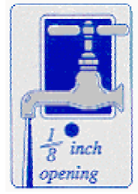
Water Leak$ are Co$tly

It is not unheard of to have a water leak in the plumbing system of your house and not be aware of it until your water and sewer bill arrives.

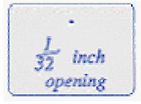
The best tip to avoid a high water and sewer bill is to discover and repair leaks immediately. In the table to the right, we have illustrated examples of leaks and their relative costs to users.

The following examples show the amount of water that can be lost (and billed to your account) for various sizes and types of leaks. The basis for the quarterly cost that a consumer would be charged in Cambridge is the fiscal year 2006 water and sewer increasing block rate structure.

A dripping leak:
15 gal/day
450 gal/month
1.8 units/qtr
$16/qtr



A 1/8 in. leak:
3,806 gal/day
114,200 gal/month
456 units/qtr
$4,500/qtr



A 1/32 in. leak:
264 gal/day
7,920 gal/month
31 units/qtr
$290/qtr

A 1/4 in. leak:
15,226 gal/day
456,800 gal/month
1,830 units/qtr
$19,000/qtr

A 1/16 in. leak:
943 gal/day
28,300 gal/month
115 units/qtr
$1,000/qtr

A 1/2 in. leak:
60,900 gal/day
1,827,00 gal/month
7,500 units/qtr
$80,600/qtr

24 Hour Emergency/Customer Service
Phone Number 1-617-349-4770

Visit Our Web Site at
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Email us at cwd@cambridgema.gov

Cambridge Water Department
250 Fresh Pond Parkway
Cambridge, MA 02138

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Cambridge, MA

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

Este relatório 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 importanti del suo che la bendo acqua. Per favore tradurrlo, o parlare con qualcuno che capisce esso.

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.

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

이 보고서에는 귀하의 식수에 대한 중요한 내용이 실려있습니다. 그러므로 이 보고서를 이해할 수 있는 사람한테 번역해 달라고 부탁하시기 바랍니다.

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。

City of Cambridge Water Department
2005 Annual Drinking Water Quality Report

250 Fresh Pond Parkway
Cambridge, MA 02138

DEP PWS ID#3049000

June 2006

24 Hour Emergency/Customer Service
Phone Number 1-617-349-4770

"This report is a snapshot of drinking water quality that we provided in 2005, last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal drinking water standards. We are pleased to be providing this report and encourage you to use the contact information if you have questions or need further information about your water system." Sam Corda, Managing Director, Cambridge Water Department (CWD)

This Year's Annual Drinking Water Quality Report Includes:

- **2005/2006 Fresh Pond Reservation Restoration Projects**
- **Our Contact Information**
- **Opportunities for Public Involvement**
- **An Introduction to Cross-Connections**
- **Cambridge Water System Description**
- **2005 Water Quality Data**
- **DEP and US EPA Water Quality Information**
- **Water Conservation: the Cost of Leaks**

2005/2006 Fresh Pond Reservation Restoration Projects

Currently, there are two landscape restoration projects occurring at the Reservation at Fresh Pond: the Little Fresh Pond Shoreline Restoration and Drainage Improvement Project, and the Northeast Sector Project. Both of these projects are pieces of the implementation of a larger strategy laid out for the Reservation in the Fresh Pond Reservation Master Plan.

Restoration of Little Fresh Pond was ranked amongst the highest of priorities for the restoration of the health of the Reservation in the Fresh Pond Master Plan. The shoreline of Little Fresh Pond had been severely eroded due to soil compaction, and it was compromising the safety of visitors using the Perimeter Road. Invasive species and proximity to the golf course were also a threat to Little Fresh Pond.

In order to combat the overall degradation of this water body, a vital component of this project was to stabilize the shoreline of Little Fresh Pond and reduce erosion. This has been achieved through a series of steps.

First, the entire shoreline of Little Fresh Pond was regraded to attain a more gradual slope to slow the flow of water and soils. Then, the shoreline was reinforced with a dense log made of coconut fibers called coir fascine.

The coir fascines were designed to retain surface water and catch sediments before they can enter the Pond, therefore helping to build up the shoreline to support vegetation. Planting was the final aspect of the shoreline restoration. Using a variety of wetland grasses, wet meadow plants, and upland shrubs and trees, we were able to repopulate the pond with native plant species. The root system of these plants will hold soils in place, and because they are native species, will assist in improving the overall health of the Fresh Pond Reservation ecosystem.

