Water Quality
ANNUAL REPORT

To Our Customers

Once again, I am pleased to present you with this year's Annual Water Quality Report, which provides detailed information on where your water comes from, what is found in the water, the different types of treatment processes, and tips on efficient use of water. I can report with confidence that programs and investments made in your water system over the past decade are showing measurable dividends.

Our water quality has never been better—due in large part to targeted improvements made at individual pumping stations as well as the construction of an advanced water treatment facility serving both the Deaconess and White Pond wells. Our reliability of service has also improved, through water main replacement and rehabilitation efforts, resulting in reduced water loss. Modest investments made at water production facilities have resulted in more energy efficient pumping systems and better controlled chemical treatment systems. Most importantly, to help you better manage your water use and associated costs, we have expanded our water efficiency opportunities and incentives.

This is all good news. The information highlighted within this report should assure you that we continue to provide you with the overall quality and reliability of service that you have come to expect. As always, we appreciate your feedback and input, so please contact us if you have any questions or comments regarding this report of our water system.

Respectfully,

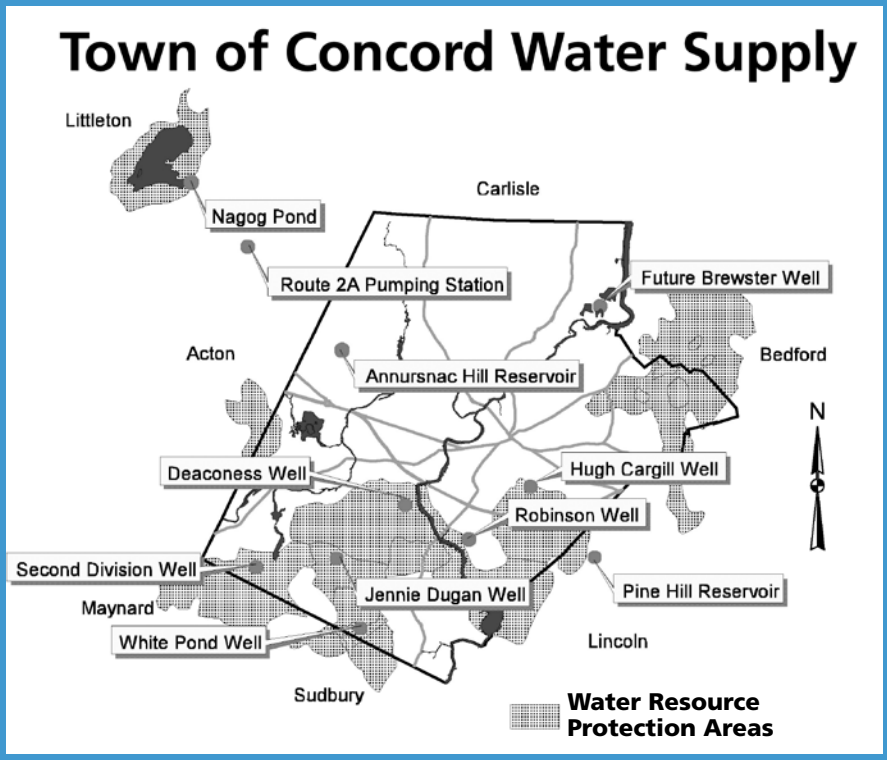
Alan H. Cathcart
Superintendent, Water/Sewer Division
Concord Public Works

2008 HIGHLIGHTS

- **Water quality improvements related to the treatment of the Deaconess and White Pond wells contributed to a 50% decrease in water quality calls during 2008. Levels of iron and manganese throughout the water system have been reduced resulting in less discoloration and staining.**
- **A $32,475 grant was awarded by the Massachusetts Department of Environmental Protection for water efficiency programs.**
- **During a National Drinking Water Week ceremony held at the State House in May 2008, Concord was recognized for outstanding performance as a public water supplier in Massachusetts and for its water conservation efforts in 2007.**
- **1,080 feet of water distribution main was installed, including the addition of Finigan Way and a small extension on Walden Terrace. An additional 3,600 feet of water distribution main was replaced along Belknap Street, Elsinore Street, Laurel Street, and Walden Terrace.**

Water Supply

Concord's water system consists of six groundwater supply wells located in Concord and one surface water supply located on the Acton/Littleton town line. In addition, it has associated pumping stations, two storage reservoirs with a 7.5 million gallon total capacity, approximately 130 miles of water main, and 1,250 fire hydrants. Depending on the season, all available production facilities may be called upon to satisfy system demands which may fluctuate between 1.5 million gallons per day (MGD) during the winter months to over 4 MGD in the summer. Concord's public water system is interconnected with Acton and Bedford for emergency backup, if ever needed.



