

2011 Annual Drinking Water Quality Report
 For
Merrimac Water Department
Merrimac, Massachusetts
DEP 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

Address: 10 W Main St

Contact Person: Gary Tuck

Telephone #: 1-978-346-8311

Fax #: 1-978-346-8312

Internet Address: gtuck@townofmerrimac.com

Water System Improvements

Our water system is routinely inspected by the Department of Environmental Protection (DEP). The DEP 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 operations of our system. As part of our ongoing commitment to you, last year we started to make the following improvements to our system: We finalized the Bear Hill pumping station upgrade for better efficiency and performance. We also started the process for the rehabilitation of both water storage tanks. And we are designing water booster pumps to address the low pressure areas in the distribution system.

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

II. YOUR DRINKING WATER SOURCE

Where Does My Drinking Water Come From?

Your water is provided by the following sources listed below: Your drinking water comes from two sources. The first source is the Bear Hill Rd. well field at Sargent Pit which consist of 6 individual wells, the second source is the Wallace Way well field which consist of four 8" wells. Both sources are ground water.

Source Name	DEP Source ID#	Source Type	Location of Source
East Main St.	3180000-04G	Groundwater	Wallace 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.

- We add Potassium Hydroxide for PH adjustment.
- We add Potassium Permanganate as an oxidizer to remove iron and manganese.
- We add Ortho Phosphate for corrosion control.
- We add Sodium Hydroxide for disinfection.
- We filter the water at Wallace way to remove iron and manganese.

The water quality of our system is constantly monitored by us and the DEP 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. The Department of Environmental Protection (DEP) 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 the DEP.

Where Can I See The SWAP Report?

The complete SWAP report is available at the water department and online at www.state.ma.us/dep/brp/dws/. For more information, call the Merrimac Water Department at 978-346-8311.

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, 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 (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 (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).

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

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.

Variations and Exemptions – State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

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.

V. WATER QUALITY TESTING RESULTS

What Does This Data Represent?

The water quality information presented in the table(s) are 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).

Regulated Contaminant	Date(s) Collected	Highest Detect	Range Detected	Highest Average	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganic Contaminants								
Antimony (ppb)	5/05/2011	ND	ND	ND	6	6	N	Discharge from fire retardants; ceramics; electronics; solder
Arsenic (ppb)	5/05/2011	ND	ND	ND	10	-----	N	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium (ppm)	5/05/2011	ND	ND	ND	2	2	N	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium	5/05/2011	ND	ND	ND	4	4	N	Discharge from electrical, aerospace, and defense industries; erosion of natural deposits

Regulated Contaminant	Date(s) Collected	Highest Detect	Range Detected	Highest Average	MCL of MRDL	MCLG of MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Cadmium (ppb)	5/05/2011	ND	ND	ND	5	5	N	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (ppb)	5/05/2011	ND	ND	ND	100	100	N	Discharge from pulp mills; erosion of natural deposits
Cyanide (ppb)	5/05/2011	ND	ND	ND	200	200	N	Discharge from metal factories; discharge from plastic and fertilizer factories
Fluoride (ppm) ■	5/05/2011	ND	ND	ND	4	4	N	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Mercury (ppb)	5/05/2011	ND	ND	ND	2	2	N	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Nitrate (ppm)	5/05/2011	.35	.23-.35	.29	10	10	N	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Nitrite (ppm)	5/05/2011	ND	ND	ND	1	1	N	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Selenium (ppb)	5/05/2011	ND	ND	ND	50	50	N	Discharge from metal refineries; erosion of natural deposits; discharge from mines
Thallium (ppb)	5/05/2011	ND	ND	ND	2	0.5	N	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
Volatile Organic Contaminants								
Benzene (ppb)	5/05/2011	ND	ND	ND	5	0	N	Discharge from factories; leaching from gas storage tanks and landfills
Carbon tetrachloride (ppb)	5/05/2011	ND	ND	ND	5	0	N	Discharge from chemical plants and other industrial activities
o-Dichlorobenzene (ppb)	5/05/2011	ND	ND	ND	600	600	N	Discharge from industrial chemical factories
p-Dichlorobenzene (ppb)	5/05/2011	ND	ND	ND	5	5	N	Discharge from industrial chemical factories
1,2-Dichloroethane (ppb)	5/05/2011	ND	ND	ND	5	0	N	Discharge from industrial chemical factories

