



TOWN OF STURBRIDGE

2019 DRINKING WATER QUALITY REPORT

Conservation and protection of our land's water supply is essential for health, agriculture, industry, and development. We must strive to ensure our drinking water remains pure and plentiful. Knowledge about how, where, and why we should protect and conserve our drinking water is contained within this report.

Contacts

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New England Waterworks

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EPA Safe Drinking Water

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Sturbridge Water Department

Public Water System #2287000

2019 Water Quality Report



Dear Customer,

We are pleased to present you with a Water Quality Report of the water provided to you during 2019. The Safe Drinking Water Act (SDWA) requires that utilities issue an annual "Consumer Confidence Report" (CCR) to customers in addition to other notices that may be required by law. Contained in this report is information about where your water is drawn from, how it is processed, and how to protect it. The CCR also provides helpful definitions and information about detected contaminants, compliance with Massachusetts Department of Environmental Protection (MassDEP) drinking water regulations, and residential cross-connection control. The Sturbridge Water Department, operated and maintained by Veolia, is committed to providing you with the safest drinking water possible in quantities sufficient to meet your demands. Any questions pertaining to this report or other water related issues can be directed to Veolia's Project Manager for Sturbridge, Shane Moody, at (508) 347-2513 or shane.moody@veolia.com.



We encourage public interest and participation in our community's decisions affecting drinking water. Regular Selectmen's meetings are typically scheduled for Monday evenings at 6:30 PM at the Sturbridge Town Hall. The public is welcome. The Selectmen's meeting schedule and agendas can be found online at www.town.sturbridge.ma.us.

2019 Overview

We are proud to report that last year your drinking water met all applicable health standards regulated by the state and federal government. Sturbridge's drinking water comes from four separate gravel-packed wells. The Source ID Numbers are 2287000-01G, 2287000-03G, 2287000-04G, and 2287000-05G, for Wells #1, #3, #4, and #5, respectively. Water from these four wells is pumped to and treated at the Sturbridge water filtration plants. As part of the process, chemicals are added to aid filtration, disinfection, and corrosion control. Adjusting the pH of the water helps to prevent lead, copper, and other metals from leaching into the water from plumbing and water mains. Sodium hypochlorite (chlorine bleach) is used for disinfection purposes. Finally, fluoride is added for dental health.

Water from Wells #1, #3, and #5 is treated at the Iron Removal Plant (IRP). This facility uses greensand filtration to remove iron and manganese from the water. In addition to the sodium hypochlorite used at the wells, the IRP has an ultra violet (UV) disinfection system. This is used for enhanced disinfection and is required in order to comply with Surface Water Treatment Rule standards. A treatment technique called blending is utilized to achieve compliance with perchlorate levels in the water.

Water from Well #4 (2287000-04G) is treated at its own separate treatment facility, which was constructed in 2011. This plant is similar to the IRP in both its filtration technique and chemical treatment. This new, more modern treatment plant has full computer control and monitoring of flows, pressures, and chemical dosing, as well as integrated alarms.

From these facilities, treated water is pumped into 28 miles of water transmission mains and into three water storage tanks. Two of the tanks hold 390,000 gallons of potable water each, while the largest holds 1.5 million gallons. This gives the water system a combined storage capacity of 2.3 million gallons, which represents about three days of normal water usage. The tank closest to the water plant is located on top of Stallion Hill. The other two tanks are located on Whittemore Road and on Church Street. In 2019, the water plants produced an average of 484,751 gallons per day (GPD) for the Town of Sturbridge, for an annual total of 176.934 million gallons. There are about 1,727 service connections to the system and more than 268 fire hydrants.

Important Definitions

Maximum Contaminant Level (MCL): The highest level of a contaminant 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: The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.



Level 2 Assessment: 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.

90th Percentile: Out of every 10 homes, nine were at or below this level.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant 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 below which there is no known expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Unregulated Contaminants: These contaminants are substances without MCLs for which the Environmental Protection Agency (EPA) requires monitoring but has not yet established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted. For some of these substances, the Massachusetts Office of Research and Standards (ORS) has developed state guidelines or secondary MCLs.

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.

Non-Detect (ND): This indicates that the contaminant is either not present or is below the test equipment's detection limit.

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)

Health Information

To ensure that tap water is safe to drink, the EPA and MassDEP prescribe 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 (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

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 at (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 infants, can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The EPA/Center 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 at (800) 426-4791.

Sources of Drinking Water and Drinking Water Contaminants

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 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, that 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, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

Organic chemical contaminants, including 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, which can be naturally occurring or be the result of oil and gas production and mining activities.



