

**2004 Annual Drinking Water Quality Report
for
Westford Water Department
Westford, Massachusetts
DEP PWS ID # 2330000**

This report is a snapshot of drinking water quality over the past year. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards.

I. PUBLIC WATER SYSTEM INFORMATION

Superintendent: *Warren Sweetser*
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 Contact Person: *Elaine Major,*
Environmental Compliance Manager
 Telephone #: *978-692-5529* Fax #: *978-692-5530*
 Internet Address:
<http://www.westford-ma.gov/generalinfo/water/water.htm>

Opportunities for Public Participation

Our office hours are Monday through Friday, 7am to 4pm. For after hours emergencies, please call the Police Dispatcher at 978-692-2161. If you would like to participate in discussions regarding your service or water quality, the Board of Water Commissioners meets at 60 Forge Village Road on the first and third Wednesday of each month at 5:30pm. If you need to request a meeting with the commissioners about a particular issue, please submit your request in writing to Robin Fullford, Water Department Business Manager, to have your topic added to the agenda. An open house is held every spring at 60 Forge Village Road for tours of the facility and to meet Water Department staff.

I. YOUR DRINKING WATER SOURCE

Water System Management and Improvements

To ensure that we provide the highest quality of water available, a Massachusetts-certified operator oversees the routine operations of our system. In addition the Massachusetts Department of Environmental Protection (DEP) inspects our system periodically for its technical, financial, and managerial capacity to provide safe drinking water to you. In 2004 the Westford Water Department made the following improvements to our system: 9 new hydrants were installed, 37 new services and 21 new gates were installed, 1.67 miles of new water main was added, and 7 water main breaks were repaired. This brings the system to a total of 880 hydrants, 5,184 accounts, 123.0 miles of water main, and total storage capacity of 4.85 million gallons. A total of 635.4 million gallons of water was pumped in 2004.

Where Does My Drinking Water Come From?

Your water source is from groundwater supplied by two major aquifers in the area, Stony Brook and Beaver Brook.

Source Name	DEP Source ID#	Location of Source
Forge Village Well Field	2330000-01G	Forge Village Road
Nutting Road Well	2330000-02G	Nutting Road
Depot Road Well	2330000-03G	Depot Road
Country Road Well	2330000-04G	Country Road
Forge Village II Well	2330000-05G	Forge Village Road
Howard Road Well Field	2330000-06G	Howard Road
Cote Well	2330000-07G	Beacon Street (Out of service since July 16, 2004.)
Fletcher Well	2330000-08G	Concord Road

Is My Water Treated?

We make every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants.

- Disinfectant is added to protect you against microbial contaminants.
- Water is filtered to remove iron and manganese, particles, and organisms such as algae, parasites, and bacteria.
- Water is chemically treated to reduce lead and copper concentrations at your tap.
- Fluoride is added to aid in dental health and hygiene (1.10 ppm annual average in distribution system).
- Water is aerated to remove volatile organic contaminants and reduce radon concentrations.
- Ultraviolet light is used as an additional guard to protect you against pathogens.

How Are These Sources Protected?

DEP has prepared a Source Water Assessment and Protection (SWAP) Report, which assesses the susceptibility of public water supplies. The key protection issues noted for Westford include the necessity for continued monitoring of roads and other non-water supply activities in Zone I areas and working with neighboring communities to protect the Zone IIs in the water supply protection area. A Zone I is defined as the protective radius required around a public water supply well or wellfield. For public water system wells with approved yields of 100,000 gallons per day or greater, the protective radius is 400 feet. Zone II means that area of an aquifer that contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at approved yield, with no recharge from precipitation). Susceptibility ratings of moderate to high were assigned to the Zone II protection areas for the Town wells. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of any hydrogeologic barriers (i.e. clay or bedrock), which can prevent contaminant migration. Westford was commended for working with the Highway Department to ensure that highway runoff is directed away from Zone IIs, acquiring land to protect the wells within Zone IIs, and working with schools to improve management of athletic field runoff. Outreach efforts are ongoing to increase public understanding of the hydrologic cycle, how pesticides and other contaminants can influence water supplies, organic lawn care, and ways residents can help protect our drinking water resources.