Regulated Contaminant	Date(s) Collected	Highest Detect	Range Detected	Highest Average	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
1,1-Dichloroethylene (ppb)	5/05/2011	ND	ND	ND	7	7	N	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene (ppb)	5/05/2011	ND	ND	ND	70	70	N	Breakdown product of trichloroethylene and tetrachloroethylene
trans-1,2-Dichloroethylene (ppb)	5/05/2011	ND	ND	ND	100	100	N	Discharge from industrial chemical factories
Dichloromethane (ppb)	5/05/2011	ND	ND	ND	5	0	N	Discharge from pharmaceutical and chemical factories
1,2-Dichloropropane (ppb)	5/05/2011	ND	ND	ND	5	0	N	Discharge from industrial chemical factories
Ethylbenzene (ppb)	5/05/2011	ND	ND	ND	700	700	N	Leaks and spills from gasoline and petroleum storage tanks
Styrene (ppb)	5/05/2011	ND	ND	ND	100	100	N	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene (PCE) (ppb)	5/05/2011	ND	ND	ND	5	0	N	Discharge from factories and dry cleaners; residual of vinyl-lined water mains
1,2,4-Trichlorobenzene (ppb)	5/05/2011	ND	ND	ND	70	70	N	Discharge from textile-finishing factories
1,1,1-Trichloroethane (ppb)	5/05/2011	ND	ND	ND	200	200	N	Discharge from use in septic system cleaners
1,1,2-Trichloroethane (ppb)	5/05/2011	ND	ND	ND	5	3	N	Discharge from industrial chemical factories
Trichloroethylene (TCE) (ppb)	5/05/2011	ND	ND	ND	5	0	N	Discharge from metal degreasing sites and other factories
Toluene (ppm)	5/05/2011	ND	ND	ND	1	1	N	Leaks and spills from gasoline and petroleum storage tanks; discharge from petroleum factories
Xylenes (ppm)	5/05/2011	ND	ND	ND	10	10	N	Leaks and spills from gasoline and petroleum storage tanks; discharge from petroleum factories; discharge from chemical factories
Disinfection By-Products								
Total Trihalomethanes (TTHMs) (ppb)	5/05/2011	43	34-43	39	80	-----	N	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5) (ppb)	5/05/2011	47	27-47	37	60	-----	N	Byproduct of drinking water disinfection

Unregulated contaminants are those for which there are no established 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.

Unregulated Contaminant	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
Inorganic Contaminants						
Sodium (ppm)	5/05/2011	20-29	25	----	20	Natural sources; runoff from use as salt on roadways; by-product of treatment process
Nickel (ppm)	5/05/2011	ND	ND	----	0.1	Discharge from industrial processes
Organic Contaminants						
Perchlorate (ppb)	7/27/2011	ND	ND	---	1	Rocket propellants, fireworks, munitions, flares, blasting agents

Secondary Contaminant	Date(s) Collected	Result or Range Detected	SMCL	Possible Source
Iron (ppm)	5/05/2011	ND	0.3	Naturally occurring, corrosion of cast iron pipes
Manganese (ppm)	5/05/2011	ND	0.05*	Erosion of natural deposits
Aluminum (ppm)	5/05/2011	ND	0.2	Byproduct of treatment process
Chloride (ppm)	5/05/2011	24-78	250	Runoff from road de-icing, use of inorganic fertilizers, landfill leachates, septic tank effluents, animal feeds, industrial effluents, irrigation drainage, and seawater intrusion in coastal areas
Color (C.U.)	5/05/2011	ND	15	Naturally occurring organic material
Copper (ppm)	5/05/2011	.022-.061	1	Naturally occurring organic material
Odor (T.O.N.)	5/05/2011	1	3 TON	Erosion of natural deposits; Leaching from wood preservatives ⁰
pH	5/05/2011	6.7-6.8	6.5-8.5	----
Silver (ppm)	5/05/2011	ND	0.10	Erosion of natural deposits
Total Dissolved Solids (TDS) (ppm)	5/05/2011	150-230	500	Erosion of natural deposits.
Zinc (ppm)	5/05/2011	ND	5	Erosion of natural deposits, leaching from plumbing materials

* The EPA has established a lifetime health advisory (HA) value of 0.3 mg/L for manganese to protect against concerns of potential neurological effects, and a One-day and 10-day HA of 1 mg/L for acute exposure.

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. We are proud to report that last year your drinking water met all applicable health standards regulated by the state and federal government.

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.