

## Important Definitions

**Maximum Contaminant Level (MCL):** the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to MCLG's 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. MCLG's 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, when exceeded, triggers treatment or other requirements which a system must follow.

**90<sup>th</sup> Percentile:** Out of every 10 homes sampled, 9 were at or below this level.

**Variance and Exemption:** State or EPA permission not to meet an MCL or 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)

**PCi/l** (picocuries per liter): a measure of radioactivity

**NTU:** Nephelometric Turbidity Units

**ND:** None Detected

**N/A:** Not Applicable

**BDL:** below detectable limit

**mg/L:** milligrams per liter

**mrem/year** (millirems 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 (ORS):** 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.

**Turbidity:** a measure of suspended matter. Turbidity is monitored because it is a good indicator of water quality. High turbidity can hinder the effectiveness of disinfectants. The .65 NTU shown is the highest level recorded during the year.

04/2013

# WATER QUALITY REPORT FOR THE YEAR OF 2016 BERNARDSTON FIRE & WATER DISTRICT



## Public Water System Information

Bernardston's water system is routinely inspected by the Massachusetts Department of Environmental Protection (MassDEP) for NMH's technical, financial, and managerial capacity to provide safe drinking water. To ensure provision of the highest quality of water available, the water system is operated by a Massachusetts-certified operator who oversees the routine operations of the system.

**Bernardston Fire & Water District,  
P.O. Box 176,  
Bernardston,  
MA 01337**

Registered public water supply No.1029000  
Contact Person: William Pachalis 413-648-9088

## Bernardston's Supply Sources

### Your Drinking Water Source

**Where does your drinking water come from?** The source of your drinking water comes from two wells. The Pratt well (well #4) located off Barton Road on the Greenfield and Bernardston Town line that currently is not in use while awaiting approval from the DEP but could be brought on line if there was an emergency. This is a 69-foot gravel packed well with a pump rate of about 450 gallons a minute. The water is primarily pumped to a 500,000-gallon concrete storage tank located on Fox Hill. The second well (well #3) is the Sugarhouse well located off Burke Flat Road near the Fall River. This is 87 foot gravel packed well with an output of about 500 gallons a minute, pumping primarily to a concrete storage tank on Huckel Hill. Typically the well water (raw) is of a pH of about 5.8 before treatment. At the pump house the water is treated with potassium hydroxide to raise the pH, reducing the corrosiveness and minimizing dissolving of metals from household plumbing. The water is pumped through the water mains and any water that is not being used within the system flows into the storage tanks. Water from the Pratt well flows mainly to the Fox Hill storage tank due to its proximity and the Sugarhouse well to the Huckel Hill storage tank for the same reason but water can be pumped from either well to either tank in case of a problem or pump replacement. The water flows from the storage tanks by gravity when the well pumps are not running and into your home. Bernardston water is of very good quality and little treatment is needed.

In 2001 the Massachusetts DEP performed a Source Water Assessment of the Bernardston Fire and Water Districts wells looking at potential sources of contamination, and the vulnerability of the water supply. Both wells are located in unconfined aquifers. Wells located in these geological conditions are considered to have a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

If you have any questions or if you would like a copy of the Source Water Assessment please contact Bill Pachalis at (413) 648 9210 or the water district office at (413) 648-9088. Copies of the Source Water Assessment can also be obtained at:

<http://www.mass.gov/dep/water/drinking/swapreps.htm>

## 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 materials and can pick up substances resulting from the presence of animals or from human activities. 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 the water poses a health risk. Types of contaminants may 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 include synthetic and volatile organic chemicals that 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 be the result of oil and gas production, and mining activities.
- Lead, if present, are primarily from materials and components associated with service lines and home plumbing. The BF&WD is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When water has been sitting for several hours, the potential for lead exposure can be minimized by flushing the tap for 30 seconds to two minutes before using water for drinking or cooking. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Information on lead in drinking water, testing methods, and steps to take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

More information about contaminants and their potential health effects can be obtained by calling the Environmental Protection Agency (EPA) Safe Drinking Water Hotline (800-426-4791).

## What's a Cross-connection?

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (Boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand) causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices are installed and maintained. For more information review the Cross-Connection Control Manual from the U.S. EPA's Web site <http://water.epa.gov/infrastructure/drinkingwater/pws/crossconnectioncontrol/index.cfm>. You can also call the Safe Drinking Water Hotline at (800) 426-4791.

The Bernardston Fire & Water District is responsible for providing high-quality drinking water and monitors the water for many contaminants. To ensure that tap water is safe to drink, the Department of Environmental Protection (DEP) and the U.S. Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health regulations also establish limits for contaminants in bottled water thus providing the same protection for public health.

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 Safe Drinking Water Hotline (800-426-4791).

### Pratt Well

The New Pratt well has not been approved to go on line yet. We are still awaiting approval from MASSDEP and hope to have it on line this summer.

## DRINKING WATER VIOLATIONS

**The Bernardston Fire & Water District was in violation of the Lead & Copper Rule having 2 houses out of 10 exceed the action level of 15 mg/L**

## Water Quality Testing Results

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).

Regulated Contaminant	Date(s) Collected	Highest Result	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
<b>Inorganic Contaminants</b>							
Nitrate (ppm) well # 2 Pratt	5/9/2013	0.52	N/A	10	10	N	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Nitrate (ppm) well # 3 Sugarhouse	4/11/2016	0.50	N/A	10	10	N	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Total Coliform	Monthly	Absent	N/A	Absent	0	Y	Naturally present in the environment
	Monthly	Absent					
Fecal Coliform or E.coli	Monthly	0	N/A	*	0	N	Human and animal fecal waste
	Monthly	0					
Perchlorate well #2 (ug/L)	8/27/2013	1.74	N/A	2.0	0	N	Rocket propellants, fireworks, munitions, flares, blasting agents.
Perchlorate well #3 (ug/L)	7/11/2016	0					

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

Lead and copper are reported as the "90th Percentile". Ten locations were sampled and 90% of the results for lead were 1.0, well below the action level of 0.015

	Date(s) Collected	90 <sup>TH</sup> percentile	Action Level	MCLG	# of sites sampled	# of sites above Action Level	Possible Source of Contamination
Lead (ppb)	8/8/2016	0.31	15	0	10	2	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	8/17/2017	0.16	1.3	1.3	10	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

**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 and Secondary Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
<b>Inorganic Contaminants</b>						
Sodium (ppm) Well # 2 Pratt	4/27/2011	2.5	N/A	----	20	Natural sources; runoff from use as salt on roadways; by-product of treatment process
Sodium (ppm) Well # 3 Sugarhouse	5/9/2014	36	N/A	----	20	Natural sources; runoff from use as salt on roadways; by-product of treatment process