Water Treatment

In accordance with state and federal drinking water requirements, Concord's water is treated before it gets to your tap. Treatment includes: *disinfection*—via the addition of liquid chlorine at all groundwater supplies and ozone/UV light plus chlorine gas at the Nagog Pond water supply; *corrosion control*—via the addition of potassium hydroxide and polyphosphate to raise the natural pH of the water and reduce its corrosiveness to household plumbing; *fluoridation*—via the addition of sodium fluoride to help prevent tooth decay; *iron sequestration*—performed by adding polyphosphate to reduce the frequency of discoloration events; and *iron and manganese removal*—performed by pressure filtering the Deaconess and White Pond wells. Due to a high level of water quality in Nagog Pond, the Town continues to operate this source under a filtration waiver. Chemical adjustments and disinfection are provided as noted above to ensure a safe drinking water is delivered to customer's taps.

Drinking Water and People with Weakened Immune Systems

Some people may be more vulnerable to contaminants in drinking water than the general population. People with weakened immune systems such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly people, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

Potential Sources of 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 will dissolve naturally occurring minerals and, in some cases, radioactive material, and can pick up other substances resulting from the presence of animals or human activities. Contaminants that might be expected in untreated water include: biological contaminants such as viruses and bacteria; inorganic contaminants, such as metals and salts; pesticides and herbicides; organic chemicals from industrial or petroleum use; and radioactive materials.

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SOURCE TREATMENT

	Nagog Pond Acton, MA	Second Division Well	Deaconess Well	Robinson Well	Jennie Dugan Well	White Pond Well	Hugh Cargill Well
Potassium Hydroxide to Adjust pH for Corrosion Control	•	•	•	•	•	•	•
Ultra Violet Light for Disinfection	•						
Chlorine for Disinfection	•	•	•	•	•	•	•
Ozone for Disinfection	•						
Fluoride to Promote Strong Teeth	•	•	•	•	•	•	•
Polyphosphate for Iron & Manganese Treatment and Corrosion Control	•	•	•	•	•	•	•
LayneOx™ Pressure Filtration for Iron & Manganese Removal			•			•	

Water Quality Summary

Listed below are the substances detected in Concord's drinking water in 2008. The presence of these substances does not necessarily indicate that the water poses a health risk. These substances are divided into 3 categories, Primary, Secondary, and Lead & Copper Parameters. Primary parameters protect drinking water quality by limiting the levels of contaminants that can adversely affect public health and are known or anticipated to occur in public water systems. Secondary parameters are set for aesthetic purposes and are designed to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted. Not listed are over 130 substances we tested for but did not detect. All substances listed below are in units of ppm (parts per million) unless otherwise noted.

PRIMARY PARAMETERS

Substance	Highest Level Detected	Range of Levels Found	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Major Sources in Drinking Water
Arsenic	0.003	ND-0.003	0.01	0	Erosion of Natural Deposits; Runoff from Agriculture
Barium	0.03	0.006-0.03	2	2	Erosion of Natural Deposits
Chlorine	2.2	0.05-2.2	4 (MRDL)	4 (MRDLG)	Water treatment for disinfection
Fluoride[1]	1.4	0.1-1.4	4	4	Water treatment for tooth decay prevention
Haloacetic Acids (ppb)	4.3[2]	ND-7.7	60	No Standard	By-product of drinking water disinfection
Nitrate	2.1	0.15-2.1	10	10	Runoff from fertilizer use; Erosion of natural deposits
Radium 228 (pCi/L)	0.4	0.3-0.4	5[3]	No Standard	Erosion of natural deposits
Selenium	0.009	ND-0.009	0.05	0.05	Erosion of natural deposits
Trihalomethanes (ppb)	10.9[2]	ND-22.2	80	No Standard	By-product of drinking water disinfection
Turbidity (NTU)	0.65	0.11-0.65	5	1	Suspended matter from soil runoff