The Northeast Sector Project has been designed to reduce compaction and erosion in a 30-acre area of the Reservation that includes Lusitania Field and the environs around Neville Place. Compaction will be alleviated through repairing degraded hillsides and creating a system of pathways that are integrated with the contours of the landscape.

Erosion will be stemmed through the use of natural and permeable erosion control materials throughout the site. These will slow the flow of water and reduce sedimentation into the Reservoir.

A major goal of the Fresh Pond Reservation Master Plan and of the Northeast Sector is to promote biodiversity through the removal of aggressive invasive vegetation and the planting of native trees, shrubs, wildflowers, and aquatic plants. A working, healthy ecosystem within the Reservation will provide an important natural function to the citizens of Cambridge by filtering contaminants from the water, as well as provide food, shelter and habitat for animals and insects. To this end, over 69,000 plants in the form of trees, shrubs and understory vegetation are to be planted as part of the Northeast Sector Project.

Join us for our weekly Fresh Pond Reservation Project Walkabouts every Monday evening at 6pm through the summer of 2006. Chip Norton, Watershed Manager, will meet participants at the Walter J. Sullivan Water Treatment Facility, 250 Fresh Pond Parkway, Cambridge for a walk to and around the project sites. See you there!

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Opportunities for Public Participation and Further Information

•The Cambridge Water Board meets monthly, usually on the first Monday of the month, from 5:00 pm to 6:30 at Walter J. Sullivan Water Purification Facility at 250 Fresh Pond Parkway, Cambridge, MA 02138.
•For more information about the dates of upcoming meetings and to review minutes from previous meetings, refer to the Cambridge Water Department Website (www.cambridgema.gov/cwd/).
•If you have additional questions about your water supply, please contact Timothy W.D. MacDonald, Manager of Water Operations, at 617-349-4773.

Contamination from Cross-Connections

Cross-connections that could contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality (rain water). Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand) causing contaminants to be siphoned out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers or garden chemicals. Protection can be provided through the installation of an inexpensive device called a hose connection vacuum breaker. Also at home, improperly installed valves in your toilet can also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed industrial commercial, and institutional facilities in the City to make sure that potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test each backflow preventer to make sure that it is providing maximum protection.

For more information, call us at 617-349-4770 or visit the Web site of the American Backflow Prevention Association (www.abpa.org)

Facts About the Cambridge Water System and Water Qaulity Data from 2005

The Cambridge Water Supply: The Cambridge water supply comes from three surface water reservoirs located in Cambridge, Lexington, Waltham, Lincoln and Weston. The Hobbs Brook (3049000-01S-4S) and Stony Brook (3049000-03S) reservoirs are the primary sources of water for our system. The total capacity of the two up-country reservoirs is 3095 million gallons. The water is transferred to the terminal reservoir, Fresh Pond (3049000-02S), via the Stony Brook Conduit. The Fresh Pond Reservoir has an additional 1308 million gallons of water storage. Our supply is also backed up by interconnections to the Massachusetts Water Resources Authority(MWRA) water system.

Our water system is routinely inspected by the Department of Environmental Protection (DEP) for its technical, financial and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality water the system is operated by Massachusetts certified treatment and distribution operators. Descriptions and details of ongoing improvements in watershed, distribution, and treatment systems and our customer service efforts in engineering, billing and metering are available on the City and Department Web sites www.cambridgema.gov and www.cambridgema.gov/cwd/

Watershed Protection: As part of the CWD's ongoing commitment to protecting the resource water we participated with the DEP in the preparation of a Source Water Assessment Program (SWAP) Report for the Cambridge water supply system during 2003. The SWAP Report assesses the susceptibility of our public water supply and notes the key land use and protection issues, which includes: Zone A Land Uses, Residential Land Uses, Transportation Corridors, Hazardous Material Storage and Use, and Presence of Oil or Hazardous Materials Contamination Sites.

The report commends the Cambridge Water Department for taking an active role in promoting source protection measures and recommends that we continue these efforts to further protect the supply. These practices include:
•Working cooperatively with watershed towns on emergency response and storm water management.
•Placing spill kits at strategic points within the watershed.
•Actively monitoring source water quality throughout the watersheds and using the data to target source protection.
•Working cooperatively with businesses in the watersheds to encourage source protection.
•Adopting the Fresh Pond Master Plan, which includes long-term source protection measures for the Fresh Pond Reservation.
•Dedicating staff resources to inspections, public education, and coordinating of source protection efforts.

