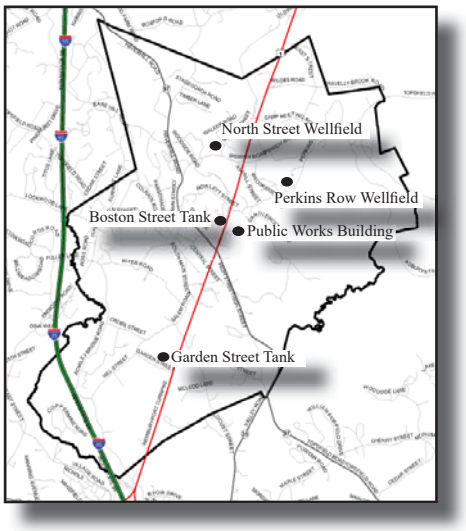
Town of Topsfield
2017 Water Quality Report

The Quality of Your Drinking Water

The Topsfield Water Department (PWS ID# 3298000) is committed to providing our customers with high quality drinking water that meets or surpasses state and federal standards for quality and safety. To ensure delivery of a quality product, we have made significant investments in treatment facilities, water quality monitoring and the distribution system. We are pleased to report the results of our calendar year 2017 water testing to inform you about your drinking water. Each year, we will be mailing you information about water quality. Results of more recent testing is available at http://watertesting.topsfieldpublicworks.org



Topsfield's Water System

Our water system is supplied by two groundwater well fields and pumping stations located at North Street (3298000-01G) and Perkins Row (3298000-02G). The system has two water storage tanks and approximately 50 miles of water main piping.

Any Questions?

Want to know more about the Topsfield water supply system or interested in participating in the decision making-process? Please call Greg Krom, Superintendent, at the Topsfield Water Department at (978) 887-1517 with any questions, comments or concerns. We are located at the Public Works Facility, 279 Boston Street. You can also email us at water@topsfield-ma.gov or visit our website: www.topsfieldpublicworks.org. Customers are encouraged to attend and participate in the Board of Water Commissioners meetings which occur the 2nd Wednesday of every month at the Public Works Facility. If you would like to receive email notifications about water supply events such as hydrant flushing, water bans or water quality topics then please visit our website to subscribe to our email list.

Topsfield's Water Treatment

In order to meet state and federal requirements for public drinking water, our source water receives treatment before it is supplied to our customers. We treat our water for corrosion control, disinfection, sequestration and fluoridation.

Many drinking water sources in New England are naturally corrosive. So, the water they supply has a tendency to corrode and dissolve the metal piping it flows through. This not only damages pipes but can also add harmful metals, such as lead and copper, to the water. For this reason it is beneficial to add chemicals that make the water neutral or slightly alkaline. This is done by adding one, or a combination of several, approved chemicals. The Topsfield Water Department adds potassium hydroxide to its water. This adjusts the water to a non-corrosive pH. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations.

All reservoirs and some groundwater sources contain numerous microorganisms, some of which can cause people to become sick. To eliminate disease-carrying organisms, it is necessary to disinfect the water. Disinfection does not sterilize the water; it removes harmful organisms. Sterilization is too costly and kills all organisms, even though most are not harmful. The Topsfield Water Department uses sodium hypochlorite as its primary disinfectant. Chlorine destroys organisms by penetrating cell walls and reacting with enzymes. Disinfection with chlorine has been proven effective at ensuring that water is free of harmful organisms and safe to drink.

Iron and Manganese are often present in groundwater at levels that can discolor the water, or cause it to take on an unpleasant odor or taste. Even though the water may still be safe to drink, treatment is often desirable. Treatment consists of adding a orthophosphate/polyphosphate blend to the water. This results in a chemical reaction, known as sequestration, which prevents the iron and manganese from forming nuisance particles. All chemicals used for sequestration are approved for water treatment by one of the following organizations: National Sanitation Foundation (Now known as NSF International) or UL, both accredited by the American National Standards Institute (ANSI). Chemicals must also meet standards established by the American Water Works Association (AWWA).

In addition, fluoride is added to the water to promote strong, healthy teeth.

Water System Improvements

Our water system is routinely inspected by the Massachusetts Department of Environmental Protection (DEP). The DEP inspects our system for 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 investments in our system:

- The Town approved funding for the construction of a water treatment facility to correct long-standing water quality issues. The plant is currently under construction and is expected to be online in late winter or early spring 2019.
- The funding for the replacement of water mains on Prospect Street and most of River Road was approved at the Annual Town Meeting held in May 2017. Construction of this project is underway and is expected to be completed by mid-July.
- Several towns including Topsfield, Hamilton, Wenham, Middleton and Danvers received a second Sustainable Water Management Initiative grant from the Massachusetts Department of Environmental Protection. This grant builds on the study completed with last year's grant and examines water management and supply alternatives for the Ipswich River Basin including regional water sharing options and when/how water from outside the basin will be obtained.

