



Water Quality

ANNUAL REPORT

To our Customers

Once again, I am pleased to provide you with this annual water quality update provided to Concord's residential and business community. As detailed in the attached report, the Water Division continued to perform routine treatment and monitoring activities to insure water quality met or surpassed state and federal drinking water standards as they relate to public health and safety during the 2004 calendar year.

While the Division accepts the responsibility for protecting and treating your drinking water supply, our customers ultimately control where and how it is used. I ask that you review the water conservation information enclosed within this report and take advantage of the variety of tools and tips. We are here to help you use water wisely so you can save on water bills and help protect our natural resources.

I hope you find the detailed water quality information enclosed easy to read and helpful. As always, we appreciate your feedback and input as we continue to refine and prioritize system needs and improvement opportunities.

Respectfully,

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

2004 HIGHLIGHTS

- A system wide **Vulnerability Assessment** was performed in accordance with EPA guidelines.
- The design of the **Deaconess well treatment facility** is near completion with bid and construction activities slated to begin as scheduled later this year.
- Development activities associated with the **Brewster Well site** located at the end of Balls Hill Road were regrettably deferred in response to new water management policies introduced at the State level.
- The **White Pond Well Pumping Station** was completely rehabilitated including all mechanical, electrical, and chemical feed systems.
- The **Evaluation of Ozone & Ultraviolet Light** research which included work performed at the Nagog Pond surface water supply wins two top water industry awards: the American Council of Engineering Companies of Massachusetts (ACEC/MA) "Grand Conceptor Award" and American Academy of Environmental Engineers (AAEE) "Grand Prize in Research".
- Over 8,314 ft. of **water main** was replaced with 2,918 ft. of new main added to our system.

Water Treatment

In accordance with state and federal drinking water requirements, Concord 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 to raise the natural pH of the water and reduce its corrosiveness to household plumbing; *fluoridation* – via the addition of sodium fluoride to help in the prevention of tooth decay; and *iron sequestration* – performed by adding polyphosphate or sodium silicate to reduce the frequency of discoloration events.

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.

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.

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.

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 infection. 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.

Questions?

For more information about Concord’s drinking water and its supply system contact Matthew Mostoller, Environmental Analyst at Concord Public Works 318-3250 or visit our website at www.concordnet.org. For more information on Federal and State drinking water regulations call the EPA’s Safe Drinking Water Hotline at 1-800-426-4791 or the Massachusetts Drinking Water Program at 1-617-292-5770.

SOURCE TREATMENT

	Nagog Pond Acton, MA	Second Division Wall	Deaconess Well	Robinson Well	Jennie Dugan Well	White Pond Well	Hugh Cargill Well
PH Adjustment for Corrosion Control	•	•	•	•	•	•	•
Ultra Violet Light for Disinfection	•						
Chlorine for Disinfection	•	•	•	•	•	•	•
Ozone for Disinfection	•						
Fluoride to Promote Strong Teeth	•	•	•	•	•	•	•
Polyphosphate for Iron & Manganese Treatment	•	•	•	•	•	•	•
Sodium Silicate for Iron & Manganese Treatment & Corrosion Control			•				

Water Quality Summary

Listed below are the substances detected in Concord's drinking water in 2004. 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, & 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	0.05	0	Erosion of Natural Deposits
Barium	0.02	ND-0.02	2	2	Erosion of Natural Deposits
Chlorine	2.08	0.02-2.08	4 (MRDL)	No Standard (MRDLG)	Water treatment for disinfection
Fluoride ^a	1.36	ND-1.36	4	4	Water treatment for tooth decay prevention
Haloacetic Acids (ppb)	0.8 ^b	ND-5.0	60	No Standard	By-product of drinking water disinfection
Nitrate	1.5	ND-1.5	10	10	Runoff from fertilizer use; Erosion of natural deposits
Trihalomethanes (ppb)	8.0 ^b	ND-23.8	80	No Standard	By-product of drinking water disinfection
Turbidity (NTU) ^c	0.5	0.1-0.5	5	No Standard	Soil runoff

