



**2017 Annual Drinking  
Water Quality Report  
For  
Water Division-  
Ayer Department of  
Public Works  
Ayer, Massachusetts  
MADEP PWSID # 2019000**

**The Town of Ayer DPW-Water Division is proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2017.** Over the years, the Ayer DPW has dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

For questions regarding your drinking water, call Mark Wetzel, P.E. -Superintendent of Public Works or Rick Linde - Water Department Foreman, at (978) 772-8240.

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.

**Copies of this can be found at Ayer Town Hall, the Nashoba Board of Health Ayer Public Library, and the Ayer DPW office.**



## **Where Does My Drinking Water Come From?**

The Town of Ayer is supplied by two groundwater supply sources: the Spectacle Pond Wells (PWS ID #2019000-04G and #2019000-05G) and three Grove Pond Wells (PWS ID #2019000-06G, #07G and #08G). The Spectacle Pond well site is located in the northeast section of the distribution system near the border of Littleton and Ayer. The Grove Pond well site is located near the southern border of Ayer off Barnum Road. Each well site consists of two gravel packed wells and a water filtration facility for the removal of iron and manganese. The treated water is pumped into the distribution system and stored in the water tanks behind Page Hilltop School and on top of Pingry Hill.

## **How Are These Sources Protected?**

A Source Water Assessment Plan (SWAP) was completed in 2002 and is available at our office. This plan is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area, and a determination of the water supply's susceptibility to contamination by the identified potential sources. According to the SWAP, our water system had a susceptibility rating of 'high' due to the presence of high-threat land use within the water supply protection areas.

Residents can help protect sources by:

- 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 DPW or Board of Health if you see illegal dumping of waste
- Limiting pesticide and fertilizer use, etc.

If you would like to review the SWAP, the complete SWAP report is available at DPW Office at 25 Brook Street and online at <http://www.ayer.ma.us/water-department> . For more information, call the DPW at 978-772-8240.



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.

#### WHY YOUR WATER IS SAFE – WATER TREATMENT



Clean, fresh water is what you expect when you take a drink of water, and that's what the Ayer DPW delivers

right to your tap. Part of the reason that the water quality is so good is that we treat the water to remove iron and manganese minerals. Iron and manganese are present in our groundwater supplies at levels that can



discolor the water, or cause it to take on unpleasant odors or tastes. While the water is still safe to drink, it is preferable that the iron and manganese be removed. At both well sites the water is treated using oxidation followed by greensand filtration. Oxidation is accomplished by adding sodium hypochlorite (chlorine) and potassium permanganate to the water. This causes the iron and manganese to form tiny particles that are filtered out through greensand media. Over time, the filters become clogged and require cleaning using a backwash process. Our system also uses potassium hydroxide for pH adjustment and sodium hypochlorite for disinfection.

#### 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 (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).

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).

## 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.

## What Does This Data Represent?

The water quality information presented in the tables 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 tables.

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state allows us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. MassDEP has reduced the monitoring requirements for volatile organic contaminants, inorganic contaminants, synthetic organic contaminants because Ayer's sources are not at risk of contamination.

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
<b>Inorganic / Organic Contaminants</b>							
Arsenic (ppb)	Quarterly 2017	3	0 - 3	10	----	<b>N</b>	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Manganese (ppm)	Quarterly 2017	0.083	0.005 – 0.083	--	0.05	<b>N</b>	Naturally occurring mineral in New England groundwater
Perchlorate (ppb)	Sept. 2017	ND	ND	2	N/A	<b>N</b>	Rocket propellants, fireworks, munitions, flares, blasting agents
Volatile Organic Contaminants (ppb)	Sept. 2017	ND	ND	Varies	0	<b>N</b>	Discharge from factories; leaching from gas storage tanks and landfills, chemical plants and other industrial activities
<b>Disinfectants and Disinfection By-Products</b>							
Total Trihalomethane (TTHMs) (ppb)	Sept. 2017	7.08	7.08 – 8.93	80	----	<b>N</b>	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5) (ppb)	Sept. 2017	ND	ND	60	----	<b>N</b>	Byproduct of drinking water disinfection
Chlorine (ppm)	Monthly 2017	0.034	0.02-0.13	4	4	<b>N</b>	Water additive used to control microbes
Chloroform (ppb)	Sept. 2017	3.73	1.8-3.73	*	----	<b>N</b>	Byproduct of drinking water chlorination (*regulated collectively with total TTHM's; in non-chlorinated sources, chloroform may be naturally occurring)