The Substances Found in Your Tap Water

In order to ensure that tap water is safe to drink, EPA, and MasDEP prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. FDA and Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

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 land's surface or through the ground, it dissolves naturally-occurring minerals and radioactive material, and can be polluted by animals or 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 distribution, mining, or 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, whichare byproducts 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.

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).

Is Our Water Safe for Everyone?

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).

Help To Protect Our Water Supply!

The Department of Environmental Protection (DEP) has prepared a Source Water Assessment Program (SWAP) Report for our water supply sources. The SWAP report assesses the susceptibility of public water supplies. A copy of the SWAP report is available at the Public Works Facility. Our SWAP report has indicated that our groundwater is highly susceptible to contamination from residential activities adjacent to the wells; residential land uses; accidental spills from local roadways and Route 1; hazardous materials storage; existing contamination sites; auto repair shops and service stations; cemeteries; and agricultural activities. As a consumer, you have an impact on the quality of our water supply sources, and therefore, the quality of the water you drink. The land around our groundwater wells is mainly forested and residential with lesser amounts zoned as commercial. When rain falls or snow melts, the seemingly small amounts of chemicals and other pollutants around your property may be transferred by groundwater or overland flow to the wells.

Concerns about Lead in Drinking Water

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 Topsfield 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 the water for drinking or cooking. If you are concerned about lead in you 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.

Concerns about Manganese in Drinking Water

Manganese is a naturally occuring mineral found in rocks, soil and groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet, but can have undesirable effects on certain sensitive populations at elevated concentrations. The United States Environmental Protection Agency (EPA) and MassDEP have set and an aesthetics-based Secondary Contaminant Level (SMCL) for manganese at 50 micrograms per Liter (ug/L), or 50 parts per billion (ppb), and health advisory levels. In addition, EPA and MassDEP have also established public health advisory levels.

Drinking water may naturally have manganese and, when concentrations are greater than 50 ug/L, the water may be discolored and taste bad. Over a lifetime, EPA recommends that people drink water with manganese levels less than 300 ug/L and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ug/L, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 300 ug/L, nor should formula for infants be made with that water for longer than 10 days.

The ORSG differs from EPA's health advisory becuase it expands the age group to which a lower manganese concentration applies from children less than six months of age to children up to one year of age to address concerns about children's susceptibility to manganese toxicity. See EPA Drinking Water Health Advisory for manganese at https://www.epa.gov/sites/production/files/2014-09/documents/support_ccl_manganese_dwreport_0.pdf and MassDEP (Office of Research and Standards (ORSG) for manganese http://www.mass.gov/eea/agencies/massdep/water/drinking/leand-and-other-contaminants-in-drinking-water.html

Water Quality Summary

Listed below are the contaminants that were detected in Topsfield's drinking water or were detected in prior years and were not retested during 2017. ***The presence of contaminants does not necessarily indicate that the water poses a health risk.*** A complete listing of all tests conducted is available at visit *http://watertesting.topsfieldpublicworks.org*.

Samples Collected from Our Sources								
Substance	**Units**	**Highest Level Detected**	**Range Detected**	**Highest Level Allowed (EPA's MCLs)**	**Ideal Goals**	**OSRG**	**Possible Sources of Contaminant**	**Health Effects**
INORGANIC CHEMICALS								
Barium	ppm	0.0626	0.0377 - 0.0629	2	2	-	Erosion of natural deposits; runoff from orchards	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
Copper	ppm	0.0025	0.0024 - 0.0025	1.3	-	-	Erosion of natural deposits,	Please see Copper entry in Samples Taken From Your Faucets below.
Lead [1]	ppb	ND	ND			-	Erosion of natural deposits.	Please see Lead entry in Samples Taken From Your Faucets below.
Nitrate	ppm	1.58	1.46 - 1.58	10	10	-	Runoff from fertilizer use; leaching from septic systems; erosion of natural deposits.	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Strontium [1]	ppb	130	86-130			1500	Naturally-occuring element; historically commercial use of strontium has been in the faceplate glass of cathode ray tube televisions to block x-ray emissions	Consuming high levels of strontium in drinking water could interere with bone growth, especially in children and in indifiduals whose diet is low in calcium and protein.
RADIONUCLIDES								
Alpha Emitters [1]	pCi/L	0.963	0.647 - 0.963	15	0	-	Erosion of natural deposits	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years have an increased risk of getting cancer.
Combined Radium	pCi/L	1.199	1.199 - 1.818	5	0	-	Erosion of natural deposits	Some people who drink water containing Radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
UNREGULATED CONTAMINANTS								
Substance	**Units**	**Range Detected**		**Average Detected**	**Suggested MCL**	**Health Advisory**	**Possible Sources of Contaminant**	**Health Effects**
Chlorate [1]	ppb	23 - 82		52.5	210		Agricultural defoliant or desicant; disinfection byproduct; and used in production of chlorine dioxide	People exposed to high concentrations of chlorate in drinking water could experience effects on the thyroid, blood, and kidneys. Because it inhibits thyroid iodide uptake, people deficient in dietary iodide are most at risk of chlorate's thyroid effects, which in turn could impact fetal and neonatal development.
Manganese [2,4]	ppb	13 - 308		167	50	300	Erosion of natural deposits	Infants and children who drink water containing manganese at high concentrations may have learning and behavior problems. People with liver disease who drink water containing manganese at high concentrations may have neurological disorders.
Sodium [2,3]	ppm	34.4 - 42		38.2	20	-	Naturally present in the environment	Some people who drink water containing sodium at high concentrations for many years could experience an increase in blood pressure.
Sulfate [1]	ppm	20.9 - 21.7		21.3	250	-	Natural sources	Some people who drink water containing sulfate at high concentrations fo rmay years coud experience diarrhea.