SECONDARY PARAMETERS

Calcium	18.6	7.8-18.6	No Standard	No Standard	Erosion of natural deposits
Chloride	61.8	19.4-61.8	250	250	Naturally present in the environment
Hardness	71	31-71	No Standard	No Standard	Erosion of natural deposits
Iron	1.3	ND-1.3	0.3	No Standard	Erosion of natural deposits
Magnesium	6.6	2.9-6.6	No Standard	No Standard	Erosion of natural deposits
Manganese	0.26	ND-0.26	0.05	No Standard	Erosion of natural deposits
Nickel	0.006	ND-0.006	No Standard	No Standard	Erosion of natural deposits
Potassium	32	3.6-32	No Standard	No Standard	Naturally present in the environment
Sodium	74.6	19-74.6	No Standard	No Standard	By-product of drinking water treatment; Naturally present in the environment
Sulfate	32.3	6.7-32.3	250	No Standard	Naturally present in the environment
Total Dissolved Solids	260	140-260	500	500	Naturally present in the environment
Zinc	0.04	ND-0.04	5	No Standard	Naturally present in the environment

LEAD & COPPER PARAMETERS^d

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)	8	ND-25	15	0	Household plumbing, see statement below
Copper	0.33	0.008-0.48	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

FOOTNOTES

a **Fluoride:** The Department of Public Health's ideal goal for fluoride is 1 ppm.

b **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.

c **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 disinfectant processes.

d **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 in 2002 and is next scheduled to be done during the summer of 2005. 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).

Water Conservation

In 2004, Concord water customers used about the same amount of water in 2003. As we enter the “peak” water season of 2005, we again remind our customers to use water efficiently. Increased water demand, especially in the summer, stresses Concord’s water supply system. All six ground-water supply wells and Nagog Pond are often required to operate at maximum levels. When this occurs, there is more wear and tear on town pumps, water quality is subjected to greater variation and production costs are increased.

Being “water-efficient” means using less water to provide the same benefit. There are many ways to enhance your water efficiency—detecting and fixing leaks, installing high-efficiency clothes washers and toilets, and watering the lawn and garden with the minimum amount of water needed.

Many Concord customers are already integrating water-efficient practices into their daily lives. In the past two years, water customers have purchased over 400 rain barrels to harvest rain-water from their roofs for use in plants and gardens. Also, over 100 water-guzzling toilets have been replaced in the past year with more efficient, 1.6-gallon toilets, earning customers a \$75 rebate.

You are encouraged to take advantage of these opportunities to conserve water and reduce water bills. Contact Water Conservation Coordinator, Joanne Bissetta, at 978-318-3259 for further information or visit our website, www.concordnet.org/cpw.

Special Offer for In-ground Irrigation Owners

Want to learn how to water your lawn more efficiently? Concord Public Works will send a certified water-use expert to your home to conduct a **free irrigation system audit**. You will receive a report documenting your property’s irrigation water use with recommendations for repairs and/or improvements that can save you water. Call Energy New England at 1-888-772-4242 to schedule an audit.

In-ground Irrigation Bylaw

Town bylaw requires that all in-ground irrigation systems connected to the public water supply be registered with the Town and equipped with automatic timers, rain sensors and backflow prevention devices. Call 978-318-3250 or go to www.concordnet.org/cpw for registration forms

Reminder:

Seasonal Rates Started May 1

Concord’s Water Conservation Rate is 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. One hundred cubic feet = 748 gallons.

- **Base Rate:** \$3.27 per 100 cubic feet (ccf) bimonthly.
- **Step 2:** \$5.89 per ccf for 2,500 – 4,800 cubic feet bimonthly May 1 through October 31.
- **Step 3:** \$7.69 per ccf over 4,800 cubic feet bimonthly May 1 through October 31.

Approximately two-thirds of Concord residential customers stay within the base rate while up to 12 percent pay the highest peak rate in Step 3.

Irrigation System Tune Up

If you have an automatic in-ground irrigation system, make sure it is using water efficiently:

- Don’t water the street, driveway, house or sidewalk.
- Check for leaks.
- Make sure your rain sensor is set for ¼-inch and is operating properly
- Adjust your controller to reflect current weather and growing needs. Lawns need less water in the spring and fall.
- Water only as rapidly as the soil can absorb water to prevent runoff. Break up watering times if water puddles or runs off your lawn. Let water soak in then water again.