While a susceptibility ranking of High was assigned to the Cambridge water supply system using the land use and potential sources of contamination information collected during the assessment by DEP, the actual risks may be lower based on the implementation of best management practices (BMP's) throughout the Cambridge watershed and by the ongoing watershed protection programs.

For a copy of the SWAP Report and details of CWD's plans and schedules for implementing recommendations, please visit our web site at www.cambridgema.gov/cwd/

How 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. The processes include:

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.
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.
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 from the water.
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.
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 us in our State certified laboratory and the DEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.

Cambridge Water Department - Consumer Confidence Report 2005 Data

Lead and Copper	Units	90% Value	Range	Action Level(AL)90%	MCLG	Violation	Sites exceeding AL	
Copper	ppm	0.035	0.001-1.09	1.3	0	NO	0 of 60	Corrosion of household plumbing.
Lead	ppb	7	0 - 157	15	0	NO	2 of 60	Corrosion of household plumbing.
Regulated- Inorganic Contaminants		Highest	Range	MCL	MCLG	Violation		
Barium	ppm	0.047	0.035-0.047	2	2	NO		Erosion of natural deposits.
Fluoride	ppm	1.3	0-1.3	4	4	NO		Water additive to promote strong teeth.
Nitrate as Nitrogen	ppm	0.74	0.29-0.74	10	10	NO		Runoff from fertilizer use.
Nitrite as Nitrogen	ppm	0.015	0-0.015	1	1	NO		Runoff from fertilizer use.
Unregulated - Inorganic Contaminants		Average	Range					
Sulfate	ppm	25	23-27					Erosion of natural deposits.
Sodium	ppm	70	60-92					road salt.
Unregulated - Organic Contaminants		Average	Range					
Bromodichloromethane	ppb	2.8	1.6-4.6					By-product of drinking water chlorination.
Bromoform	ppb	1.8	0.9-3.4					By-product of drinking water chlorination.
Chloroform	ppb	1.4	0.7-3.0					By-product of drinking water chlorination.
Dibromodichloromethane	ppb	3.9	2.3-6.3					By-product of drinking water chlorination.
Regulated -Volitale Organic Contaminants		Highest Ave	Range	MCL	MCLG	Violation		
Total Trihalomethanes(THMs)	ppb	10.3	4.8-18	80	0	NO		By-product of drinking water chlorination.
Haloacetic Acids(HAA5)	ppb	8.7	3.5-20	60	0	NO		By-product of drinking water chlorination.
		Highest Ave	Range	MRDL	MRDLG	Violation		
Chlorine as Chloramine	ppm	3	1.3 - 3.0	4	4	NO		Water additive used to control microbes.
Regulated - Radioactive Contaminants (2002)						Violation		
Gross Alpha Activity	pCi/L	0.3	n/a	15	0	NO		Erosion of natural deposits.
Gross Beta Activity	pCi/L	14	n/a	AL = 50	0	NO		Decay of naturally occurring deposits.
Turbidity	TT	Lowest Monthly %		Highest Daily Value		Violation		
Daily Compliance(NTU)	1			0.16		NO		Suspended matter from soil runoff.
Monthly Compliance	At least 95%	100				NO		Suspended matter from soil runoff.
Bacteria	Highest % Positive in a Month			Total # positive	MCL	Violation	MCLG	
Total Coliform	1%(April)			1	>5%	NO	0	Naturally occurring in the enviroment.

What the EPA and DEP say about Drinking Water - Substances Found In Tap Water:

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

In order to ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (DEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. 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 some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

IMPORTANT DEFINITIONS
Maximum Contaminant Level (MCL) – 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.
Maximum Contaminant Level Goal (MCLG) –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.
Maximum Residual Disinfectant Level (MRDL) — The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG) — The level of a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) 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.
Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.
Action Level (AL) – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
90th Percentile – Out of every 10 homes sampled, 9 were at or below this level.
Variances and Exemptions – State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
ppm= parts per million, or milligrams per liter (mg/l)
ppb= parts per billion, or micrograms per liter (ug/l)
ppt= parts per trillion, or nanograms per liter
pCi/l = picocuries per liter (a measure of radioactivity)
NTU= Nephelometric Turbidity Units
N/A= Not Applicable
ND= Not Detected
mrem/year = millimrems per year (a measure of radiation absorbed by the body)