Samples Collected from Your Faucets							
Substance	**Units**	**Highest Level Detected**	**Range Detected**	**Highest Level Allowed (EPA's MCLs)**	**Ideal Goals (EPA's MCLGs)**	**Possible Sources of Contaminant**	**Health Effects**
MICROBIOLOGY							
Total Coliform Bacteria (Highest number detected per month)		ND	ND	1	0	Naturally present in the environment	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.
Fecal Coliform Bacteria (Highest number detected per month)		ND	ND	0	0	Human and animal fecal waste	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and the people with severely compromised immune systems.
INORGANIC CHEMICALS							
Fluoride	ppm	0.9	0.5 - 0.9	4 (MRDL)	4	Water additive which promotes strong teeth.	Some people who drink water containing fluoride in excess of the MCL over may years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.
DISINFECTION BY-PRODUCTS							
TTHMs - Total Tri-Halomethanes	ppb	26.3	24.3 - 26.6	80	-	By-product of drinking water chlorination.	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
Haloacetic Acids (HAA5)	ppb	2.99	ND - 2.99	60	-		Some people who drink water containing haloacetic acids in excess of the MCL over may years may have an increased risk of getting cancer.
DISINFECTANT							
Substance	**Units**	**Highest Quarterly Average**	**Range Detected**	**MRDL**	**MRDLG**	**Possible Sources of Contaminant**	**Health Effects**
Free Chlorine	mg/L	0.17	0.01 - 0.52	4	4	Water additive to inactivate harmful organisms.	Some people who use water containng chlorine well in excess of the MRDL could experience irritating effects in their eyes and nose.
LEAD & COPPER							
Substance	**Units**	**90th Percentile**	**Range Detected**	**Action Level (EPA's MCLs)**	**Ideal Goals (EPA's MCLGs)**	**Possible Sources of Contaminant**	**Health Effects**
Copper (0 samples exceeded action level)	ppm	0.137	0.0308 - 0.26	1.3	1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over may years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
Lead (0 sample exceeded action level)	ppb	1.7	ND - 3.1	15	0	Corrosion of household plumbing systems; Erosion of natural deposits.	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning disabilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Definitions

Maximum Contaminant Level (MCL) - This is 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 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 teh use of disinfectants to control microbial contaminants.

Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.

90th Percentile - Out of every 10 homes sampled, 9 were at or below this level.

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.

ppm - One part of contaminant per million parts of water.
ppb - One part of contaminant per billion parts of water.
UR - Unregulated contaminant

ND - Substance not detected in the sample
pCi/L - Picocuries per liter is a measure of the radioactivity in water.

Notes:

1. The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.
2. 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.
3. The Massachusetts Office of Research and Standards has set a guideline of 20 ppm for sodium.
4. EPA has established a lifetime health advisory (HA) 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.

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Monitoring Requirements Not Met for Topsfield Water Department

Our water system violated a drinking water regulation during March 2018. Even though this was not emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During March of this year we did not test for Total Coliform Bacteria at our water sources and therefore cannot be sure of the quality of our drinking water during that time.

What should I do?

There is nothing you need to do at this time.

The table below lists the contaminants we did not properly test for during March 2018, how often we are supposed to sample for Total Coliform and how many samples we are supposed to take, how many samples we took, when samples should have been taken, and the date on which follow-up samples were taken.

Contaminant	Required sampling frequency	Number of samples taken	When all should have been taken	When samples were taken
Total Coliform Bacteria (water sources)	1 raw & 1 finished water samples from each source every month	0	March 2018	May 2018
Total Coliform Bacteria (distribution system)	8 samples every month	8	March 2018	March 2018

What happened? What is being done?

