCEEDING THE AL	HOW IT GETS IN THE WATER
Copper (2008)	ppm	0.023	0.001 - 0.036	1.3	0	NO	0 of 60	Corrosion of household plumbing.
Lead (2008)	ppb	9	0 - 29	15	0	NO	2 of 60	Corrosion of household plumbing.

In 2008, we had a Monitoring Violation. The Massachusetts DEP required CWD to take one sample perchlorate within the 3rd quarter (July-September) of 2008. Due to a laboratory scheduling error the sample was not collected during this time and therefore cannot be sure of the quality of our drinking water during that time. As soon as the error was noted, a sample was collected (October 28, 2008) and analyzed. The result (nd - not detected) indicated that we are meeting the drinking water standards (MCL=0.002ppm) for perchlorate. Perchlorate interferes with the normal function of the thyroid gland and this has the potential to affect growth and development, causing brain damage and other adverse effects in fetuses and infants. Pregnant women, the fetus, infants, children up to the age of 12, and people with a hypothyroid condition are particularly susceptible to perchlorate toxicity.

## IMPORTANT INFORMATION ABOUT SOURCES OF DRINKING WATER AND DRINKING WATER CONTAMINANTS FROM EPA & MADEP

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 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, 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 (1-800-426-4791).

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 (1-800-426-4791).

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. 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 <http://www.epa.gov/safewater/lead>. Home Lead Testing Kits are available at 250 Fresh Pond Parkway for Cambridge residents.

## TERMS & ABBREVIATIONS

<b>ppm</b>	Parts per Million or milligrams per liter (mg/l)
<b>ppb</b>	Parts per Billion or micrograms per liter (ug/l)
<b>pCi/l</b>	picouries per liter
<b>nd</b>	Not Detected
<b>NTU</b>	Nephelometric Turbidity Unit- the amount of light dispersed as it passes through the column of water. Turbidity is a measurement of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
<b>TT</b>	Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water. Filtration, partial removal process. 100% compliance in 2005. 95% of readings each month must be below our TT of 0.3 NTU.
<b>n/a</b>	This compound does not have a range a detections because there was only one required sample
<b>MCL</b>	Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close t the MCLGs as feasible using the best available treatment technology.
<b>MCLG</b>	Maximum Contaminant Level Goal or: 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.
<b>AL</b>	Action Level - The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.
<b>90% Value</b>	Out of every 10 homes, 9 were at or below this level
<b>MRDL</b>	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.
<b>MRDLG</b>	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.

<sup>1</sup> **Unregulated contaminants** are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

## PHARMACEUTICALS AND PERSONAL CARE PRODUCTS TESTING IN THE CAMBRIDGE WATER SUPPLY

### Cambridge Water Department commitment to enhanced testing

In March of 2008 the Cambridge Water Department (CWD), in collaboration with the Cambridge Public Health Department (CPHD), established a voluntary biannual monitoring program of 86 PPCPs. Samples are collected from both untreated (raw) water and treated (finished) water. The analysis is performed by a laboratory using analytical methods with very low detection limits, often measured in parts per trillion. There are no EPA-approved standard methods for detection of these chemicals and there are no water quality standards for these compounds in drinking water at this time. This monitoring program will provide additional assurance that the CWD and CPHD will continue to be aware of PPCP-associated chemicals in the water supply, even if they remain unregulated by EPA.

### Cambridge drinking water results

Samples from the Cambridge drinking water supply were found to have no measurable levels of dozens of chemical contaminants targeted in this study in the first round, but did reveal trace concentrations of two compounds in the treated (finished) water in the second round of testing. Nicotine and acetaminophen (e.g. Tylenol) were found at levels that are barely detectable (parts per trillion). These two chemicals were included in surveys of water systems across the country, though nicotine is not associated with any medication. A total of six chemicals were found in the untreated (raw) water samples; all but two chemicals, cited above, were destroyed by the treatment process or were reduced below measurable levels. The Cambridge Water Department (CWD) employs ozonation to treat raw water, a latest-generation technology that effectively kills bacterial contaminants and has been found to destroy many PPCPs. Ozone is used along with traditional treatment processes, e.g. pre-treatment with alum based dissolved air floatation (DAF), biological filtration, chlorination, pH adjustment and chloramination. Together all these processes contribute to the high quality of Cambridge drinking water.

The full Cambridge results are available at: [www.cambridgema.gov/CityOfCambridge\\_Content/documents/PPCP\\_web\\_042809.pdf](http://www.cambridgema.gov/CityOfCambridge_Content/documents/PPCP_web_042809.pdf)

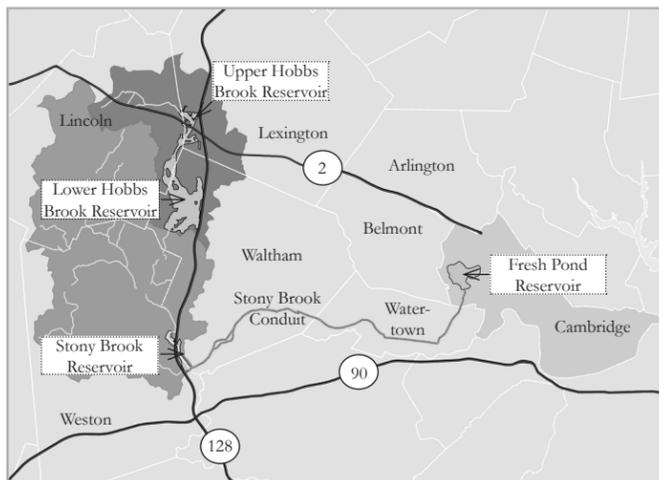
The web site listed above will be updated as CWD and CPHD receive more monitoring results and as we have more sources of information to share.