Water Use Restrictions

Voluntary Water Ban - As of 10/1/19, the Town of Sturbridge is in a voluntary water ban as an effort to conserve water. It is requested that odd numbered services may water lawns on odd numbered days and even numbered services may water lawns on even numbered days. It is also requested that no lawn watering take place between 9 AM and 5 PM.

Mandatory Water Ban - To meet the **Water Management Act** permit (9P2-2-09-287 01 Quinebaug River Basin) issued by MassDEP, the Sturbridge Water Department is required to enter into a mandatory water ban when the flow rate at the USGS Quinebaug River Gauge Station near Southbridge #01123600 falls below a specified setpoint for three consecutive days. This setpoint is **87 cubic feet per second (cfs)** (May 1st - June 30th) and **37 cfs** (July 1st - Sept 30th). You can view this flow rate and historical data online at: http://waterdata.usgs.gov/ma/nwis/uv/?site_no=01123600&PARAMeter_cd=00065,00060.

If and when the flow rate falls below the trigger conditions, the following water use restrictions will be in effect and will be enforced to comply with the Town's Water Management Act permit issued by MassDEP. Once implemented, the restrictions shall remain in place until stream flow at the gauge meets or exceeds the trigger stream flow for seven consecutive days.

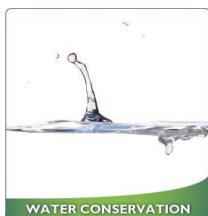
The Water Department will set up signs on Route 20, Route 131, and major entrances into town when the water ban is in effect in order to notify town residents.

1. These rules apply from May 1st until September 30th.
2. Non-essential outside water use is not allowed, **except** that sprinklers may be used for lawn watering outside of the hours of 9 AM to 5 PM one (1) day a week. Non-essential water use is defined as water use that is not required: **A.** for health or safety reasons, **B.** by regulation, **C.** for production of food and fiber, **D.** for the maintenance of livestock, or **E.** to meet core functions of a business. Examples of non-essential use are irrigation of lawns, washing of exterior buildings surfaces, parking lots, driveways, or sidewalks unless it is to apply paint, preservatives, stucco, pavement, or cement. Acceptable outside examples are irrigation to establish a new lawn during the months of May and September, irrigation for production of food and fiber or the maintenance of livestock, and irrigation by plant nurseries as necessary to maintain stock. The irrigation of public parks and recreational fields shall follow the same restrictions.

Lawn sprinklers are very popular, and many people have installed underground automatic systems. While this can be positive, it can also create serious problems if not installed properly. Any landscaping company will tell you that the best time to water your lawn is in the early morning or during the evening. Watering your lawn during the day wastes water due to the evaporation that occurs. Some experts say that as much as 50% of the water will evaporate before it soaks into the ground on a hot, sunny day. Please cooperate with these rules.

Violators will be subject to the following:

- 1st Offense: written warning with a list of rules on the warning
- 2nd Offense: \$50.00 fine
- 3rd Offense: \$250.00 fine
- 4th Offense: \$750.00 fine
- Subsequent Offenses: \$750.00 fine for each offense and possible court action



Water conservation is an important way to protect our drinking water by ensuring that we don't diminish our resources. As much as 97% of the world's water is saltwater, leaving 3% freshwater, two-thirds of which is stored as icecaps or glaciers. This leaves us 1% of the world's freshwater for drinking. Needless to say, water conservation will help us sustain this precious 1%. Here are a few ways to help out: water your lawn only when it needs it. Step on your grass – if it springs back when you lift your foot, it doesn't need water. This can **save 750 - 1,500 gallons** per month. Turn off the water while brushing your teeth. This can **save three gallons** per day. Set lawn mower blades one notch higher than normal. Longer grass means less evaporation. This can **save 500 - 1,500 gallons** per month. Put a layer of mulch around trees and plants. This can **save 750 - 1500 gallons** per month.

Source Protection

Protecting our drinking water is crucial, whether it's from pollution – such as rain runoff and improper disposal of hazardous materials – or cross-connections and water loss due to leaks from plumbing fixtures or corroded pipes. MassDEP has written a Source Water Assessment and Protection (SWAP) Report for the Town of Sturbridge's water system. This includes potential contamination sources near the three source wells. This report assesses the susceptibility of the water system to contamination threats. Sturbridge was given a rating of "high" susceptibility due to land uses in the area. These land uses include gas stations, furniture refinishing, underground storage tanks, chemical manufacturing, and hazardous material storage, which is the most significant. This information can be found in the SWAP report along with all other possible threats and their rankings. It is important to understand that a release may never occur from the potential source of contamination, provided facilities are using best management practices (BMPs). If BMPs are in place, the actual risk may be lower than the threat ranking. Many potential sources of contamination are regulated at the federal, state, and/or local levels to reduce this risk. A Sturbridge Zoning Bylaw aids in this by prohibiting earth removal within six (6) feet of historical high groundwater levels. A map of these boundaries can be obtained from the Town Clerk.