News and Notes

Let's Make Water Conservation a Habit

Show You Care

Is your lawn chemical pesticide-free? Have you "gone organic?" If so, display your commitment to reducing the use of toxic chemicals that can threaten the environment, as well as the health of your family and pets. As part of the Healthy Lawns for Healthy Families campaign funded by the UMass-Lowell Toxics Use Reduction Institute, Concord Public Works has lawn signs available to residents wishing to promote their "healthy" lawns. Call Joanne Bissetta at 978-318-3259 to get your sign today. For more information about reducing pesticide use and organic lawn care, visit www.healthylawnsforhealthyfamilies.com.

Ask me about

**Healthy
Lawns for
Healthy
Families**



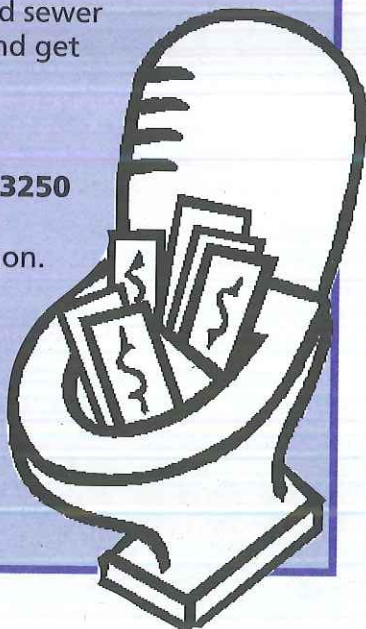
Or go to
www.healthylawnsforhealthyfamilies.com

Sponsored by a grant from the UMass-Lowell
Toxics Use Reduction Institute

Stop flushing cash down the drain!

Have an old toilet?
Install a new, low-flow
toilet and save on
water and sewer
bills — and get
a rebate.

Call
978.318.3250
for more
information.



Be "Water-Smart"

Learn how to design an attractive, water-conserving landscape right in your own backyard. A colorful, inviting "water-smart" landscape can reduce outdoor water use by 30 to 80 percent by incorporating native and adapted plants suited to a region's soil and climate. A 53-minute instructional video, "Your Own Backyard: A Xeriscape Primer," produced for the American Water Works Association, is being broadcast on CTV8, Concord's local cable channel, throughout the spring. Check with local listings for exact dates and times.

"Water-Smart" Landscape Plans

Thanks to grants from the Garden Club of Concord and the Massachusetts Department of Environmental Protection, four landscape templates are being developed by local landscape designers that, once established, are easy to maintain and require little or no supplemental water. Once completed, these templates will be posted on our website www.concordnet.org/cpw and will be available as handouts from our office at 135 Keyes Road.

"Water-Smart" Demonstration Gardens

Seeing is believing. This summer, a garden will be planted in the front yard at Emerson Umbrella, 40 Stow Street, that will demonstrate plants that are drought-tolerant and easy to maintain. There will be a variety of ground covers, shrubs, flowers, and grasses on display to give property owners ideas on lawn alternatives. The garden is funded by a grant from the Massachusetts Department of Environmental Protection. Also, a hot, sunny strip in the parking lot of 135 Keyes Road was planted last summer with drought-tolerant perennials by CPW's Grounds Crew. Come visit and watch the garden bloom throughout the season.

Outdoor Watering Guide

Over-watering can damage lawns. Cutting down on lawn watering will reduce your water bills and conserve drinking water for its purpose – drinking. To maintain healthy grass while saving water and money, keep the following in mind:



- Healthy lawns only need one inch of water a week, including rainfall. Even if it is your "day" to water, consider whether it has recently rained or if rain is forecasted before you turn on your sprinkler. A hearty rain can eliminate the need for watering for up to two weeks. Get a free rain gauge from Concord Public Works to keep track of rainfall.
- Check to see if your lawn is thirsty by sticking a screwdriver into your lawn. If it doesn't go through the top five inches of soil easily, then your lawn may need to be watered. Another sign that watering may be needed is if your footprints are visible for more than a few seconds after walking across your lawn.
- Measure how much water you use by setting out tuna fish cans on your lawn when you're watering.
- Water before 9 a.m. to minimize water lost to evaporation.
- Water deeply and infrequently to encourage deep roots. Healthy grass has deep roots that are better able to withstand drought and pests.
- Cultivate healthy soil. Healthy lawns grow best in healthy soil. Get it tested once a year. The U-Mass Extension will analyze your soil samples. Go to www.umass.edu/plsoils/soiltest/soilbrocha.html for instructions.
- Aerating your lawn prevents runoff and gives water easier access to root systems. You can rent an aerator from local equipment rental outlets.
- Mow high. Keep your lawn 2.5 to 3 inches high to encourage a stronger root system, reduce evaporation, and crowd out weeds.
- Fertilizers increase water consumption. Apply the minimum amount needed. Better yet, use compost. Not only will it add nutrients to your soil; it will enhance its texture and ability to retain moisture. Screened compost is available free of charge for Concord residents at the Composting Site on Walden Street.

C L I P A N D S A V E

Resource Protection

Water Supply

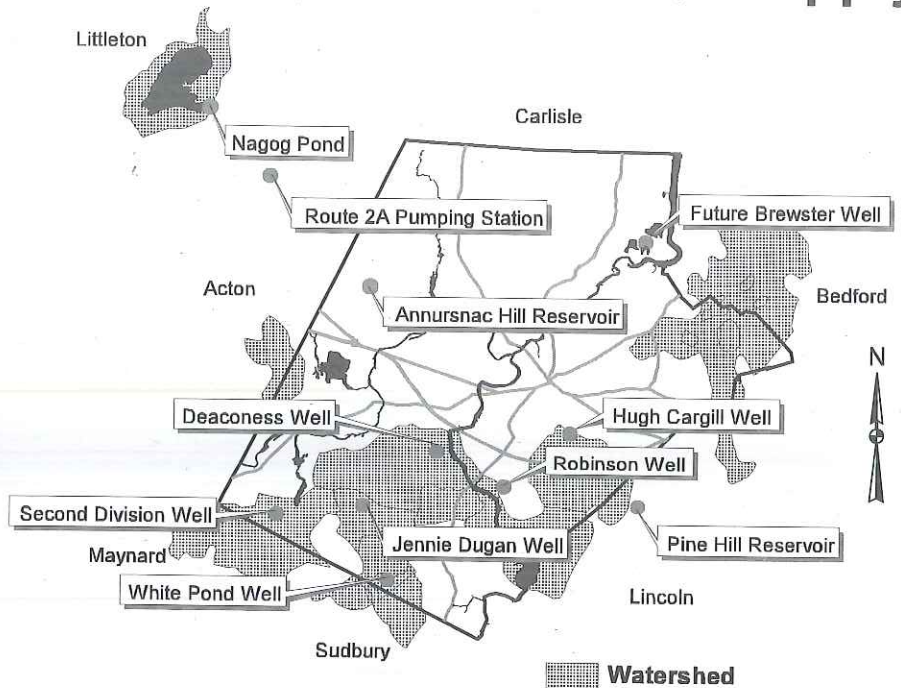
Concord's water system consists of six groundwater supply wells and one surface water supply, pumping stations, two storage reservoirs with a 7.5 million gallon total capacity, and approximately 121 miles of water main. Depending on the season, all available production facilities may be called upon to satisfy system demands which may fluctuate between 1.5 million gallons per day (MGD) during the winter months to over 5 MGD in the summer. Concord's public water system is interconnected with Acton and Bedford for emergency backup, if ever needed.

Get Involved

Do you live or play near any of our water supplies depicted on the map? If so, you could be part of CPW's efforts to protect and preserve our water resources. As a "neighbor" to our facilities, you can become part of a community watch type of program that CPW hopes to implement around our groundwater supplies. We have a similar program in place around Nagog Pond in Acton and Littleton, where neighbors identify issues or report suspicious and malicious behaviors. To participate, we would ask that you be able to attend a kick-off meeting and be willing to communicate with Division Staff regularly.

Residents can also help protect drinking water resources by engaging in good septic system practices, taking hazardous household chemicals to proper hazardous materials collection facilities, and limiting the use of pesticides and fertilizer on their property.