Source water samples are typically taken on the second Tuesday of each month but the lab was closed on this day during March 2018. The samples should have been taken later in the month but were missed. We have since added the ability to schedule samples using our water testing website and will be sent reminders when samples should be taken (day prior and day of) and will receive notifications if any samples are missed or are incomplete.

Routine distribution system bacteria samples were collected during March 2018. Total Coliform Bacteria was not detected in the distribution system during March 2018 nor the follow-up source water samples taken in May 2018. For more information, please contact Gregory Krom, Water Superintendent, at (978) 887-1517, gkrom@topsfield-ma.gov. or at Topsfield Water Department, 279 Boston Street, Topsfield, MA 01983.

This notice is being sent to you by the Topsfield Water Department, PWS ID# 3298000.

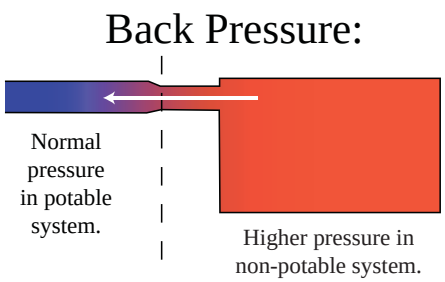
June 15, 2018

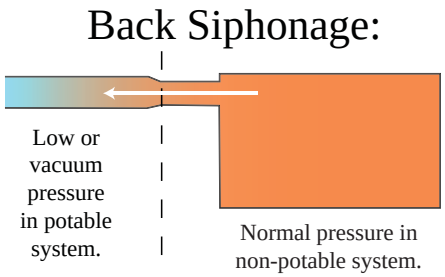
Topsfield Water Department
Cross Connection Control Program

The Topsfield Water Department makes every effort to ensure that the water delivered to your home and business is clean and safe. Our staff works very hard to protect the quality of the water delivered to our customers from the time the water is extracted from the wells until it exits the distribution system. But what happens when the water reaches your home or business? Is there still a need to protect the water quality from contamination caused by a cross-connection? If so, how?

What is a cross-connection?
A cross-connection occurs whenever the drinking water supply is or could be in contact with potential sources of pollution or contamination. Cross-connections exist in piping arrangements or equipment that allows the drinking water to come in contact with non-potable liquids, solids or gases (hazardous to humans), or unapproved water sources such as a private wells. Contaminated water can be drawn into the potable water system during a backflow event.

What is a backflow?
Backflow is the undesired reversal of water flow in the drinking water distribution lines. This backward flow of water can occur when the pressure created by equipment or system such as a boiler or air-conditioning unit is higher than the water pressure inside the water distribution line (backpressure), or when the pressure in the distribution line drops due to routine occurrences such as water main breaks or heavy water demand causing the water to flow backward inside the water distribution system (backsiphonage). Backflow is a problem that many water consumers are unaware of, a problem that each and every water customer has a responsibility to help prevent.





What can I do to help prevent a cross-connection?
Without the proper protection something as simple as a garden hose has the potential to contaminate or pollute the drinking water lines in your house. In fact over half of the country's cross-connection incidents involve unprotected garden hoses. There are very simple steps that you as a drinking water user can take to prevent such hazards. They are:

- NEVER submerge a hose in soapy water buckets, pet watering containers, pool, tubs, sinks, drains or chemicals.
- NEVER attached a hose to a garden sprayer without the proper backflow preventer.
- Buy and install a hose bibb vacuum breaker on any threaded water fixture. The installation can be as easy as attaching a garden hose to a spigot. This inexpensive device is available at most hardware stores and home-improvement centers.
- Identify and be aware of potential cross-connections to your water line.
- Buy appliances and equipment with a backflow preventer
- Buy and install backflow prevention devices or assemblies for all high and moderate hazard connections.

If you are the owner or manager of a property that is being used as a commercial, industrial or institutional facility you must have your property's plumbing system surveyed for cross-connections by a licensed cross connection control surveyor. If your *non-residential property* has not been surveyed for cross-connection contact the Topsfield Water Department to schedule a free cross-connection survey.

Why am I receiving this information?
The Massachusetts Drinking Water Regulations, 310 CMR 22.00, requires all public water systems to have an approved and fully implemented Cross Connection Control Program (CCCP). The Topsfield Water Department is working to protect the public health of its drinking water customers from the hazards posed by unprotected cross-connections through the implementation of its cross-connection control program. Providing customers with information about cross connections, including the publication of this brochure, is a required component of our cross connection control plan.

Where can I learn more?
More information about our program can be found on our website, www.topsfieldpublicworks.org, or by contacting Greg Krom at (978) 887-1517 or gkrom@topsfieldpublicworks.org.