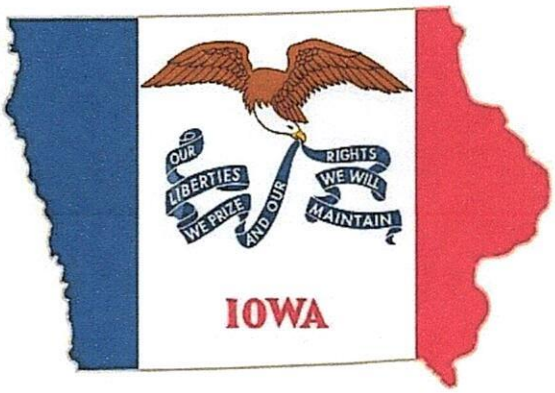
# Consumer Confidence

# Water Quality Report

## 2020

## From aquifer to tap...

The City of Fairfax Water Department is pleased to present the 2020 Annual Water Quality Report. The City of Fairfax has a quality water source that meets all the state and federal EPA primary standards for public health.




## City of Fairfax, Iowa Public Water Supply

# *Important Questions*

***What to expect from your drinking water?*** 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 Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791).

***What are sources of contamination to drinking water?*** 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 presences of animal or human activity

Contaminants that may be present in source water include:

(A) **Microbial contaminates**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;

(B) **Inorganic contaminants**, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

(C) **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;

(D) **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 storm water runoff, and septic systems; and

(E) **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

***Who needs to take special precautions?*** 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 persons, and infants can be particularly at risk from infection. 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 microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

## *Lead in plumbing fixtures:*

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. FAIRFAX WATER SUPPLY 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 at http://www.epa.gov/safewater/lead.

***Water System Backup Measures:*** In the event of unexpected problems the city has a few backup systems built into our utility to ensure our customers have a constant flow of drinking water. With the current three wells if any one of the three is off line the other two will be able to keep up with the current demand. We have increased the production of water at all three of our wells and water plant to help avoid water conservation measures. The water plant at the tower has a backup generator to supply power to well #3 in the event of a power outage. Wells #1 and #2 have had a backup generator installed. The City of Fairfax has 200,000 gallons of water stored in an elevated tank during normal operations. An additional 500k gallon ground storage water tank and pumping station with back-up generator power is being constructed this year and should be online this summer 2021.

The Derecho of 2020 put the test to your backup system and without any major problems the system worked as expected. Clean water and sanitation are essential to health and habitation. Our customers did not need to worry about these two utility services.

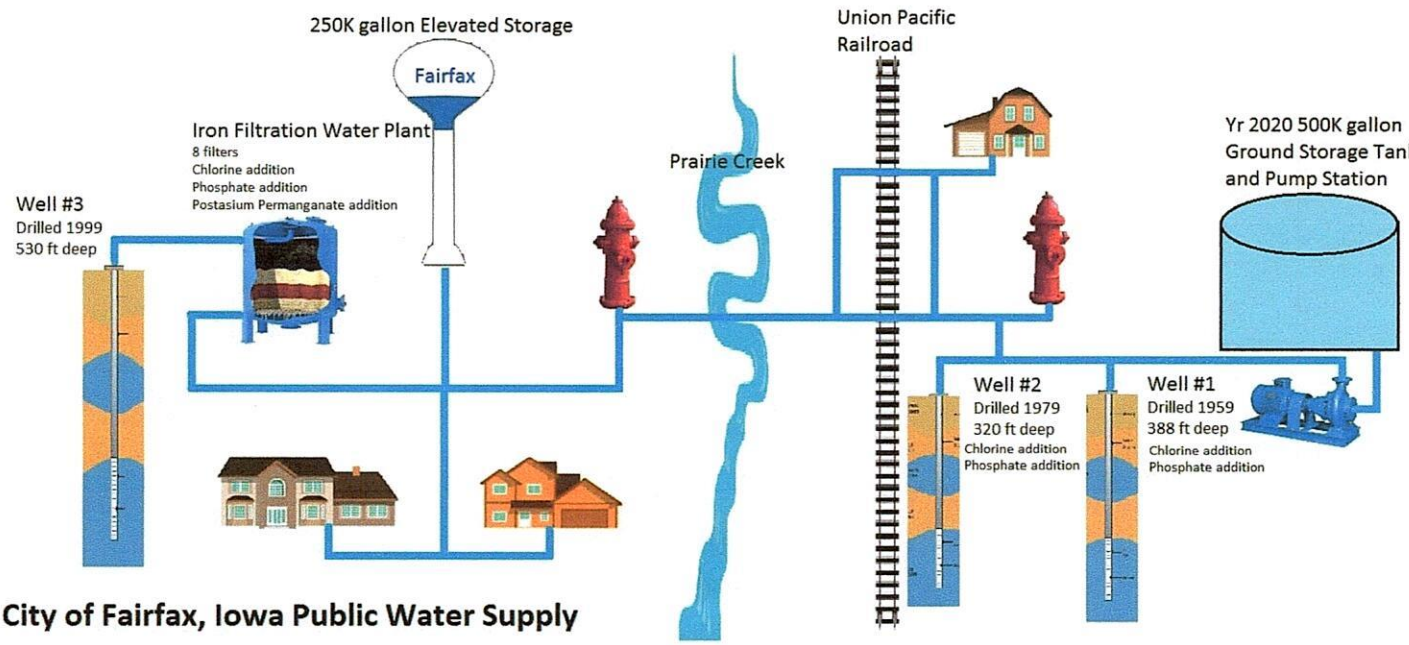
***Water System Violations:*** The City of Fairfax had no State or Federal violations in the year 2020.