## Revised Total Coliform Rule (RTCR)

The RTCR establishes a maximum contaminant level (MCL) for E. coli and uses E. coli and total coliform to initiate a “find and fix” approach to address fecal contamination that could enter into the distribution system. It requires public water systems (PWS) to perform assessments to identify sanitary defects and subsequently take action to correct them.

*Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct a Level 1 assessment to identify any problems that were found during these assessments.*

**A Level 1 assessment** is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

**A Level 2 assessment** is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.



The following definitions relate to terms used in the report or the contaminants reported in the water quality tables:

**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 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

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

**NTU** = Nephelometric Turbidity Units

**ND** = Not Detected

**N/A** = Not Applicable

**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.



**Drink Local and Be Green!** Tap water is delivered straight to your home without trucking or plastic waste. Bottled water produces over 10,000 times the amount of greenhouse gases as tap water. Our local water supply uses high efficiency pumping systems and we buy electricity from a local solar farm.

### WATER SYSTEM PROJECTS

The Ayer DPW- Water Division has many recently completed, ongoing and upcoming water system projects, including additional supplies, treatment improvements, water main upgrades and a new water storage tank. Many of these projects require engineering, permitting, bidding and construction by qualified contractors. This can take several years! Some of our projects are:

**Sandy Pond Road / Wright Road Water Main** – A new water main was installed from Sandy Pond Road to Wright Road. This eliminates the long dead end on Wright Road, improves water quality and fire protection. The water main was installed using the directional drill method, eliminating the need to drive construction equipment through the wetlands.

**Water Filter Evaluation** - The Grove Pond Water Treatment Plant was under performing on removing the iron and manganese from the water. The DPW hired a filtration expert to examine the filters and media. It was determined that the treatment media needed special chemical regeneration. This was completed and the treatment plant is performing as required.

**Devens Interconnection on Barnum Road** design was completed and will be constructed this summer. This interconnection will allow Ayer to get water from Devens in case of an emergency.

**Spectacle Pond No. 2 Replacement Well** was completed and is in service. This increases the supply from this well from about 0.5 million gallons per day (MGD) to 1 MGD.

**Replaced Water Services on Snake Hill Road.** There were 9 customers on Snake Hill Road that were served off of an old cast iron pipe. The customers suffered extremely rusty water. In order to correct this problem, the DPW hired a contractor to replace the water services and connect them to the newer water main in the street.

**Water Main Improvements are planned** to replace the 100 to 120 year old pipes in the water system. Projects are selected based on the pipe condition, water quality issues and the roadway re-paving schedule. We are currently constructing a new water main on Pearl Street and designing projects on Williams, Holmes and High Streets. We are also seeking a grant for replacing the pipes on Prospect Street and Oak Street.

**ALWAYS!**  
Use Water Wisely



Ayer implements water use restrictions every summer. These restrictions limit the time of day and the days of the week that you can water outdoors. These restrictions have been implemented in order to protect our resources. It is important that these conservation efforts continue.

### Cut Out And Conserve

More tips are available at [MWRACom](http://MWRACom).

#### ▷ Indoor Tips ◁



**Install** low-flow aerators on your faucets. You'll save 1 to 5 gallons per minute.

**Fix** that leaky toilet. You'll save 50 gallons a day or more.



**Replace** your washing machine with a high-efficiency model. You'll use 30 to 50% less water.



**Never** use your toilet as a wastebasket. You'll save 1 to 2 gallons per flush (and you'll save your pipes).



**Fix** that leaky faucet. Worn-out washers can waste hundreds of gallons per week.



#### ▷ Outdoor Tips ◁

**Water** your lawn overnight or before 5 am. Mid-day watering will result in evaporation.



**Aerate** your soil in the spring and fall. This will aid water absorption and retention.



**One** inch of water a week is plenty. After heavy rains, you may not need to water for 10 to 14 days.



**Raise** the mower blade to 2 or 3 inches or more. Longer grass retains moisture and competes better against weeds.



**Use** mulch in your flower beds. Mulch will keep roots cool and moist and reduce weeds.



**With all the News** about lead in drinking water, you may have some concerns about the safety of your tap water. Ayer samples 40 locations in town twice a year for lead in customer's water. We had one violation (1 ppb over the Action Limit) in 2012 and have since made improvements to optimize our water treatment.

