2010 Annual Drinking Water Quality Report
For
Town of Sterling Water Department
Sterling, Massachusetts
PWS ID # 2282000

This report includes water quality data for 2010. In 2011, as we continue to serve the residents of Sterling, our goal is to provide our customers with high quality drinking water that meets all state and federal standards for quality and safety. We have made significant investments in infrastructure repair and testing.
The Massachusetts Department of Environmental Protection (MassDEP) periodically inspects our water system for its technical, financial and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality of water available, the Sterling Water Department has two Massachusetts certified water operators who oversee the routine operations of the system.

I. PUBLIC WATER SYSTEM INFORMATION

Address: ***171 Worcester Road, Sterling, MA 01564-0537***

Contact Person: ***Paul Lyons, Water Operations Foreman***

Telephone #: ***978-422-6767*** **Fax #:** ***978-422-0168***

E-mail Address: ***plyons@sterlingdpw.com***

Internet Address: ***www.sterling-ma.gov/Pages/SterlingMA_DPW/water***

Where Does My Drinking Water Come From?

Your water is provided from six groundwater sources: Wells #2A, 2B and 2C are located at Pump Station 2 on Worcester Road/Rt. 12. Wells #3, 4, and 5 are located at the West Sterling Pump Station on Redemption Rock Trail. We also have three remote storage tanks to help maintain even pressure throughout the system. In emergencies, we have the ability to pull from Leominster or West Boylston.

Is My Water Treated?

To improve the quality of the water delivered to you, we treat it to remove several contaminants.

- *We disinfect the water system with ultraviolet light to keep it free of coliform bacteria and microorganisms. If for some reason the UV fails, we are equipped with a chlorine backup system.*
- *We chemically treat the water with potassium hydroxide to maintain pH and to reduce lead and copper concentrations.*

The Sterling Water Department and MassDEP help to determine the effectiveness of existing water treatment and constantly monitor the water quality of our system.

Water System Improvements

In 2010 various infrastructure maintenance and administrative tasks were performed. These included the cleaning and inspection of the Osgood Road and Kendall Hill Tanks, and a full leak detection survey. An Emergency Response Plan and a Standard Operating Procedure was developed and implemented.

II. SOURCE WATER PROTECTION

MassDEP has prepared a Source Water Assessment and Protection (SWAP) Report for the water supply sources serving this water system. A susceptibility ranking of **High** was assigned to this system using the information collected during the assessment by MassDEP. The Sterling Water Department also has an updated Source Water Protection Plan. Both documents are available at the Water Department office. The SWAP Report is also available online atwww.mass.gov/dep/water/drinking/2282000.pdf. Although it does not contain information specific to the new Worcester Road wells, it gives an overview of the source protection needs for that location.

What Are the Key Issues For Our Water Supplies?

The SWAP Report and Source Water Protection Plan identify the key issues for protecting the Zone I and Zone II areas around our wells from potential contamination. Sterling's Water Department has been commended by MassDEP for taking an active role in promoting source protection measures. Some threats in Zone II areas are: auto repair shop, gas stations, paint shop, recycling, and underground storage tanks. Stormwater runoff is always an issue. We must all remain vigilant in our efforts to control what ends up in stormwater before it enters our streams, lakes, and wetlands. Anything you put in the ground can possibly end up in the drinking water system.

To Improve Protection, the SWAP Report and Source Water Protection Plan recommends:

- *Removing all non-water supply activities from the Zone I, a 250- to 400-foot radius around each well.*
- *Storing pesticides, fertilizers, or road salt outside the Zone I.*
- *Keeping any new non-water supply activities out of the Zone I.*

Our Public Water System Plans to Address the Protection Recommendations by:

- *Educating residents on best management practices for protecting water supplies*
- *Promoting best management practices (BMPs) for stormwater management and pollution controls*

Residents Can Help Protect Sources by:

- *Practicing good septic system maintenance.*
- *Supporting water supply protection initiatives.*
- *Taking hazardous household chemicals to hazardous materials collection days.*
- *Limiting use of pesticides, fertilizers, and other household chemicals.*

III. SUBSTANCES THAT MAY BE FOUND IN DRINKING WATER

In order to ensure that tap water is safe to drink, MassDEP and the U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. 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).

