



2015 Water Quality Report for Hartford and Quechee Central Water Systems

The Hartford Water Department is committed to provide drinking water that meets or exceeds State and Federal Standards for quality and safety. We are pleased to report the results of our testing of your drinking water for 2015, of its high quality, and of the service that we deliver to you every day.

The HARTFORD AND QUEECHEE WATER SYSTEMS are separate entities that provide over 75% of the Town of Hartford's population with its drinking water. *The Hartford Water Department is responsible for maintaining both municipal water systems.*

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

WE TEST for over eighty contaminants that 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 or farming.
- **Pesticides and herbicides** that 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, septic systems, and careless disposal of household chemicals.
- **Radioactive contaminants** which can be naturally-occurring or be the result of oil and gas production and mining activities

(Monitoring Schedules are based on system size)

DEFINITIONS

- **Maximum Contamination 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 Contamination 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.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below that there is no known or expected risk to health. MRDLGs do not reflect the benefits of disinfectants in controlling microbial contaminants.
- **Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. Addition a disinfectant may help control microbial contaminants.
- **Action Level:** The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.
- **90th Percentile:** Ninety percent of the samples are below the action level.
- **95th Percentile:** Ninety-five percent of the samples are below the action level.
- **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.
- **Parts per million (ppm) or Milligrams per liter (mg/l):** one penny in ten thousand dollars
- **Parts per billion (ppb) or Micrograms per liter (ug/l):** one penny in ten million dollars
- **Picocuries per liter (pCi/L):** a measure of radioactivity in water
- **Nephelometric Turbidity Unit (NTU):** measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- **Locational Running Annual Average (LRAA):** The average of sample analytical results for samples taken at a particular monitoring location during four consecutive calendar quarters.
- **Running Annual Average (RAA):** The average of 4 consecutive quarters (when on quarterly monitoring); values in table represent the highest RAA for the year
- **N/A:** Not applicable

The HARTFORD WATER SYSTEM WSID 5319

Two “gravel pack” wells provide drinking water to approximately 7,500 people in White River Junction, Wilder, and Hartford Village. The department is able to meet current system demands utilizing either well. Wilder Well #1 has a current pump capacity of approximately 700 gallons per minute while Wilder Well #2 is capable of pumping approximately 650 gallons per minute. In 2015 we pumped almost 118-million gallons from Wilder Well #1 and over 123-million gallons from Wilder Well #2. This resulted in an average use of 660,000 gallons per day. Although the water quality from these wells is excellent, they do contain elevated levels of manganese. Manganese is a naturally occurring mineral that is common in ground water. The amount found in groundwater is usually not considered a health risk; however as little as 0.05 ppm can be a nuisance by staining fixtures and laundry. The water from both Wilder Wells is processed through “greensand” filters at the **Wilder Treatment Plant** to consistently remove the manganese to levels below 0.02 ppm before entering the distribution system. The process, known as “catalytic oxidation” uses sodium hypochlorite (chlorine) for both filter regeneration and system disinfection. An alternative method also uses potassium permanganate (KMNO₄) to regenerate the filter media. The plant is capable of treating over 2-million gallons of water a day. **The water is distributed** to over 1900 homes and businesses through an underground network of pipes ranging from 3/4" to 16" in diameter. As required by State and Federal regulations, a small disinfection residual is maintained throughout the distribution system. Two storage reservoirs, totaling 2.5-million gallons, provide pressure and storage during high water usage, such as a fire, and when the pumps are off. Additionally, there are 266 fire hydrants connected to the Hartford system. A 12" water main interconnects Hartford and the City of Lebanon water systems for mutual use in emergency conditions. **A Source Protection Plan** that was approved by the Vermont Water Supply Division in May 2012 shows the susceptibility of potential contamination to the wells is low; since isolation zone around the wellheads is either owned or controlled by the Town of Hartford. The complete Source Protection Plan can be reviewed at the Public Works office.

Future Plans for the Hartford System

We have begun the process to replace Well #1. Well #1 was placed in service in the mid 1950's. From 1974 to 2004, it was the only water source for the Hartford system. The well has been cleaned and redeveloped a number of times over the past years. While it still provides quality water, the well has reached the point where future redeveloping is no longer cost effective. We have contracted with an engineering firm to investigate replacement options.

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the **EPA Safe Drinking Water Hotline at (800) 426-4791.**

Drinking water sources (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.

We Deliver. - From Source to Tap!

A crew of four personnel operates and maintains both water systems. These Water System Operators must possess a Class 3 VT Water Operator certification to operate a public water system. They must also complete additional education and training “contact hours” to maintain their certifications. In addition, Hartford Water operators keep current with changes in the public water sector through membership in the America Water Works Association (AWWA), New England Water Works Association (NEWWA), Green Mountain Water Association (GMWEA) and the Vermont Rural Water Association (VRWA). A number of the operators are active on the GMWEA board and various training and advisory committees with GMWEA, Vermont Drinking Water Week, and State of Vermont DEC.