## WHAT YOU NEED TO KNOW ABOUT LEAD IN TAP WATER

Ayer's water is lead free when it leaves the treatment plants. Our water pipes that carry the water to your house are made mostly of iron and steel and do not add lead to the water. However, lead can get into tap water through pipes in your home, lead solder used in plumbing, and some brass fixtures. Corrosion or wearing away of lead-based materials can add lead to tap water, especially if water sits for a long time in the pipes before it is used.

Ayer adds potassium hydroxide to the water to increase the pH and make the water less corrosive, thereby reducing the leaching of lead into drinking water.



## AYER WATER MEETS LEAD STANDARD IN 2017

Under EPA rules, each year the Water Division must test tap water in a sample of homes that are likely to have high levels. These are usually homes with lead solder plumbing. The EPA rule requires that 9 out of 10, or 90%, of the sampled homes must have lead levels below the Action Level of 15 parts per billion (ppb).

Results for the 40 samples taken in July and August 2017 are shown in the table. Only 1 out of the 40 samples were over the lead action level of 15 ppb and none were over the copper action level. The Ayer DPW continues to optimize our water treatment to reduce lead and copper levels in the Town's water.

	Date(s) Collected	90 <sup>TH</sup> percentile	Action Level	MCLG	# of sites sampled	# of sites above Action Level	Possible Source of Contamination
Lead (ppm)	July & August. 2017	0.009	0.015	0.00	40	1	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	July & August. 2017	0.69	1.3	1.3	40	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

## IMPORTANT

Information from EPA about lead



If present, elevated levels of lead can cause serious health problems, especially for unborn babies and young children.

Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Ayer is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. If your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap water 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 at 1-800-426-4791 or [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## What Can I Do To Reduce Exposure To Lead in Drinking Water?

Let the water run before using: fresh water is better than stale! To save water, fill a pitcher with fresh water and place in the refrigerator for future use.



Any time water has gone unused for more than 6 hours, run each faucet used for drinking or cooking until after the water becomes cold.

Never use hot water from the faucet for drinking or cooking, especially when making baby formula or other food for infants.

Check your plumbing fixtures to see if they are lead-free. Read the labels closely.

Remove loose lead solder and debris. Every few months remove the aerator from each faucet in your home and flush the pipes for 3-5 minutes.

Be careful of places you may find lead in or near your home. Paint, soil, dust and some pottery may contain lead.



Call the Department of Public Health at 800-532-9571 or EPA at 800-424-LEAD for health information.

## Lead Testing In Schools



Starting in 2016, the Ayer DPW and the Ayer Shirley Regional School District in coordination with DEP, provided no-cost lab analysis and technical assistance for the District schools in Ayer.



The results are available on the DEP website —[www.mass.gov/dep](http://www.mass.gov/dep) (search for lead in schools). Some results also may be available through your local community website, DPW, or school department. The High School had no lead in the water, however Page Hilltop showed lead over the action level at 2/3rds of the sample sites. The DPW and ASRSD are working together to correct this problem.

## PER AND POLYFLUOROALKYL SUBSTANCES (PFAS)

PFAS contaminants are included under the EPA UCMR3 unregulated contaminant monitoring rule. Unregulated contaminants are those 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. The EPA has established health advisories for (HA) for two of these unregulated compounds (PFOA & PFOS) at 70 ppt (combined). The Health Advisories for both PFOA and PFOS are based on similar developmental effects and are numerically identical; when these two chemicals co-occur at the same time and location in a drinking water source, a conservative and health-protective approach that EPA recommends would be to compare the sum of the concentrations ([PFOA] + [PFOS]) to the HA (70 ppt).