The 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.

IV. 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.

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 sites sampled, 9 were at or below this level. This number is compared to the action level to determine compliance for lead and copper.

ND = not detected
ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (ug/l)
PCi/l = picocuries per liter (a measure of radioactivity)

Secondary Maximum Contaminant Level (SMCL) – These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

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 substances for which there are no established federal drinking water standards. The purpose of unregulated contaminant monitoring is to assist regulatory agencies in determining their occurrence in drinking water and whether future regulation is warranted.

V. WATER QUALITY TESTING RESULTS

The water quality results presented in the following tables are from 2010 or the most recent round of testing done in accordance with the drinking water regulations and our MassDEP sampling schedule. The Sterling Water Department also tested for volatile organic contaminants (VOCs) and synthetic organic contaminants (SOCs) in 2010 and had no detections.

In July 2010 there was a detection of total coliform in the distribution system and a detection of E.coli in the raw water in one well. As a result a boil water order was issued by the Mass DEP and all required action was taken.

We currently take 17 bacteria samples per month: nine routine samples within the distribution system, two samples at the plant tap, and six raw water samples.

Bacteria in 2010	Highest # Positive Samples in a Month	MCL	MCLG	Violation (Y/N)	Possible Sources
Total Coliform	12	1	0	Y	Naturally present in the environment
E. coli	1*	**	0	N	Human and animal fecal waste

* The Sterling Water Department detected E. coli in one source water sample. The sample was collected in response to a total coliform positive routine sample collected on July 19, 2010. More information about this situation is provided in the Compliance Section.

** Compliance with the fecal indicator/E.coli MCL is determined upon additional testing.

	Dates Collected	90th Percentile	Action Level (AL)	MCLG	# of Sites Sampled	# of Sites Above AL	Possible Sources
Lead (ppb)	9/09	10	15	0	40	1	Corrosion of household plumbing systems
Copper (ppm)	9/09	0.2	1.3	0	40	0	Corrosion of household plumbing systems

Regulated Contaminants	Dates Collected	Highest Detect	Range	Highest Source Average	MCL	MCLG	Violation (Y/N)	Possible Sources
Inorganic Contaminants								
Nitrate (ppm)	05/06/10	1.06	ND - 1.06	---	10	10	N	Runoff from fertilizer; leaching from septic tanks, natural deposits
Barium (ppm)	2/12/10	0.008	--	---	2	2	N	Erosion of natural deposits
Perchlorate (ppb)	Quarterly in 2010	1.69	ND - 1.69	6.2	2	0	N	Fireworks, blasting agents
Radioactive Contaminants								
Gross Alpha (pCi/l)	9/24/08 12/15/08	2.4	ND - 2.4	1.65	15	0	N	Erosion of natural deposits
Radium 226 & 228 combined (pCi/L)	9/24/08 12/15/08	0.98	0.3 - 0.98	0.89	5	0	N	Decay of natural and manmade deposits

Unregulated and Secondary Contaminants	Dates Collected	Highest Detect	Average	SMCL	ORSG	Possible Sources
Sodium (ppm)	02/12/10	9.2	--	--	20	Natural sources; runoff from roadway salt; by-product of treatment process
Sulfate (ppm)	02/12/10	7.1	--	250	----	Natural sources
Iron (ppb)	05/06/10	1800	350	300	---	Naturally occurring; corrosion of cast iron pipes
Manganese (ppb)	05/06/10	50	36	50	---	Erosion of natural deposits
Radon (pCi/l)	6/08	1500	1333	---	10,000	Natural sources

VI. COMPLIANCE WITH DRINKING WATER REGULATIONS

The Sterling Water Department received a Notice of Noncompliance (NON) from MassDEP for violating the maximum contaminant level for total coliform bacteria in July 2010 and for failure to take some of the required repeat samples. Under special raw water monitoring required by EPA's Groundwater Rule, we detected E. coli in one sample, which led to a boil order, which was issued on July 21. Our response to the bacteria problem included removing the affected well from service, chlorinating the affected portion of the distribution system, notifying the public, and conducting repeat sampling to confirm the problem had been corrected.