# ABOUT OUR WATER…

***What is in Fairfax's drinking water?*** The EPA requires regular sampling of the city's water supply to ensure drinking water safety. In 2019 we ran over 1,000 tests for different substances. The good news is that none of the contaminants that we detected exceeded EPA established Maximum Contaminant Levels or resulted in a violation of drinking water standards. Only a very small percentage of the contaminants tested for exist in our water at detectable levels. The tables on the back pages identify the contaminants that were detected. The Iowa DNR requires us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though accurate, is more than one year old.

***What is the source of Fairfax's drinking water?*** The City of Fairfax obtains 100% of its water from three wells from the dolomite of the Silurian aquifer that was created long ago by glacial activity. The Silurian aquifer was determined to be susceptible to contamination because of the characteristics of the aquifer. Overlying materials provide some protection from contaminants from the land surface. The Silurian wells will be susceptible to surface contaminants such as leaking underground storage tanks, contaminant spills, and excess fertilizer application. Well #1 was drilled in 1959; it can produce 216,000 gallons in 12 hours. Well #2 is across the street from #1 and was drilled in 1979; it can produce 190,000 gallons in 12 hours. Well #3 was drilled in 1999; it produces 252,000 gallons in 12 hours going through eight filters to remove iron. **Fairfax produced over 69.9 million gallons of drinking water in 2020 or an average of 191,480 gallons per day, this is up by 10.3% from last year (without the new Splash Pad usage); our community is still growing at a steady rate.** The City is currently evaluating different locations for future new well sites and possible treatment plant. This is an average of 51 gal/person/day usage, this has a slight increase due to the stay at home practices. The national average is 60-80 gal/person/day usage. So the customers of Fairfax are doing a great job of conserving our water resource. This number is getting better every year.

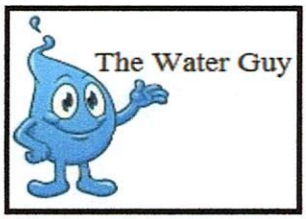
A detailed evaluation of your source water was completed by the IDNR *(Iowa Department of Natural Resources)* and is available from the Water Operator at 319-389-8439.




**City of Fairfax, Iowa Public Water Supply**

# WHAT WE ARE DOING…

**System Improvements:** The City of Fairfax has been adding a 70/30 blend of orthophosphate and polyphosphate to the water at a dosing of 1.5 ppm since 2018. This has resulted in a significant reduction of lead and copper in the consumers homes from past years. The IDNR have extended our next testing schedule to year 2021. The EPA is revising the Lead and Copper Rule and most likely will require that every service connection in the City to all its customers have a record of the materials used in their home water system. This is a direct result from the Flint, Michigan water disaster. This year the City will send out surveys to all its customers to help list all the materials in the system. The water department personnel will be available to help customers with identifying the type of pipes in the home. The EPA will require 100% compliance from the City and all service connections will need to be inspected and identified.