Although we are not required by EPA to routinely monitor for PFAS, we began sampling for PFAS in September 2016. All of our PFAS test results for our treated water were below the EPA advisory level, including our last sample that was taken on March 7, 2018.

Based on additional information about PFAS, and out of an abundance of caution, MassDEP has adopted an ORSG guideline for five of these unregulated compounds (PFOA, PFOS, PFHpA, PFHxS, PFNA) at 70 ppt (combined). On March 21, 2018 our water system notified consumers of this development and that the elevated source was removed from service in February 2018. Refer to MassDEP Fact Sheet - PFAS in Drinking Water at: <https://www.mass.gov/lists/contaminants#pfas-per-and-polyfluoroalkyl-substances-including-pfos-and-pfoa->

The Town appropriated \$4.2 million at Spring Town meeting to construct treatment to remove these chemicals from our water. The DPW has begun the design of this treatment system and will have it on line in late 2019.

More information on the potential health effects of these chemicals can be found at: <https://www.atsdr.cdc.gov/pfas/index.html>. EPA also provides additional information for several of these chemicals. See: [https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories\\_pfoa\\_pfos\\_updated\\_5.31.16.pdf](https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf)

Unregulated Contaminants	Year Sampled	Range Detected	Average	ORSG or Health Advisory	Possible Source of Contamination
Perfluoroheptanoic acid (PFOA) (ppt)	2017	10-16	65 (2 combined)	70*** (combined)	Breakdown product of stain- and grease-proof coatings on food packaging, couches, carpets.
Perfluorooctanoic acid (PFOS) (ppt)	2017	25-45			Used in the process of making Teflon and similar chemicals, firefighting foams, cleaners, cosmetics, greases and lubricants, paints, polishes, adhesives and photographic films.
Perfluoroheptanoic acid (PFHpA) (ppt)	2017	9-21	132 (5 combined)		Industrial processes, including stain resistant and moisture repelling coatings, firefighting foams, cosmetics, lubricants, and synthesis of some polymeric materials.
Perfluorohexanesulfonic acid (PFHxS) (ppt)	2017	16-23			Industrial processes, including stain resistant and moisture repelling coatings, firefighting foams, cosmetics, lubricants, and synthesis of some polymeric materials.
Perfluorononanoic acid (PFNA) (ppt)	2017	0			Industrial processes, including stain resistant and moisture repelling coatings, firefighting foams, cosmetics, lubricants, and synthesis of some polymeric materials.
Perfluorobutanesulfonic acid (PFBS) (ppt)	2017	0	6.6	--	Used as surfactants, to make fluoropolymers and as water and stain protective coatings for carpets, paper and textiles.



**We Take Customer Concerns Seriously** Every call is investigated to ensure that there are no problems with the water supply. Most complaints are related to discolored water, which is usually related to local construction or hydrant use. If you have a question or concern, please call the DPW at 978-772-8240.

### INFORMATION ABOUT CROSS CONNECTIONS

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 (back-siphonage).

#### Typical Residential Cross-Connections

- ◆ Hose Bibs
- ◆ Lawn Irrigation
- ◆ Jacuzzis
- ◆ Swimming Pools
- ◆ Toilet Ball-cocks



Outside water taps and garden hoses tend to be the most common sources of cross-connection 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 at

<http://water.epa.gov/Infrastructure/drinkingwater/pws/crossconnectioncontrol/index.cfm>. You can also call the Safe Drinking Water Hotline at (800) 426-4791.

### Has your Water Meter Been Updated?

The Ayer Department of Public Works is installing new water meters and Automatic Meter Reading (AMR) devices for more accurate and efficient water meter reading. We have completed about 80% of the meter replacements. If you have not had a new meter and outside reading device installed, we need your cooperation. Meters will be installed at no cost to the customer.

To perform the installation, an Ayer Water Division Technician must access your water meter. In most cases the installation can be completed within 60 minutes. All Water Customers need to have the radio transmitter device installed and/or their water meter replaced. PLEASE CALL the Ayer DPW Office 978-772-8240 to schedule an appointment.



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