SECONDARY PARAMETERS

Calcium	27.3	6-27.3	No Standard	No Standard	Erosion of natural deposits
Chloride	126	19.1-126	250	250	Naturally present in the environment
Hardness	108	19-108	No Standard	No Standard	Erosion of natural deposits
Iron	0.86	ND-0.86	0.3	No Standard	Erosion of natural deposits
Magnesium	9.7	2.1-9.7	No Standard	No Standard	Erosion of natural deposits
Manganese	0.064	ND-0.064	0.05	No Standard	Erosion of natural deposits
Methyl Tertiary-Butyl Ether (ppb)	1.2	ND-1.2	No Standard	No Standard	Fuel Additive
Potassium	33	1.4-33	No Standard	No Standard	Naturally present in the environment
Sodium	66.2	10.6-66.2	No Standard	No Standard	By-product of drinking water treatment; Naturally present in the environment
Sulfate	34.2	4.5-34.2	250	No Standard	Naturally present in the environment
Total Dissolved Solids	358	97-358	500	500	Naturally present in the environment
Zinc	0.066	0.006-0.066	5	No Standard	Naturally present in the environment
Zinc	0.057	0.027-0.057	5	No Standard	Naturally present in the environment

LEAD & COPPER PARAMETERS[5]

Substance	90th Percentile Level Detected	Range of Levels Found	90th Percentile Action Level (EPA's MCL)	Ideal Goal (EPA's MCLG)	Major Sources in Drinking Water
Lead (ppb)	3	ND-8	15	0	Household plumbing, see statement below
Copper	0.37	0.04-0.52	1.3	1.3	Household plumbing, see statement below

TERMS & ABBREVIATIONS

Action Level: The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.
MCL: (Maximum Contaminant Level) The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.
MCLG: (Maximum Contaminant Level Goal) The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.
MRDL: (Maximum Residual Disinfectant Level) The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MRDLG: (Maximum Residual Disinfectant Level Goal) The level of a drinking water disinfectant below which there is no known expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
ppb: parts per billion or micrograms per liter
ppm: parts per million or milligrams per liter
pCi/L: picocuries per liter
ND: none detected
NTU: Nephelometric Turbidity Units
1) **Fluoride:** The Department of Public Health's ideal goal for fluoride is 1 ppm.
2) **Haloacetic Acids and Trihalomethanes:** The highest level detected represents the highest running annual average for these contaminants. The range of levels found may have results in excess of the MCL but the running annual average of all sample locations is used to determine compliance.
3) **Radium 228:** The 5 pCi/L standard is for combined results of Radium 226 and Radium 228.
5) **Lead and Copper:** In accordance with EPA regulations, Concord Public Works tests the tap water of 30 homes in Concord for lead and copper every 3 years. Testing was last done during August and September 2008 and is next scheduled for completion during the summer of 2011. EPA determines whether the protection against corrosion is sufficient by requiring that at least 90% of the sampled homes have lead levels under 15 parts per billion (ppb). This is called the Action Level.

Important Information From EPA About Lead: Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

** **Turbidity:** Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality and the effectiveness of disinfectants.

Water Conservation

Why Be Water-Efficient?

Water efficiency means using our water resources more wisely and adopting technology we already have so our homes, offices, industries and appliances use less water to do more and waste less. It is common sense and easy to do.

Water Quality—Due mostly to the varying types and locations of water supply sources in Concord's system, certain sources provide better aesthetic water quality than others. When demand remains low and constant, Concord Water can better manage the system to optimize the quality of water. As demand increases, we need to activate all of our water resources and this can alter the color and odor of our water.

Peak Usage Issues—During the peak demand season (usually from May through September), water levels in storage tanks may drop, causing water pressure to diminish for some customers. If demand is too great, the Town may have to impose a ban on outdoor water uses to ensure adequate water for basic needs and emergency use, such as fighting fires.

Water Withdrawal Restrictions—To minimize environmental impact from water withdrawals and ensure adequate water supplies for the future, the Massachusetts Department of Environmental Protection regulates how much water we can pump from our wells and use from Nagog Pond. Controlling usage during peak periods is important to stay within permitted levels.

Cost—Concord Water utilizes a seasonal tiered rate system to calculate water bills. The more water you use, the higher per unit you pay. Being water-efficient will keep your water and sewer bills low.