HAVE QUESTIONS?

WANT MORE INFORMATION?

Call Everett Hammond, Asst. Public Works Director or Rick Kenney, Chief Water System Operator at (802) 295-3622.
Visit our office at the Public Works Facility at 173 Airport Road, White River Jct. VT.

Visit our Website at www.hartford-vt.org

The Town of Hartford Board of Selectmen also serves as the Water Commissioners for the Hartford Water Department. Meetings are held on alternating Tuesdays of each month.

Disinfection Residual for the Hartford Water System

Disinfection Residual	RAA	Range	Unit	MRDL	MRDLG	Typical Source
chlorine	0.323	0.14 - 0.39	mg/l	4.0	4.0	Additive to control microbes

DETECTED CONTAMINANTS for the Hartford Water System (for the past five years)

Regulated Contaminants	Collection Date	Highest Value	Range	Unit	MCL	MCL Goal	Typical Source	
Nitrate (As N)	2/26/15	Below detection	<0.1	ppm	10	0	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	
Lead and Copper	Date	90 TH Percentile	95 TH Percentile	Range	Unit	Action Level	Sites Over Action Level	Typical Source
Copper	2014	0.45	0.56	0.-0.7	ppm	1.3	0	Corrosion of household plumbing systems
Lead	2014	4	8	1 - 26	ppb	15	1	Corrosion of household plumbing systems
Disinfection by-products	Monitoring Period	Running Annual Average (RAA)	Range	Unit	MCL	MCLG	Typical Source	
Total Haloacetic Acids (HAAS)	2015	<17.0	<17.0 - <17.0	ppb	60.0	0	by-product of chlorination	
Total Trihalomethanes (TTHM)	2015	23.1	35.5 - 35.5	ppb	80.0	0	by-product of chlorination	
Radionuclides	Collection Date	Highest Value	Range	Unit	MCL	MCLG		
Combined Radium	2/26/2015	1.257	1.257 - 1.257	pCi/L	5	0		
Gross Alpha	2/26/2015	0.596	0.596-0.596	pCi/L	15	0		
Radium-226	2/26/2015	0.972	0.972 - 0.972	pCi/L	5	0		
Radium-228	2/26/2015	0.285	0.285 - 0.285	pCi/L	5	0		
Secondary Contaminants	Collection Date	Highest Value	Range	Unit	MCL			
Hardness, Total (as CaCO ₃)	01/05/12	90.4	90.4	mg/l	N/A			

Hartford Water System Violations that occurred during 2015

We are required to monitor your drinking water for specific contaminants based on a sampling schedule issued by the State of Vermont. The table lists drinking water violations we incurred during 2015. A failure to perform required monitoring means we cannot be sure of the quality of our water during that time.

Type	Category	Analyte	Compliance Period
No Violations Occurred in the Calendar Year 2015			

IMPORTANT HEALTH INFORMATION

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 microbiological contaminants are available from EPA's Safe Drinking Water Hotline (1-800-426-4791).

Infants and children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. It's always advisable to flush your tap for 30 seconds to 2 minutes before using the water. If you are concerned about elevated lead levels in your home's water, you can have it tested. Additional information is available from the Safe Drinking Water Hotline (1-800-426-4791) or at <http://www.epa.gov/safewater/lead>.

Disinfection for the Quechee System

Disinfection Residual	RAA	Range	Unit	MRDL	MRDLG	Typical Source
Chlorine	0.199	0.120-0.330	mg/l	4.0	4.0	Additive to control microbes

DETECTED CONTAMINANTS for the Quechee System (for the past five years)

Regulated Contaminants	Collection Date	Highest Value	Range	Unit	MCL	MCLG	Typical Source	
Nitrate (As N)	11/24/2015	1	1	ppm	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	
Lead and Copper	Date	90 TH Percentile	95 TH Percentile	Range	Unit	Action Level	Sites Over Action Level	Typical Source
Copper	2013	0.1	0.1	0.026 - 0.1	ppm	1.3	0	Corrosion of household plumbing, erosion of natural deposits
Lead	2013	2	3	0 - 4	ppb	15	0	Corrosion of household plumbing, erosion of natural deposits
Disinfection by-products	Monitoring Period	Running Annual Average		Range	Unit	MCL	MCLG	Typical Source
Total Trihalomethanes (TTHM)	2015	None detected			ppb	80.0	0	by-product of drinking water chlorination
Total Haloacetic Acids (HAAS)	2015	None detected			ppb	60.0	0	by-product of drinking water chlorination

Radionuclides	Collection Date	Highest Value	Range	Unit	PIC/L
No detected results					
Secondary Contaminants	Collection Date	Highest Value	Range	Unit	MCL
Calcium	7/14/2011	49	48-49	mg/l	N/A
Hardness, Total (as CaCO ₃)	7/14/2011	140	138-140	mg/l	N/A
Magnesium	7/14/2011	4.4	4.3-4.4	mg/l	

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 increased risk of getting cancer.