Our new 500K gallon ground storage water supply tank is completed with the pump booster station nearing completion on the south side of Fairfax by the corner of Hwy 151 and Williams Blvd. This facility will be online this summer. The south side was chosen due to the City has only one water main crossing Prairie Creek. This will give both of the City's water districts an active well and water storage. The IDNR and AWWA *(American Water Works Association)* recommend that a community have a minimum of 24 hours water storage in the event all their wells are out of service. We have 175,000 gallons storage available, in the winter we store about 105,000 gallons to prevent the tower from ice formation inside, this give us only 17 hours of water available. In the summer the demand is much higher, we use the full 175,000 gallons for storage but consume between 400,000 and 600,000 gallons a day, this is 7.2 hour of water storage. Additional water storage is vital to our City for fire protection and the future consumption of our customers. The additional storage will meet the 24 hour recommendation with at total usable storage of 700,000 gallons in the summer months during peak usage. Fairfax has updated all of the older water mains to a minimum of 8", this provides able water flows for fire protection. The IDNR strongly suggests that communities track there system water lose rate to help determine the need for addition water pumping needs and system repairs. Fairfax water lose is 5.42% average for the year 2020, the national average is 16% and as high as 30%.

The City has a Source Water Protection Committee with assistance from the Iowa DNR to help identify sources of contaminates and measures of mitigation for our current wells as well as our future well field. The City currently has no outside contaminates impacting it's current 3 wells.

This years 2021 water system projects will involve looping or connecting the water main from Linn St./Fairfax Rd. to Southview Rd. and west to Williams Blvd. connecting at the ground storage tank. Looping systems helps with water quality and flow characteristics for fire fighting.

***Who do I contact for more information?*** For more information about drinking water contact the EPA Safe Drinking Water Hotline at 800-426-4791; or contact the Iowa DNR Region 1 Office at (563)-927-2075; or contact The City of Fairfax at (319)-846-2204.

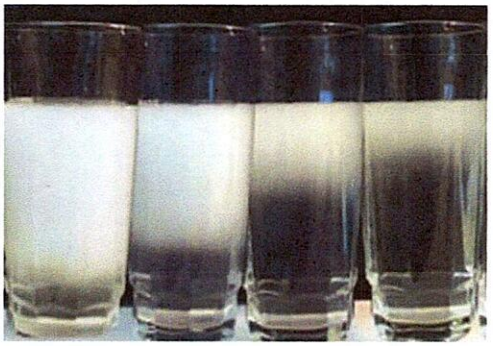
City Council Meetings are held the second Tuesday of every month at 6:00 PM, upstairs at 300 80th Street Court, Fairfax, Iowa.

# *Frequently Asked Questions:*

**What is hard water?** Fairfax's water contains the naturally occurring mineral calcium, which is better known as hardness. Water was described as "hard" when people found it *hard* to make soap suds or lather from the water. The presence of calcium in the water is not a health concern but rather somewhat of a nuisance that is very costly to remove on a large scale. Some individuals use a water softener to remove unwanted hardness. Calcium buildup can be removed from faucets and coffee pots using vinegar. Fairfax's water hardness is about 398 mg/L or 23.3 grains (Very Hard).

**Why do I occasionally see discolored water leaving my tap?** Discolored water is usually due to the presence of rust (iron). Rust in drinking water can be caused by corrosion in the pipes that carry the water from the treatment plant to your home or corrosion in your home's plumbing, including the hot water heater. Rust is typically not dangerous in terms of health but it can stain laundry. Do not heat-dry laundry washed in rusty water. Problems with discolored water usually clear themselves within a day.

Cloudy water, also known as white water, is caused by air bubbles in the water. It is completely harmless. Water under pressure holds more air than water that is not pressurized. Once the water comes out of your tap, the water is no longer under pressure and the air comes out of solution as bubbles (similar to a carbonated soft drink). The best thing to do is let it sit in an open container until the bubbles naturally disappear. If you have a prolonged discolored water problem, please notify us.



**Do water filters remove bacteria?** Reverse osmosis filters use normal household water pressure to force water through a semi permeable membrane, which separates contaminants from the water. They're great for removing bacteria and viruses, but they won't remove all chemical pollutants.