Reduce Wastewater Flows—Whether you have a private septic system or are part of the municipal collection and treatment system, excessive water use can shorten the life of your septic system and take up valuable capacity at the Town's wastewater treatment plant.

New Rules for Toilet Replacement Rebates to go into Effect

Starting June 1, 2009, only toilets with the WaterSense label will be eligible for rebate (pending Public Works Commission approval). WaterSense, a program sponsored by the U.S. Environmental Protection Agency (EPA), is helping consumers identify high performance, water-efficient toilets that can reduce water use in the home and help preserve our water resources.

Recent advancements have allowed toilets to use 20 percent less water than the current federal standard, while still providing equal or superior performance. The WaterSense label is used on toilets that are certified by independent laboratory testing to meet rigorous criteria for both performance and efficiency. Only high-efficiency toilets that complete the third-party certification process can earn the WaterSense label.

Toilets are by far the main source of water use in the home, accounting for nearly 30 percent of your indoor water consumption. Toilets also happen to be a major source of wasted water due to leaks and/or inefficiency. Over the course of your lifetime, you will likely flush the toilet nearly 140,000 times. If you replace older, existing toilets with WaterSense labeled models, you can save 4,000 gallons per year with this simpler, greener choice.

Unlike some first-generation, "low-flow" toilets, WaterSense labeled toilets combine high efficiency with high performance. Design advances enable WaterSense labeled toilets to save water with no trade-off in flushing power. In fact, many perform better than standard toilets in consumer testing.

Concord water customers replacing older, water–guzzling toilets with 1.28 gallon per flush WaterSense models are eligible for a $150 rebate. Those trading in a 1.6 gallon toilet can receive a $50 rebate. For application forms and more information go to: *www.concordma.gov*. For more information about WaterSense go to *www.epa.gov/watersense*.

News and Notes

Let's Make Water Conservation a Habit

Save Water in Concord and Bring Drinking Water to El Uval: Join the Community Conservation Challenge

You can help bring safe drinking water to a village in Concord's Sister City, San Marcos, Nicaragua by saving water this summer. This year, participants in the Community Conservation Challenge will raise funds for the El Uval Drinking Water Project, which will go toward drilling a well and constructing distribution pipes for the village. Drinking water for the village's 400 residents is currently delivered via horseback several times a week.

Not familiar with the Challenge? It is an outreach campaign that links water conservation with fundraising by local groups. Group members earn money by reducing water use this summer.

Local groups such as civic organizations, business groups, school groups and others are eligible to join. CPW will help participants learn how to become more water-efficient by offering workshops, irrigation system "check-ups," toilet replacement rebates and more. If successful at reducing their water use, groups will earn $2 per member for each percentage of water saved this summer. By saving water here in Concord, you will be helping to bring drinking water to a neighborhood in our sister city, improving public health and nutrition.

Community **Conservation** Challenge

Challenge participants the past two years reduced their water use by over 1.8 million gallons, earning thousands of dollars for local non-profit organizations.

All Concord water account holders (businesses included) are able to participate; you can join an existing group or get some of your friends and neighbors to sign up. Go to *www.ConservationChallenge.org* for more information or contact Water Conservation Coordinator Joanne Bissetta at 978-318-3259 or *joanneb@concordma.gov.*

This year's Challenge is funded in part by a grant from the Massachusetts Department of Environmental Protection.

For Our Commercial and Institutional Customers

Did you know, according to a study conducted by the Massachusetts Water Resources Authority, the total amount of water used to produce a restaurant meal ranges from six to 29 gallons per meal?

For a limited time, Concord Public Works will provide free water use assessments and pre-rinse spray nozzles to institutions and businesses in the food service industry and those with large kitchens. The water use assessments are conducted by a qualified, independent contractor who provides you with an action plan to reduce water use and wastewater production at your facility. These voluntary action plans focus on ways your business can save money. In addition, the contractor will install a water-efficient pre-rinse spray valve at no extra charge.

Depending on the size of your facility, you can save over $1,000 every year in energy, water and sewer bills by replacing your inefficient spray valve.

Funding for this initiative is provided in part by grants from the Massachusetts Environmental Trust and the Massachusetts Department of Environmental Protection. Funds are limited; assessments and spray nozzle installations are available on a first-come first-serve basis.

For more information, contact the Water Conservation Coordinator at *joanneb@concordma.gov* or call 978-318-3259.

