



# WATER QUALITY ANNUAL REPORT

## CONCORD PUBLIC WORKS – Fall 1999

### To Our Customers

Concord Public Works is committed to providing our community with the highest quality drinking water possible. I am pleased to report that throughout 1998, our drinking water supply consistently met or surpassed all federal and state standards established for health and safety. Beginning with this report, you will be mailed a Water Quality Annual Report to update you on actual water quality conditions measured within our system.

While insurance of safe drinking water will remain our primary goal, we are increasing our efforts towards improving aesthetic water quality conditions throughout our distribution system. The projects outlined below represent some of the more significant initiatives recently undertaken by CPW in the interest of improving water quality within the Town of Concord.

- Refinement of **water supply protection districts** to allow for improved monitoring of potential land-uses impacts on our drinking water supplies.
- **Enhanced water quality testing** and analyses of both source water quality and distribution system quality to more accurately characterize variations observed between production wells and neighborhoods.
- Placing on-line the long anticipated **Robinson water supply well**.
- Expanded and **improved water flushing activities**.
- **Replacement** of thousands of feet of antiquated water mains.
- **Optimization** of existing treatment processes.
- Comprehensive **Water Conservation Program**.

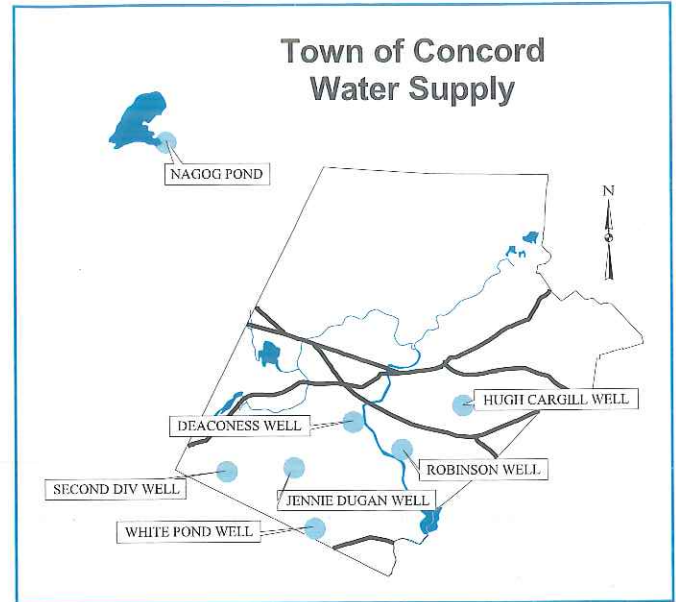
A more extensive list of improvement projects has been integrated into a financially responsible and comprehensive 10-year capital improvement plan. This renewed commitment to Concord's water system is necessary to insure it is well managed and maintained. With your interest and support we will continue to look at new ways to protect, conserve, and enhance the drinking water supply serving Concord.

Sincerely,

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

## Water Supply

Concord's water system consists of five active and one emergency groundwater supply wells, one surface water supply, pumping stations, two storage reservoirs with 7.5 million gallon 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 fluctuate between 2 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. To help preserve our limited drinking water resources, Concord has established a vigorous water conservation program, including conservation based rates and the Odd-Even Outdoor Watering Program.



## 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 chlorine at all groundwater withdrawal locations and the addition of ozone at our Nagog Pond surface water supply for enhanced disinfection; *corrosion control* – via the addition of potassium hydroxide used to raise the natural pH of our water thereby reducing its corrosiveness to household plumbing; *fluoridation* – via the addition of sodium fluoride to help promote strong teeth; and *iron sequestration* – performed by adding polyphosphate to reduce the frequency of red/brown discoloration events.