The SWAP report for Sturbridge can be viewed at the Sturbridge Water Department's main office or online at <https://www.mass.gov/doc/central-region-source-water-assessment-protection-swap-program-reports-0/download>. For more information, call Shane Moody, Veolia's Project Manager for the Sturbridge Water Department, at (508) 347-2513 or shane.moody@veolia.com.

Sump Pumps and Cross-Connections

In 2020, the Sturbridge Water and Sewer Departments will be conducting random inspections for illegal sump pump connections tied into the sewer collection system. It is **illegal** to pump basement sumps into the collection system. Illegal connections can overwhelm the wastewater treatment plant in times of heavy rain.

Massachusetts drinking water regulations state that an approved public water supply may not be connected to an unapproved supply, such as a private well. Such a connection is considered an **illegal cross-connection**. Therefore, a residence may receive water either from a public water supply, or a well, but not both (unless there are two separate piping systems within the residence).

A cross-connection is an **actual or potential** link between the potable water supply and a source of contamination (e.g. sewage, chemicals, gas, etc.). A cross-connection can be a temporary or permanent direct connection, bypass arrangement, jumper connection, submerged inlet, removable section, swivel, or change-over device, etc., that could connect a potable system to a non-potable source. Ideally, it is best not to have any cross-connections, but in certain situations they are unavoidable. When an installation requires a cross-connection, it must be properly protected with an acceptable backflow prevention assembly or device to eliminate any potential for a reverse flow back into the potable water supply. An unprotected cross-connection threatens the health and safety of individuals and may contaminate food or beverage products utilizing water from that system.

Residents should be aware that pollution can come from their own homes. For example, if you decide to fertilize your lawn with a spray fertilizer that attaches to your garden hose and the water pressure drops (e.g. because of fire hydrant use in town at that same time), the fertilizer may be inadvertently drawn back into the drinking water pipes in your own home and possibly into the water mains themselves. The simplest way for Sturbridge residents to help protect our water supply is to attach a vacuum breaker to all inside and outside hose connections (see right). These can be purchased at local hardware stores for a few dollars and will help ensure safe drinking water for everyone!



2019 Drinking Water Quality Test Results

In 2019, the Sturbridge Water Department monitored your water for bacteria, chlorine residual, volatile organic compounds, inorganics, disinfection byproducts (trihalomethanes and haloacetic acids), nitrate, nitrite, perchlorate, arsenic, radionuclides, synthetic organic contaminants, iron, and manganese. The Sturbridge Water Department regularly tests for the full list according to the frequency required by our MassDEP sampling schedule.

The following tables show **only the substances detected** during the most recent monitoring period for each contaminant group within the last five years. For an explanation of the terms and acronyms, see the Important Definitions section in this report.

Bacteria

E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that were found during these assessments.

During the past year, a Level 2 Assessment was required to be completed because we found *E. coli* in our water system. In addition, we were required to take four corrective actions that were all completed.

Bacteria	MCL/TT	MCLG	Value	Date	Violation (Y/N)	Possible Sources
<i>E. coli</i>	MCL	0	Positive	7/8/2019	Yes*	Human and Animal Fecal Waste

**E. coli* was detected in one out of nine distribution system samples collected on 7/8/2019. Repeat testing conducted on 7/10/2019 showed a total coliform-positive repeat sample following an *E.coli* positive routine sample, which violated the MCL for *E.coli*. More information about this situation is provided below.

On 7/8/2019, a routine round of Total Coliform samples was collected for the month of July. On 7/10/2019, we were notified by the lab that the sample from Stallion Hill Water Tank tested positive for Total Coliform and also positive for *E. coli*; they also notified us that the sample from Route 20 Pump Station tested positive for Total Coliform but negative for *E. coli*. On 7/10/2019, we collected a set of repeat samples. On 7/11/2019, we were notified by the lab that the sample from Old Sturbridge Village Road tested positive for Total Coliform but negative for *E. coli*; they also notified us that all of the other repeat samples tested negative for Total Coliform and also negative for *E. coli*. On 7/11/2019, a second set of repeat samples was collected; Stallion Hill Water Tank was removed from service as a precaution. We completed a Tier I Total Coliform Notice, which was posted on the Town of Sturbridge's website and on the local access channel for the Town of Sturbridge. We also used a Reverse 911 call to notify all residents of Sturbridge. On 7/12/2019, we were notified by the lab that all samples from the second set of repeat samples tested negative for Total Coliform and negative for *E. coli*. Stallion Hill

Water Tank was returned to service on that same day. On 7/19/2019, we put a Total Coliform Notice in the local newspaper; all certifications were sent to the Massachusetts Department of Environmental Protection (MassDEP) and also to the Sturbridge Board of Health.