The Water Department staff has worked hard under the direction of dedicated leadership to return the department to compliance in all areas in order to ensure your water meets all MassDEP regulations.

VII. EDUCATIONAL INFORMATION

Vulnerable Populations: 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).

Lead: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Sterling Water Department is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Manganese: The EPA has established a lifetime health advisory (HA) value of 300 ppb for manganese to protect against concerns of potential neurological effects, and a one-day and 10-day HA of 1000 ppb for acute exposure. However, it is advised that for infants younger than 6 months, the HA of 300 ppb be used even for an acute exposure of 10 days.

Perchlorate: This inorganic contaminant interferes with the normal function of the thyroid and thus has the potential to affect growth and development, causing brain damage and other adverse affects, particularly in fetuses and infants. Pregnant women, the fetus, infants, children up to the age of 12, and people with hypothyroid condition are particularly susceptible to perchlorate toxicity.

Radon: Radon is an odorless, tasteless gas that occurs naturally from the breakdown of uranium in soil. Radon can move up through the ground and into a home through cracks in the foundation. It can also get into indoor air when released from tap water. The current guidance for radon in drinking water in Massachusetts is 10,000 picocuries per liter (pCi/l). Typically this would result in an increase of 1 pCi/l to the air inside the home. US EPA currently advises people to take action of the total level of radon in their household air is above 4 pCi/l. Breathing in radon gas over a long period of time can increase your risk of getting lung cancer. Drinking tap water containing high amounts of radon may increase your chances of developing stomach cancer. For more information about radon, contact the EPA at 1-800-767-RADON.

VIII. ADDITIONAL INFORMATION

Cross Connection Control Program

A cross connection is a connection between a potable water source and a non-drinkable source.

The Sterling Water Department implements a cross connection control program for all industrial, commercial, municipal and institutional facilities. We have a certified backflow device tester and cross connection surveyor on our staff, and all surveying and testing is performed in accordance with the cross connection section (310 CMR 22.22) of the Massachusetts Drinking Water Regulations. In the near future we plan to implement testing of all residential irrigation systems.

Residents should be aware that pollution can come from their own homes through residential cross connections. For instance, if you were planning to spray fertilizer on your lawn, you might hook up your hose to the sprayer that contains the fertilizer. If the water pressure were to drop because of a water main break or fire hydrant use in town, the fertilizer could be sucked back into the drinking water pipes through the hose. Using an attachment on your hose called a backflow prevention device can prevent this problem.

The Sterling Water Department recommends that homeowners install backflow prevention devices, such as low-cost hose bib vacuum breakers, for all inside and outside hose connections. You can purchase them at a hardware or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system in our town.

Water Conservation

We have a mandatory water ban in effect beginning on May 1st and ending on September 30th, so we ask everyone to please conserve water.

Financial Outlook

The department was downsized which yielded a reduction in the budget by approximately six percent despite the increase in costs for Potassium Hydroxide (KOH) and testing. We will continue to do as much as we can to make sure our operations are as cost-effective as possible while ensuring compliance with all state and federal requirements for safe drinking water.

Opportunities for Public Participation

If you would like to participate in discussions regarding your water quality, you may attend the regular Board of Public Works meetings. These meetings occur on the second and fourth Tuesdays of each month at the Department of Public Works, 171 Worcester Road, Sterling MA. The public is welcome. Additional copies of this report are available on request.