

2009 Annual Drinking Water Quality Report

For

Merrimac Water Department

Merrimac, Massachusetts

MASSDEP PWSID # 3180000

This report is a snapshot of drinking water quality that we provided last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards. We are committed to providing you with information because informed customers are our best allies.

I. PUBLIC WATER SYSTEM INFORMATION

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Water System Improvements

Our water system is routinely inspected by the Massachusetts Department of Environmental Protection (MassDEP). MassDEP inspects our 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, your water system is operated by a Massachusetts certified operator who oversees the routine operations of our system. As part of our ongoing commitment to you, last year we made the following improvements to our system: We are scheduling the rehabilitation of both water storage tanks. We have also installed equipment to more accurately monitor our chemical usage. We also updated our Emergency Response Plan and other small corrective actions. We did not have any deficiencies initiating an enforcement violation.

Opportunities for Public Participation

If you would like to participate in discussions regarding your water quality, you may attend the following meetings or educational events: *Public Power Week / First week in October.*

2. YOUR DRINKING WATER SOURCE

Where Does My Drinking Water Come From?

Your water is provided by the following sources listed below:

Source Name	MassDEP Source ID#	Source Type	Location of Source
East Main st.	3180000-04G	Groundwater	Wallacw way
Bear Hill Wells	3180000-02G	Groundwater	Sargent's Pit

Is My Water Treated?

Our water system makes 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.

[Examples]

- We add Potassium Hydroxide for PH adjustment
- We filter the water to remove small particles and organisms such as sediment, algae and bacteria.
- We add Ortho Phosphate for corrosion control.

- We add Sodium Hypochlorite for disinfection.
- We add Potassium Permanganate as an oxidizer, for iron and manganese removal.

The water quality of our system is constantly monitored by us and MassDEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.

How Are These Sources Protected?

Our water sources are restricted by gate access to authorized personnel only.

MassDEP has prepared a Source Water Assessment Program (SWAP) Report for the water supply source(s) serving this water system. The SWAP Report assesses the susceptibility of public water supplies.

What is My System's Ranking?

A susceptibility ranking of *moderate* was assigned to this system using the information collected during the assessment by MassDEP.

Residents can help protect sources by:

{Examples}

- *Practicing good septic system maintenance*
- *Supporting water supply protection initiatives at the next town meeting*
- *Taking hazardous household chemicals to hazardous materials collection days*
- *Contacting the water department or Board of Health to volunteer for monitoring or education outreach to schools*
- *Limiting pesticide and fertilizer use, etc.*

3. SUBSTANCES FOUND IN TAP 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, 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.

In order to ensure that tap water is safe to drink, the Department of Environmental Protection (MassDEP) 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 (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).

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganic Contaminants							
Nitrate (ppm)	4/09/2009	0.47	0.23-0.47	10	10	n	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Perchlorate	ND			2	N/A	n	Rocket propellants, fireworks, munitions, flares, blasting agents
Volatile Organic Contaminants							
Benzene (ppb)	ND			5	0	n	Discharge from factories; leaching from gas storage tanks and landfills
Carbon tetrachloride (ppb)	ND			5	0	n	Discharge from chemical plants and other industrial activities
o-Dichlorobenzene (ppb)	ND			600	600	n	Discharge from industrial chemical factories
1,2-Dichloroethane (ppb)	ND			5	0	n	Discharge from industrial chemical factories
1,1-Dichloroethylene (ppb)	ND			7	7	n	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene (ppb)	ND			70	70	n	Breakdown product of trichloroethylene and tetrachloroethylene
trans-1,2-Dichloroethylene (ppb)	ND			100	100	n	Discharge from industrial chemical factories
Dichloromethane (ppb)	ND			5	0	n	Discharge from pharmaceutical and chemical factories
1,2-Dichloropropane (ppb)	ND			5	0	n	Discharge from industrial chemical factories
Ethylbenzene (ppb)	ND			700	700	n	Leaks and spills from gasoline and petroleum storage tanks
Styrene (ppb)	ND			100	100	n	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene (PCE) (ppb)	ND			5	0	n	Discharge from factories and dry cleaners; residual of vinyl-lined water mains
1,2,4-Trichlorobenzene (ppb)	ND			70	70	n	Discharge from textile-finishing factories
1,1,1-Trichloroethane (ppb)	ND			200	200	n	Discharge from use in septic system cleaners
1,1,2-Trichloroethane (ppb)	ND			5	3	n	Discharge from industrial chemical factories
Trichloroethylene (TCE) (ppb)	ND			5	0	n	Discharge from metal degreasing sites and other factories
Toluene (ppm)	ND			1	1	n	Leaks and spills from gasoline and petroleum storage tanks; discharge from petroleum factories

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).

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 Merrimac 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>.

4. 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.

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. MRDLG's 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.

ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (ug/l)
ppt = parts per trillion, or nanograms per liter
pCi/l = picocuries per liter (a measure of radioactivity)
NTU = Nephelometric Turbidity Units
ND = Not Detected
N/A = Not Applicable
mrem/year = milliremms per year (a measure of radiation absorbed by the body)

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.

5. WATER QUALITY TESTING RESULTS

What Does This Data Represent?

The water quality information presented in the table(s) is from the most recent round of testing done in accordance with the regulations. All data shown was collected during the last calendar year unless otherwise noted in the table(s).

	Date(s) Collected	90 th percentile	Action Level	MCLG	# of sites sampled	# of sites above Action Level	Possible Source of Contamination
Lead (ppb)	n/a	n/a	15	0	n/a	n/a	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	06/18/09 8/03/09 to 8/07/09	0.28	1.3	1.3		none	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

* Compliance with the fecal coliform/*E. coli* MCL is determined upon additional repeat test

Bacteria Testing:

The Merrimac Water department collected bacteria samples at (7) sites that are representative of the distribution system and pre-approved by DEP. We are also required to sample both pumping stations. During the entire year, Merrimac had one sample test positive for Coliform bacteria. But upon resampling, the second sample tested negative.

	Highest # Positive in a month	MCL	MCLG	Violation (Y/N)	Possible Source of Contamination
Total Coliform	1	1	0	N	Naturally present in the environment
Fecal Coliform or <i>E. coli</i>	0	*	0		Human and animal fecal waste

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Vinyl Chloride (ppb)	ND			2	0	n	Leaching from PVC piping; discharge from plastics factories
Xylenes (ppm)	ND			10	10	n	Leaks and spills from gasoline and petroleum storage tanks; discharge from petroleum factories; discharge from chemical factories
Regulated Contaminant	Date(s) Collected	Highest Running Average	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Disinfection By-Products							
Total Trihalomethanes (TTHMs) (ppb)	8/13/09	17	11-22	80	-----	n	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5) (ppb)	8/13/09	4.2	1.8-6.6	60	-----	n	Byproduct of drinking water disinfection
Chlorine (ppm) (free, total or combined)	Monthly	.75	.44-.85	4	4	n	Water additive used to control microbes

6. COMPLIANCE WITH DRINKING WATER REGS

Does My Drinking Water Meet Current Health Standards?

Our water system and MassDEP monitor and record the effectiveness of actions taken in response to contaminant violations. The health effect statement for this contaminant is listed below.

We are committed to providing you with the best water quality available. We are proud to report that last year your drinking water met all applicable health standards regulated by the state and federal government.

Health Effects Statements

Total Coliform: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.