**What contaminants does Reverse Osmosis remove?** Reverse osmosis systems will remove some common chemical contaminants (metal ions, aqueous salts), including sodium, chloride, copper, chromium, and lead; may reduce arsenic, fluoride, radium, sulfate, calcium, magnesium, potassium, nitrate, and phosphorous.

**How do I know when my water heater is going to fail?** Generally, most water heaters that are **more than 10 years old** should be considered for replacement. If your water heater is in a location that will not cause damage if there is a leak, you can wait until it develops a leak before replacing it, but that really is not recommended. If you discover **rusty water** coming from your water heater and it only comes from the hot side piping in your home, this can be a sign that your water heater is rusting away on the inside and it may begin to leak soon. When you can hear **rumbling or banging sounds** coming from the water heater as it is heating up, this is a sign that the water heater is at the end of its useful life. This is sediment building up on the bottom of the tank. As the sediment is heated and reheated, it eventually will harden. If you notice **moisture around your water heater** you may have a small leak or a fracture in the tank. As the metal heats, it expands and if there are slight fractures, water may leak from the tank. Once the metal has cooled the inner tank will stop leaking.

**How to treat tap water for my aquarium?** The City of Fairfax tap water has natural ammonia in the source water and when combined with chlorine it forms a chloramine, this is a longer lasting disinfectant. When treating the water to remove the chlorine it breaks the bond of the chloramine leaving the ammonia which is toxic to fish and invertebrates. Using RO ( Reverse Osmosis) water or a 3 in 1 chlorine, chloramine and ammonia treatment tap water conditioner from the pet store will help in preventing toxins in the water and keeping your friendly swimming fish happy.

**Why do I need a backflow device?** The City of Fairfax requires the use of a backflow preventer device on all lawn irrigation systems, pools and fire sprinklers systems. A backflow preventer is a device that prevents water from flowing backward. There are two main types that are used on irrigations systems.

One type is a Pressure Vacuum Breaker: The Pressure Vacuum Breaker (PVB) must be installed so that the bottom of the assembly is 12" higher than the highest sprinkler head or point of use, so is best used when the lawn is level.

Another type is a Reduced Pressure Assembly: The Reduced Pressure Assembly (RPA) can be used when there are elevation changes in the lawn. **Both backflow assemblies must be tested once a year by a licensed certified tester and a copy submitted to the City of Fairfax.**

**Phosphates.: What you need to know**

The City of Fairfax started adding a 70/30 blend of orthophosphate and polyphosphate to the water beginning on January 31, 2018. The following information is provided to you as it relates to the use of phosphates in drinking water.

**What are phosphates?** Phosphates are water treatment chemicals used to solve specific water quality problems resulting from inorganic contaminants (iron, manganese, calcium, etc.) in ground water supplies and also to maintain water quality (inhibit corrosion, scale, biofilm, reduce lead and copper levels) in the distribution system. Ortho and polyphosphates work together, stabilizing water quality and minimizing color, scale, deposits, corrosion, and chlorine demand in drinking water systems.

**What are the problems that phosphates help to solve?** Phosphates are used in municipal water systems to perform three broad functions: inhibit corrosion of water mains/plumbing (iron, steel, galvanized, asbestos/ cement, lead, copper), sequester nuisance metals in the water supply (iron, manganese, calcium, magnesium). They can also improve the quality of water in the distribution system by removing scale deposits & tuberculation, discourage microbial film formation/regrowth, and stabilizing free chlorine disinfectant residuals.

**How do phosphates work in a water system?** Orthophosphate based additives are classified as corrosion inhibitors and as such react with dissolved materials (e.g. Ca, Mg, Zn, etc.) in the water to form a very thin metal-phosphate coating or it reacts with metals on a pipe surface to form a microscopic film on the inner surface of the pipe that is exposed to the treated water.

Polyphosphate type chemicals react with soluble metals (iron, manganese, calcium, magnesium, etc.) by sequestering (bind-up) the metals to maintain their solubility in water. The phosphate sequestering process minimizes the risk of discoloration, staining, scaling, taste/odor and other water quality complaints.