Learn How to Have a Great Looking Yard While Cutting Water Use

Water demand in Concord typically increases by over 50 percent during the summer months. This causes our wells to pump for extended periods of time, potentially affecting water quality and pressure. Attend a landscaping or irrigation workshop and learn how to cut your summer water use and reduce the need to use chemical fertilizers and pesticides that can contaminate water resources.

Naturally Beautiful Lawns and Landscapes, 7–8:30 p.m., Wednesdays, May 6 and 13, at CCHS.

Attractive landscapes don't have to have expansive lawns covering your entire property. Replacing part of your lawn with low maintenance ground covers, planting beds, or gardens will add color and dimension to your landscape. During the first session, you will learn the importance of the "right plant in the right place,"

as well as companion planting (plants that complement each other) and the benefits of compost. Lists of drought-tolerant and native plants will be provided.

At the second session, you will learn the value of healthy soil to a lush green lawn. Topics will include: soil preparation and testing; choosing grasses with emphasis on pest and drought tolerance; and using organic fertilizers and soil amendments. Pests and organic management materials will be discussed.

Presented by Donald Bishop, landscape consultant and owner of "Gardens Are…" a Marlborough-based organic landscaping and design business. Don is a former board member of the Ecological Landscaping Association and co-author of *The Standards of Organic Land Care: Practices for Design and Maintenance of Ecological Landscapes.*

Irrigation Systems 101, 7–9 p.m., Wednesday, May 20 at CCHS

Certified irrigation auditor and contractor Ted Moriarty will guide you on how to properly maintain your irrigation system for maximum watering efficiency. Learn how to use your controller and develop an optimum watering schedule as well as easy do-it-yourself repairs.

Ted has been an instructor for the Irrigation Association for the past 11 years and holds Irrigation Association Board Certifications as a Designer, Auditor and Contractor. He is also an EPA WaterSense partner, and Vice president of the Irrigation Association of New England.

Register for one or all three Wednesday evening sessions through Concord-Carlisle Adult and Community Education at *www.ace.colonial.net* or at 978-318-1540. There will be a $5 fee for each workshop.

Special Offer!

For Concord Water Customers

Rain Barrel

Only $62.95*

Collect rainwater for your garden and plants

Order online at *www.nerainbarrel.com*

Order by May 13

Pick up rain barrels at CPW, 135 Keyes Rd., 4–7 p.m., Wednesday, May 20

Discount offer limited while supplies last.
Additional rain barrels can be purchased for $72.95.

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Drinking water, including bottled water, may reasonably be expected to contain at least some small amounts of certain substances which the EPA calls "contaminants." The presence of these substances does not necessarily indicate that the water poses a health risk. For example, naturally occurring dissolved minerals are commonly found in well water. More information about the substances found in drinking water and their potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791 or the Massachusetts Drinking Water Program at 1-617-292-5770.

Quality Control

To ensure that tap water is safe to drink, the EPA enforces regulations that require stringent monitoring of specific contaminants within public water supply systems. Within Concord's system, over 500 tests are run each year to assess approximately 145 potential contaminants. We are proud to report that Concord's water quality testing program not only meets EPA's requirements for drinking water but goes above and beyond those requirements to satisfy the higher standards we have set for ourselves. Additional water quality information is available on our website at *www.concordma.gov.*

Get Involved

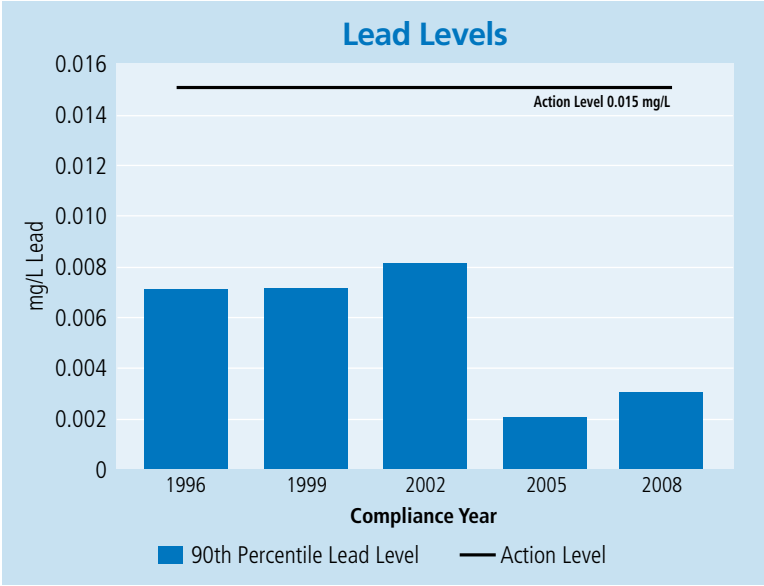
The Public Works Commission is the overseeing body of CPW and their meetings provide an opportunity to become more involved in issues relating to the water system. They typically meet the second Wednesday of each month at 7 pm. Please check the CPW website for exact dates and location. For more information regarding water quality and resource protection initiatives, or if you have a neighborhood concern in a resource protection area (depicted on map on page 2), please contact Matthew Mostoller, Environmental & Regulatory Coordinator at 978-318-3250 or *mmostoller@concordma.gov*.