Town of Concord Water Supply



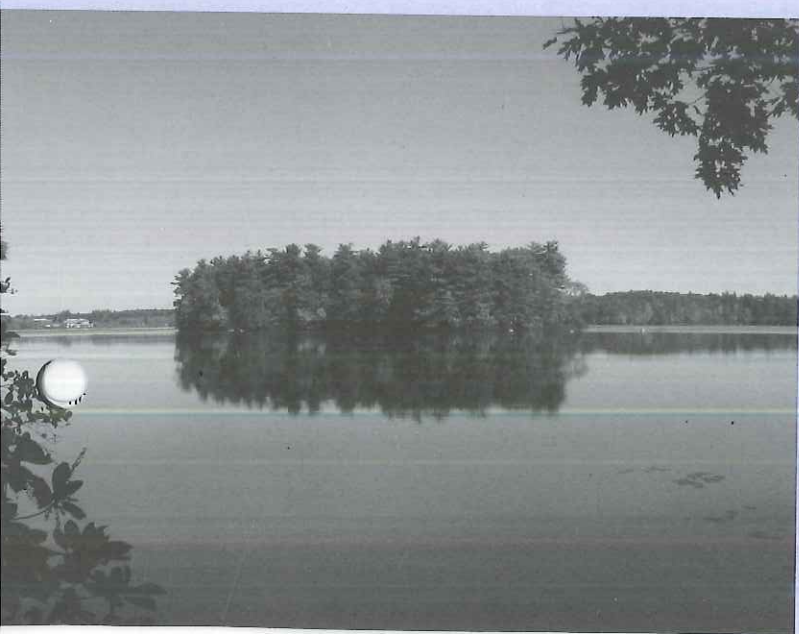
These are a few small steps that customers can take to help us protect the drinking water resources we have in Concord.

To participate in the "Watershed Watch" program or for more information regarding water quality and resource protection initiatives, please contact Matthew Mostoller, Environmental Analyst at 978-318-3250 or mmostoller@concordnet.org.

Perchlorate

During the spring of 2004, the Massachusetts Department of Environmental Protection (DEP) issued an emergency regulation regarding the testing of perchlorate. The DEP issued this regulation to collect data on the occurrence of perchlorate in drinking water supplies across the Commonwealth of Massachusetts. Perchlorate is suspected of interfering with the thyroid gland and leading to developmental complications in children and sensitive adult populations. After completing the two rounds of sampling required by the regulation in April and September of 2004, the substance was not detected in any of the water supplies serving our customers. Some neighboring communities have found perchlorate in their drinking water supplies causing much concern for residents and water suppliers alike. Concord continues to follow the progress of perchlorate as a contaminant of concern and is working to ensure that the potential for contamination in Concord's water supply is eliminated or reduced.

For more information regarding perchlorate and the DEP emergency regulation, please visit the DEP website at: <http://www.mass.gov/dep/brp/dws/percinfo.htm>.



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Water/Sewer Division
PWS ID 3067000
135 Keyes Road
Concord, MA 01742



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Free Water Conservation Devices

Concord Public Works wants to help you conserve water. Stop by our office at 135 Keyes Road weekdays 7:30 a.m.-4 p.m. or call Joanne Bissetta, Water Conservation Coordinator, at 978-318-3259.

Rain Gauge – Keep track of rainfall to avoid over-watering your lawn.

Leak Detection Kit – A simple test to determine if you have a leaky toilet.

Bathroom Flip Aerator – Temporarily halt the flow of water with a flip of the switch without readjusting temperature controls. Great for shaving and brushing teeth.

Dual Setting Flip Aerator with Swivel for the Kitchen – A swiveling aerator that has a full flow for filling pots, a wide spray for rinsing fruits and vegetables, and a flow restrictor for use when washing dishes.

EPA Guidebook on Water-Efficient Landscaping – Easy-to-read instructions on how to create eye-catching gardens that save water, prevent pollution and protect the environment. Get our photocopy or print out your own. Visit www.epa.gov/owm/water-efficiency.

Low-flow Showerhead – An attractive, high-quality showerhead that uses 2.0 gallons per minute that doesn't feel "low-flow." Cut your shower water use in half.

Shower Timer – Helps you keep your showers to five minutes.

Presentations to Local Groups – Concord Public Works staff is available to come to your organization to talk about water conservation. Give us a call!