# 2020 City of Fairfax CCR Test Results

## *Test Results*

| CONTAMINANT | MCL - (MCLG) | Compliance | | Date | Violation | Source |
|---|---|---|---|---|---|---|
| | | Type | Value & (Range) | | Yes/No | |
| ***Disinfection By-Products*** | | | | | | |
| Total Trihalomethanes (ppb) [TTHM] | 80 (N/A) | LRAA | 3.24 (3-3) | 8/5/2019 | No | By-products of drinking water chlorination |
| Total Haloacetic Acids (ppb) [HAA5] | 60 (N/A) | LRAA | 10.00 (10-10) | 9/30/2020 | No | By-products of drinking water disinfection |
| ***Inorganic Contaminants*** | | | | | | |
| Lead (ppb) | AL=15 (0) | 90th | 5.00 (ND-12) | 2018 | No | Corrosion of household plumbing systems; erosion of natural deposits |
| Copper (ppm) | AL=1.3 (1.3) | 90th | 0.343 (0.0224-0.446) | 2018 | No | Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives |
| ***Residual Disinfectants 950 - Distribution System*** | | | | | | |
| Chlorine (ppm) | MRDL=4.0 (MRDLG=4.0) | RAA | 2.9 (2-4.2) | 12/30/2020 | No | Water additive used to control microbes |
| ***Water Characteristics 950 - Distribution System*** | | | | | | |
| Iron (ppm) | Secondary MCL 0.3 | AA | 0.38 | 2020 | No | Rusty color; sediment; metallic taste; reddish or orange staining |
| Manganese (ppm) | Secondary MCL 0.05 | AA | 0.006 | 2020 | No | Black to brown color; black staining; bitter metallic taste |
| pH | Secondary MCL 6.5-8.5 | AA | 7.34 | 2020 | No | LOW pH: Bitter metallic taste; corrosion<br>HIGH pH: Slippery feel; soda taste; deposits |
| Hardness-mg CaCO3/L | N/A (N/A) | AA | 440<br>25.7 Grains | 2020 | N/A | Soft: 0-17.1<br>Slighty Hard: 17.1-60<br>Mod Hard: 60-120<br>Hard: 120-180<br>Very Hard: 180 & over |
| Ammonia - Free (ppm) | N/A (N/A) | AA | 0.32 (0.00-0.98) | 2020 | N/A | Runoff from fertilizer use;leaching of septic tanks, sewage; erosion of natural deposits. |
| Nitrate (ppm) | 10 (10) | AA | 1.31 (0.00-3.8)<br>28 samples | 2020 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Nitrite (ppm) | 1 (1) | AA | 0.021 (<0.001-0.2) 61 samples | 2020 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Phosphate PO4 (ppm) | 10 | AA | 1.49 | 2018 | No | Added for corrosion control and metals sequestering |

## *Test Results*

| CONTAMINANT | MCL - (MCLG) | Compliance | | Date | Violation | Source |
|---|---|---|---|---|---|---|
| | | Type | Value & (Range) | | Yes/No | |

## *01 - Finished Water Sample Tap, #1*

| | | | | | | |
|---|---|---|---|---|---|---|
| Combined Radium (pCi/L) | 5 (0) | SGL | 2.6 | 10/30/2019 | No | Erosion of natural deposits |
| Ammonia (ppm) | N/A (N/A) | AA | 4.31 (0.68-5.31) | 2019 | No | Runoff from fertilizer use;leaching of septic tanks, sewage; erosion of natural deposits. |
| Barium (ppm) | 2 (2) | SGL | 0.0208 | 4/14/2020 | No | Discharge from drilling wastes;Discharge from metal refineries; Erosion of natural deposits |
| Chromium (ppb) | 100 (100) | SGL | 2.9 | 4/14/2020 | No | Discharge from steel and pulp mills; Erosion of natural deposits. |
| Organic Chemicals (ppb) Volatile Organic Compounds Synthetic Organic Compounds | 0.2 - 700 (ND-700) | SGL | ND | 4/7/2016 | No | Runoff from industrial sites, herbicides, petroleum sites, insecticides and PVC factories |
| Fluoride (ppm) | 4 (4) | SGL | 0.4 | 4/14/2020 | No | Water additive which promotes strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories |
| Sodium (ppm) | N/A (N/A) | SGL | 58.1 | 4/14/2020 | No | Erosion of natural deposits; Added to water during treatment process |