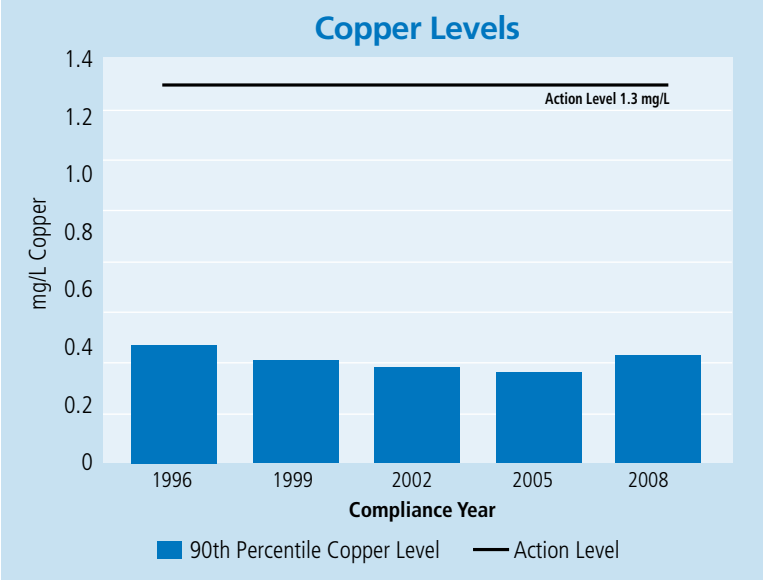
Water Quality

Lead & Copper

In accordance with U.S. Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (DEP) regulations, Concord Public Works tests for lead and copper on a three-year schedule. The last lead and copper sampling was performed in 2008 and will be repeated during the summer of 2011. A total of 30 homes throughout town are sampled on this schedule to confirm the effectiveness of our corrosion control efforts. The two graphs on this page summarize Concord's compliance levels for lead and copper for the past five compliance periods. More information on lead and copper compliance is available on page 3.

If lead is present, elevated levels can cause health problems, especially for pregnant women and children. Lead in drinking water is primarily from materials used in the service line and plumbing in buildings. High quality drinking water is delivered to each service connection but the variety of materials used in plumbing components is beyond the control of Concord Public Works. To minimize lead exposure, water should be flushed between 30 seconds and two minutes prior to drinking or cooking with water that has been sitting in your home or business. If you are concerned about lead and copper in your drinking water, you may wish to have testing performed in your home. For additional information on lead in your drinking water and what Concord is doing to control it, please visit *www.epa.gov/safewater/lead* or visit Concord Public Works website at *www.concordma.gov*.





CONCORD PUBLIC WORKS—2009

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Seasonal Rates Start May 1

Concord's Water Conservation Rates are in effect each year between May 1 and October 31 for residential customers. Water customers using more than 2,400 cubic feet of water bimonthly (more than 300 gallons daily), pay higher rates for their extra consumption, reflecting the higher cost of meeting peak water demand. Below are proposed rates, effective June 1, subject to Public Works Commission approval. One hundred cubic feet = 748 gallons.

- **Base Rate:** $3.83 per 100 cubic feet (ccf) bimonthly.
- **Step 2:** $7.51 per ccf for 2,500 – 4,800 cubic feet bimonthly May 1 through October 31.
- **Step 3:** $9.58 per ccf over 4,800 cubic feet bimonthly May 1 through October 31.