Quechee Central Water System Violations that occurred during 2015

We are required to monitor your drinking water for specific contaminants based on a sampling schedule issued by the State of Vermont. The table lists drinking water violations we incurred during 2015. A failure to perform required monitoring means we cannot be sure of the quality of our water during that time.

Type	Category	Analyte	Compliance Period
MONITORING, ROUTINE MAJOR	Failure to Monitor	CYANIDE	01/01/2015 - 03/31/2015

We are required to sample for cyanide once every 9 years. State requirements called for the cyanide sample for the Quechee system to be taken in the first quarter of 2015. We inadvertently missed the compliance deadline for the cyanide sample by 93 days. Upon notification of the error, the sample was immediately taken on 6/29/15 (2nd quarter). The results were <0.004 mg/l (below detection).

Type	Category	Analyte	Compliance Period
MONITORING, ROUTINE MAJOR	Failure to Monitor	Nitrate	07/01/2015 - 09/30/2015

We are required to sample annually for nitrate. State requirements called for the nitrate sample for the Quechee system to be taken in the third quarter of 2015. We inadvertently missed the compliance deadline by 55 days. The nitrate sample was taken on 11/24/15 (4th quarter). The results are listed above in the Detected Contaminants table.

These are the first ever violations received in at least 28 years in the Town of Hartford. We have implemented additional checks and balances to assure that similar violations do not recur. Please contact me at (802) 295-3622 if you have any questions. – Rick Kenney, Chief Water System Operator

QUECHEE CENTRAL WATER SYSTEM WSID 5320

Since 1973, the water supplied to **Quechee** has come from one "gravel pack" well with a current pump capacity of 600 gallons per minute. In 2015 we pumped almost 53-million gallons from this well, which resulted in an average use of 145,000 gallons per day. **Over 600** connections to the system provide water to year round residents, vacation homes, and commercial businesses. The water is distributed through an underground network of pipes ranging from 3/4" to 12" in diameter. Also connected to the system are 81 fire hydrants. The water is pumped to three storage tanks totaling 262,000 gallons. These tanks provide pressure and storage during high water usage, such as a fire, and for when the pump is off. An additional 54,000-gallon tank is filled through a booster pump station and serves some higher elevations. As a preventative measure, a small amount of sodium hypochlorite (chlorine) is added for disinfection. This practice is similar to many other public water systems in the United States. **A Source Protection Plan** that was approved by the Vermont Water Supply Division in April 2015 shows the susceptibility of potential contamination to the well is low to medium since the Town controls the isolation zone around the wellhead. The complete Source Protection Plan can be reviewed at the Public Works office.

Future Plans for the Quechee System

Construction of a new storage tank is anticipated to begin in the summer of 2016. This new 400,000-gallon tank will replace the existing 30,000-gallon tank located off of Quechee Hartland Rd. This project will improve firefighting capacities and provide increased flexibility for scheduled maintenance. The project also includes replacing the existing 8" water main on Quechee Hartland Rd and Waterman Hill with a new 12" main.



Did You Know?

- **Hardness in drinking water is caused by two nontoxic minerals--calcium and magnesium.** By nature, ground water sources--such as the Hartford and Quechee systems--tend to contain more minerals than surface water because of the natural filtering of the water flowing through the soil. (That accumulation of whitish gray scale seen in tea kettles or other containers used to boil water is an example of hard water.) Although excessive "hardness" can be a nuisance, there is no known health risks associated with the consumption of "hard" water. (Some studies even suggest there are health benefits.)
- **For about the same price you would pay for one bottled water, we deliver over three hundred gallons to your tap.**
- **Ascorbic acid (vitamin C) neutralizes chlorine.** Try a slice of lemon or lime in your tap water before reaching for the bottled water.
- **Do you hear water running and don't know where it's going?** If so, give us a call. There may be a leak outside underground. Many times a leak can be heard on household plumbing before it ever comes to the surface

Remember that what goes on the ground can find its way to a drinking water source. Please dispose of all chemicals properly. Better yet, try to find alternatives to using harmful chemicals.

Safe Drinking Water is Everyone's Right...And Everyone's Responsibility!

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TOWN OF HARTFORD WATER DEPARTMENT

2015 WATER QUALITY REPORT

for

**White River Junction, Wilder, Hartford Village, and Quechee
VERMONT**

www.hartford-vt.org

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