Questions about the health impact of these results on the water supply should be addressed to the Cambridge Public Health Department at 617-665-3838. Questions about the protection, monitoring, treatment or distribution of the Cambridge drinking water supply should be addressed to the Cambridge Water Department at 617-349-4773.

## WHERE DOES YOUR WATER COME FROM?

### Reservoirs

The Cambridge System extends across four towns and includes four bodies of water. The Hobbs Brook Upper Reservoir (PWS ID - 3049000-04S) flows into the Hobbs Brook Lower Reservoir (3049000-01S), and is combined with water from the Stony Brook Reservoir (3049000-03S). After this, the combined water flows to the Fresh Pond Reservoir (3049000-02S) via an underground aqueduct. The watershed for the Stony Brook Reservoir extends from Weston north into the town of Lincoln. The Hobbs Brook Reservoirs' watersheds include areas of Waltham, Lexington, and Lincoln. The functional watershed for the Fresh Pond Reservoir is now completely within the City of Cambridge, though it originally included areas of Watertown and Belmont. This smaller functional watershed is the result of storm water drainage modifications that divert street runoff away from the reservoir. The total capacity of the two up-country reservoirs is 3095 million gallons with and additional 1308 million gallons of water storage in Fresh Pond Reservoir. Our water supply is also backed up by distribution system interconnects with the Massachusetts Water Resource Authority (MWRA) water system. For a more detailed locus map of water sources and their protection areas please visit <http://www.cambridgema.gov/cwd/depmaps.cfm>



### Watershed Protection

The City of Cambridge drinking water reservoirs drain highly urbanized areas which includes several major highways. The watershed has a long history of transportation, commercial, industrial and residential land uses and has a high percentage of impervious surfaces. The reservoirs receive runoff carrying pollutants associated with developed land uses such as heavy metals, salt and other contaminants from roads and parking lots, untreated sewage from illicit connections, exposed soils from construction sites, nutrients from fertilizers, failed septic systems, and combustion byproducts, and a wide range of chemicals from motor oil to caffeine. Immediate water quality is threatened by potential spills of hazardous materials from transport trucks on heavily trafficked highways. These potential spills could temporarily cripple the water supply and render source waters unusable. Groundwater contamination from State-regulated 21E sites, landfills, and mobile dissolved pollutants like chloride also threaten source water quality. In some areas, wildlife and domestic pets contribute to erosion and pathogen loading.

As defined in Source Water Assessment Program, susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area. A source's susceptibility to contamination does not imply poor water quality, but does require program planning and implementation to minimize threats. Due to the developed nature and types of land uses within the water supply watershed, source waters have a "High" susceptibility to contamination.

A copy of the Cambridge SWAP can be found on the MADEP website at <http://www.mass.gov/dep/water/drinking/neroreps.htm>

For questions about our source water please contact David Kaplan, Watershed Supervisor, at [dkaplan@cambridgema.gov](mailto:dkaplan@cambridgema.gov) or 617-349-4799

## WANT TO LEARN MORE?

### GET INVOLVED!

#### Volunteer at the Fresh Pond Reservation

- Contact Emily Tansey, Watershed Assistant by phone at [fpr@cambridgema.gov](mailto:fpr@cambridgema.gov) or 617-349-6489 and visit <http://www.cambridgema.gov/CWD/freshpond.cfm> for more information

#### Become a Friend of Fresh Pond

- <http://www.friendsoffreshpond.org/>

#### Join us for a Water Board Meeting

- Usually on the 2nd Monday of each month, from 5-6:30 pm at the Walter J. Sullivan Water Purification Facility at 250 Fresh Pond Parkway For more information about dates of upcoming meetings and to review minutes from previous meetings please visit the Water Departments website, [www.cambridgema.gov/CWD](http://www.cambridgema.gov/CWD)

#### Visit the Water Department Website

- [www.cambridgema.gov/CWD](http://www.cambridgema.gov/CWD)

## 10 THINGS YOU CAN DO TO PROTECT YOUR WATER SUPPLY

- Don't dump oil or any other substances in street drains
- Use organic, low phosphorus fertilizers sparingly, and never before rain
- Wash your car at a commercial car wash where waste-water is treated instead of at home.
- Avoid using pesticide, herbicide or other chemical treatments for your landscaping or gardening
- Plant your yard with drought-tolerant native plants, not grass
- Pick up after your pet
- Do not flush old medication
- Properly maintain your septic system
- If deicing, use alternative deicers such as calcium magnesium acetate, avoid table or rock salt.
- Don't litter and yes, this includes cigarette butts.