Where Can I See The SWAP Report?

The complete SWAP report is available at the Westford Water Department. For more information, contact Elaine Major at 978-399-2457.

III. SUBSTANCES FOUND IN DRINKING 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, 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*, such as synthetic and volatile organic chemicals, 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 the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, 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 and Massachusetts Department of Public Health 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 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).

IV. IMPORTANT DEFINITIONS

ppm = parts per million or milligrams per liter (mg/L)

ppb = parts per billion or micrograms per liter (µ/L)

pCi/L = picocuries per liter (a measure of radioactivity)

Nd = not detected

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 or expected risk to health. MRDLGs 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.

Massachusetts Office of Research and Standards Guideline (ORSG) – This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

Unregulated Contaminants – These are contaminants 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.

V. WATER QUALITY TESTING RESULTS

What Does This Data Represent?

The water quality information presented in the following tables is from testing in accordance with DEP regulations for 2004. Data shown were collected during the last calendar year unless otherwise noted.

Regulated Contaminants	Date(s) Collected	Highest Detect or *Highest Quarterly RAA	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganics							
Barium (ppm)	4-5-04	0.02	0 – 0.02	2	2	No	Discharge from metal refineries or drilling wastes
Fluoride (ppm)	4-5-04	0.72	0.5 – 0.72	4**	4	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (ppm)	4-5-04	1.8	0.99 – 1.8	10	10	No	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Volatile Organics							
Tetrachloroethylene (PCE) (ppb)	4-5-04	1.4	–	5	0	No	Discharge from factories and dry cleaners
Disinfection Contaminants							
Chlorine (ppm)	Monthly	0.379	0.18 – 0.59	4	4	No	Water additive used to control microbes

Haloacetic Acids (HAA5s) (ppb)	Quarterly	12.45*	10.38 – 13.99	60	----	No	Byproduct of drinking water disinfection
Total Trihalomethanes (TTHMs) (ppb)	Quarterly	36.63*	24.50 – 43.31	80	----	No	Byproduct of drinking water chlorination

* Highest RAA = highest running annual average of four consecutive quarters

** Fluoride also has a secondary contaminant level of 2 ppm.

	Date(s) Collected	90 TH percentile	Action Level	MCLG	No. Sites Sampled	Sites Above Action Level	Possible Source of Contamination
Lead (ppb)	4-4-04	2	15	0	31	0	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	4-4-04	0.52	1.3	1.3	31	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

Turbidity	Treatment Technique	Lowest Monthly % of Samples	Highest Detected Daily Value	Violation (Y/N)	Possible Source of Contamination
Daily Compliance (NTU)	1	----	0.8	No	Soil runoff. Turbidity has no health effects but it can interfere with disinfection and provide a medium for bacterial growth and indicate the presence of disease-causing organisms.
Monthly Compliance*	0.3	98	----	No	

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality.

*Monthly turbidity compliance is related to a specific treatment technique. Our system filters the water so at least 95% of our samples each month must be below the turbidity limits specified in the regulations.

Unregulated and Secondary Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source(s)
Perchlorate (ppb)	3-04 to 12-04	Nd – 3.9	2.42	----	1 ppb	Propellant for solid rocket fuel, blasting agents, missiles, and/or fireworks
Chloroform (ppb)	4-5-04	2.4-2.4	2.4	----	----	Trihalomethane; byproduct of drinking water chlorination
Bromoform (ppb)	4-5-04	1.6-2.2	1.9	----	----	Trihalomethane; byproduct of drinking water chlorination
Bromodichloromethane (ppb)	4-5-04	4.0-4.8	4.4	----	----	Trihalomethane; byproduct of drinking water chlorination
Chlorodibromomethane (ppb)	4-5-04	5.5-6.5	6.0	----	----	Trihalomethane; byproduct of drinking water chlorination
Sodium (ppm)	1-12-04, 4-5-04, 10-1-04	35.9 – 52.9	45.12	----	20	Natural sources; runoff from use as salt on roadways; by-product of treatment process
Sulfate (ppm)	1-12-04, 4-5-04, 10-1-04	8.9 – 19.4	13.78	250	----	Natural sources
Iron (ppm)	1-12-04, 4-5-04,	Nd – 0.05	0.027	0.3	----	Naturally occurring, corrosion of cast iron pipes