	SOURCE TREATMENT					
	Nagog Pond Acton, MA	Second Division Well	Deaconess Well	Robinson Well	Jenny Dugan Well	White Pond Well
pH Adjustment for Corrosion Control	•	•	•	•	•	•
Chlorine for Disinfection	•	•	•	•	•	•
Ozone for Disinfection	•					
Fluoride to Promote Strong Teeth	•	•	•	•	•	•
Polyphosphate for Iron & Manganese Treatment	•	•	•	•	•	•

## 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 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 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 145 potential contaminants. We are proud to report that Concord's water quality testing program not only follows EPA's requirements for drinking water but goes above and beyond those requirements to satisfy the higher standards we have set for ourselves.

### WATER QUALITY SUMMARY

Listed below are the 20 substances detected in Concord's drinking water in 1998. The presence of these substances in the water does not necessarily indicate that the water poses a health risk. These substances are divided into two categories, primary and secondary 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 as aesthetic indicators and are designed to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted. Not listed are over 120 substances that were tested for but not detected including, but are not limited to: pesticides, organic chemicals such as solvents and petroleum products, metals, and radioactive materials. 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)	Sources of Contaminants
Barium	0.1	0.1	2	2	Erosion of natural deposits.
Chlorine	2.6	0.2-2.6	4	No Standard	Water treatment for disinfection
Dichloromethane (ppb)	0.9	0.8-0.9	5	0	By-product of Water Disinfection
Fluoride	1.7	0.3-1.7	4	4	Water additive which promotes strong teeth
Nitrate*	5.8	0.4-5.8	10	10	See statement below.
Total Trihalomethanes (ppb)	5.2	2.6-5.2	100	No Standard	By-product of Water Disinfection

#### Secondary Parameters

Aluminum (ppb)	50	50	200	No Standard	Naturally present in the environment
Calcium	18	5-18	No Standard	No Standard	Naturally present in the environment
Chloride	50	30-50	250	250	Naturally present in the environment
Iron	1.9	0.1-1.9	0.3	No Standard	Erosion of natural deposits
Magnesium	4	1-4	No Standard	No Standard	Naturally present in the environment
Manganese (ppb)	200	10-200	50	No Standard	Erosion of natural deposits
Phosphorus	0.3	<0.01-0.3	No Standard	No Standard	Water treatment for iron and manganese
Potassium	35	2-35	No Standard	No Standard	Naturally present in the environment
Sodium	17	17	28	No Standard	Naturally present in the environment
Sulfate	27	6-27	250	No Standard	Naturally present in the environment
Total Dissolved Solids	185	63-185	500	500	Naturally present in the environment
Zinc (ppb)	0.1	0.03-0.1	5	No Standard	Naturally present in the environment

#### Lead and Copper Program

	90th Percentile Level Detected	Range of Levels Found	90th Percentile Action Level** (EPA's MCL)	Ideal Goal (EPA's MCLG)	
Lead (ppb)***	12	<5-590	15	0	Household plumbing, see statement below
Copper***	0.5	<0.05-1.9	1.3	1.3	Household plumbing, see statement below

#### Terms and Abbreviations

Maximum Contaminant Level Goal (MCLG): 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.

Maximum Contaminant Level (MCL): 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.

ppb= parts per billion or micrograms per liter

\* Nitrate: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age.

High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.

\*\*Action Level= the concentration of a contaminant that, if exceeded, triggers treatment modifications.

\*\*\* Lead and Copper: The state requires lead and copper testing less than once per year because the concentrations of these substances are not expected to vary significantly year to year. The samples reported were taken in October of 1996. We are scheduled to resample for lead and copper in the Fall of 1999. 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 at 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).

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CONCORD, MASSACHUSETTS 01742

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## Special note to Immuno-compromised persons

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 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 Gregory Clark, Environmental Analyst at Concord Public Works 318-3250. For information on State and Federal drinking water regulations call the EPA's Safe Drinking Water Hotline at 1-800-426-4791 or the Massachusetts Safe Drinking Water Hotline at 1-617-292-5770.