As a result of the sampling and completion of the Level 2 Assessment, we took the following corrective actions: on 7/10/2019, a sanitary sample tap was installed at Route 20 Pump Station in a more suitable location; on 7/23/2019, a new Total Coliform sampling plan was submitted to MassDEP (as a part of this plan, a better sampling location for Old Sturbridge Village Road was suggested.); on 8/5/2019, the sampling location at Fiske Hill Water Storage Tank was moved to better represent the Water Tank itself. On 8/6/2019 and 8/7/2019, a 24-gauge non-corrodible mesh screen was added over the existing screens on all three of the Water Storage Tanks in Town.

Regulated Contaminants

Inorganic Contaminants	Date(s) Collected	Highest Amount Detected or Highest RAA*	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Sources
Fluoride (ppm)	Daily	1.12	0.12 – 1.12	4**	4	N	Additive which promotes strong teeth
Perchlorate (ppb)	15 times in 2019	0.67	0.07 – 0.67	2	--	N	Fireworks, flares, blasting agents
Nitrate (ppm)	6/11/19; 6/12/19	0.28	0.24 – 0.28	10	10	N	Erosion of natural deposits
Barium (ppm)	6/7/18	0.020	0.005 – 0.020	2	2	N	Erosion of natural deposits
Radioactive Contaminants							
Gross Alpha (pCi/l)	6/11/19	0.708	-0.0486 - 0.708	15	0	N	Erosion of natural deposits
Disinfection Contaminants							
Total Trihalomethanes (THMs) (ppb)	8/20/19; 8/21/19	17.0	2.1 – 17.0	80	--	N	Byproduct of drinking water disinfection
Haloacetic Acids (HAAs) (ppb)	8/20/19; 8/21/19	32.0	5.7 – 32.0	60	--	N	Byproduct of drinking water disinfection
Chlorine (ppm)	Nine samples per month	1.35	0.08 – 1.35	4	4	N	Water additive used to control microbes

* The running annual average (RAA) is the highest average of four consecutive quarters

** Fluoride also has an SMCL of 2 ppm

Lead and Copper

On June 7th, 1991, EPA published a regulation to control lead and copper in drinking water. This regulation is known as the Lead and Copper Rule. Exposure to lead and copper may cause health problems ranging from stomach distress to brain damage. The rule established a maximum contaminant level goal (MCLG) of zero for lead in drinking water and a treatment technique to reduce corrosion within the distribution system.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead and copper in drinking water comes primarily from materials and components associated with service lines and home plumbing. The Sturbridge 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 online at www.epa.gov/safewater/lead.

Lead and Copper	Date Collected	90th Percentile*	Action Level (AL)	MCLG	# of Sites Sampled	# of Sites Above AL	Exceeds AL (Y/N)	Possible Sources
Lead (ppb)	August and September 2017	2.9	15	ND	20	1	N	Corrosion of household plumbing
Copper (ppm)	August and September 2017	0.12	1.3	1.3	20	0	N	Corrosion of household plumbing

* Lead and copper compliance is based on the 90th percentile value, which is the highest level found in nine out of every 10 homes sampled. This number is compared to the action level for each contaminant.

Unregulated and Secondary Contaminants

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. The following table shows only the substances detected during 2019. For an explanation of the terms and acronyms, see the Important Definitions section in this report.

Unregulated and Secondary Contaminants	Date Collected	Result or Range of Detected	Average Detected	SMCL	ORSG or Health Advisory	Possible Sources
Sodium (ppm)	6/7/18	29 – 65*	47	--	20	Natural sources; runoff from road salt
Sulfate (ppm)	2/6/19	11 – 14	13	250	--	Natural sources
Manganese (ppb)	Eight times in 2019	2 – 31	7	50	300	Erosion of natural deposits
Iron (ppb)	Ten times in 2019	50 - 51	51	300	--	Erosion of natural deposits

**Sodium-sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of sodium levels in their drinking water where exposures are being carefully controlled.*

Turbidity

Turbidity is a measure of the cloudiness of the water. We monitor turbidity because it is a good indicator of water quality.

Turbidity	TT	Lowest Monthly % of Samples	Highest Detected Daily Value	Violation (Y/N)	Possible Source
Daily Compliance (NTU)	0.01	--	0.900	N	Soil runoff
Monthly Compliance*	At least 95%	100%	--	N	

** Monthly turbidity compliance is related to a specific treatment technique (TT). Our system filters the water so that 95% of our samples each month must be below the turbidity limits specified in the regulations.*

Additional copies of this Water Quality Report can be obtained upon request from the Sturbridge Water Department by calling 508-347-2513 or emailing shane.moody@veolia.com.