	10-1-04					
Manganese (ppm)	1-12-04, 4-5-04, 10-1-04	Nd - 0.02	0.005	0.05	----	Erosion of natural deposits

VI. COMPLIANCE WITH DRINKING WATER REGULATIONS

Does My Drinking Water Meet Current Health Standards?

We are committed to providing you with the best water quality available. However, last year we reported a drinking water violation on 21 July 2004 for perchlorate. Massachusetts DEP issued a notice requiring public water suppliers to sample and test for perchlorate beginning in March 2004. An interim guidance level of 1ppb was established by DEP. Sampling conducted in March and April 2004 did not detect perchlorate. However in July, perchlorate was detected at an average of 2.4ppb at the Nutting Road Treatment Facility. The violation was a result of perchlorate contamination at the Cote Well. The well was taken out of service as soon as the problem was identified to that particular location and no further violations were noted.

VII. EDUCATIONAL INFORMATION

Do I Need To Be Concerned About Certain Contaminants Detected In My Water?

Sodium- Sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of the sodium levels where exposures are being carefully controlled.

Perchlorate- Perchlorate may cause adverse effects on the thyroid gland. Sensitive individuals, such as women who are pregnant or nursing, infants, children under 12, or those with hypothyroidism should be aware of perchlorate levels in water and food sources that could contain perchlorate. If you have concerns about exposure to perchlorate please consult your physician.

VIII. ADDITIONAL INFORMATION

A **cross-connection program** is required to prevent drinking water contamination from unapproved sources. The purpose of the program is to prevent back siphoning of non-potable water (such as water from irrigation systems, sewers, drains, boilers, pools, etc.) into the public drinking water distribution system. Cross-connection and backflow information is provided at the annual open house. A cross-connection survey is done at least once a year.

Iron & Manganese Removal (oxidation and filtration)

Iron and manganese are often present in groundwater at levels that can discolor the water, or cause it to take on unpleasant odors or tastes. Iron and manganese are removed through a two-step process of oxidation and filtration. Oxidation is accomplished by adding chlorine and potassium permanganate to the water. This causes the iron and manganese to form tiny particles. Once this happens, the water passes through special filters consisting of material that is specifically designed to capture iron and manganese particles.

Primary Disinfection with MIOX (Chlorine with filtration)

All reservoirs and some ground water sources contain numerous microorganisms, some of which can cause people to become sick. To eliminate disease-carrying organisms, it is necessary to disinfect the water. Disinfection does not sterilize the water; it removes harmful organisms. The Westford Water Department uses MIOX generated sodium hypochlorite as its primary disinfectant. MIOX destroys organisms by penetrating cell walls and reacting with enzymes. When combined with proper filtration, disinfection with MIOX has been proven effective at ensuring that water is free of harmful organisms and safe to drink.

Corrosion Control Through pH Adjustment

Many drinking water sources in New England are naturally corrosive (i.e. they have a pH of less than 7.0). So, the water they supply has a tendency to corrode and dissolve the metal piping it flows through. This not only damages pipes but can also add harmful metals, such as lead and copper, to the water. For this reason it is beneficial to add chemicals that make the water neutral or slightly alkaline. We add potassium hydroxide to the water to adjust the water to a non-corrosive pH. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations at your tap.

Water Conservation and Protection Bylaws

The Town has a voluntary even/odd water conservation policy in effect every year from May 1 through October 31. Homeowners with even-numbered addresses water lawns even numbered days and those with odd-numbered addresses water on odd numbered days. The Town has also adopted water resource protection overlay districts in the Zoning Bylaws to ensure an adequate quality and quantity of drinking water for the residents, institutions, and businesses, and to preserve and protect drinking water supplies.

Westford Water Department
2004 Consumer Confidence Report

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