## *02 - Finished Water Sample Tap, #2*

| | | | | | | |
|---|---|---|---|---|---|---|
| Gross Alpha, inc (pCi/L) | 15 (0) | SGL | 12.2 | 1/8/2018 | No | Erosion of natural deposits |
| Combined Radium (pCi/L) | 5 (0) | SGL | 2.8 | 1/8/2018 | No | Erosion of natural deposits |
| Ammonia (ppm) | N/A (N/A) | AA | 4.378 (0.67-5.33) | 2020 | No | Runoff from fertilizer use;leaching of septic tanks, sewage; erosion of natural deposits. |
| Nitrite (ppm) | 1 (1) | AA | 0.02 (0.002-0.20) | 2020 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Nitrate (ppm) | 10 (10) | AA | 1.62 (1.4-2.4) | 2019 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Organic Chemicals (ppb) Volatile Organic Compounds Synthetic Organic Compounds | 0.2 - 700 (ND-700) | SGL | ND | 4/7/2016 | No | Runoff from industrial sites, herbicides, petroleum sites, insecticides and PVC factories |
| Selenium (ppb) | 50 (50) | SGL | 1.7 | 10/30/2019 | No | Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines |
| Barium (ppm) | 2 (2) | SGL | 0.0213 | 10/30/2019 | No | Discharge from drilling wastes;Discharge from metal refineries; Erosion of natural deposits |
| Fluoride (ppm) | 4 (4) | SGL | 0.5 | 10/30/2019 | No | Water additive which promotes strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories |
| Sodium (ppm) | N/A (N/A) | SGL | 53.7 | 11/11/2019 | No | Erosion of natural deposits; Added to water during treatment process |

## *Test Results*

| CONTAMINANT | MCL - (MCLG) | Compliance | | Date | Violation | Source |
|---|---|---|---|---|---|---|
| | | Type | Value & (Range) | | Yes/No | |
| ***03 - Finished Water Sample Tap, #3*** | | | | | | |
| Gross Alpha, inc (pCi/L) | 15 (0) | SGL | 4.4 | 8/20/2020 | No | Erosion of natural deposits |
| Ammonia (ppm) | N/A (N/A) | AA | 3.028 (1.41-4.68) | 2020 | No | Runoff from fertilizer use;leaching of septic tanks, sewage; erosion of natural deposits. |
| Nitrate (ppm) | 10 (10) | AA | 1.72 (<1.0-2.3) | 2020 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Nitrite (ppm) | 1 (1) | AA | 0.017 (0.004-0.051) | 2020 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Fluoride (ppm) | 4 (4) | RAA | 0.3 | 10/30/2019 | No | Water additive which promotes strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories |
| Selenium (ppb) | 50 (50) | SGL | 1.7 | 10/30/2019 | No | Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines |
| Barium (ppm) | 2 (2) | SGL | 0.378 | 10/30/2019 | No | Discharge from drilling wastes;Discharge from metal refineries; Erosion of natural deposits |
| Sodium (ppm) | N/A (N/A) | SGL | 30.4 | 11/11/2019 | No | Erosion of natural deposits; Added to water during treatment process |
| Organic Chemicals (ppb)<br>Volatile Organic Compounds<br>Synthetic Organic Compounds | 0.2 - 700 (ND-700) | SGL | ND | 8/5/2019 | No | Runoff from industrial sites, herbicides, petroleum sites, insecticides and PVC factories |
| Chorides (as Cl) (ppm) | Secondary MCL 250 | SGL | 6.7 | 5/8/2018 | No | Erosion of natural deposits |
| Sulfates (ppm) | Secondary MCL 250 | SGL | 19.8 | 5/8/2018 | No | Erosion of natural deposits |

Note: Contaminants with dates indicate results from the most recent testing done in accordance with regulations.

## *Definitions:*

- 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.
- Secondary Maximum Contaminate Level (SMCL) - They are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These contaminants are not considered to present a risk to human health at the SMCL.
- Maximum Contaminant Level Goal (MCLG)— The level of the contaminant in drinking water below which there is no known or expected risk to health. MCLG allow for a margin of safety.
- ppb—parts per billion.
- ppm—parts per million.
- pCi/L—picocuries per liter.
- N/A—Not applicable
- ND—Not detected
- RAA—Running Annual Average
- AA— Annual Average
- LRAA—Locational Running Annual Average
- Treatment Technique (TT)—A required process intended to reduce the level of a contaminant in drinking water.
- Action Level (AL)— The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- Maximum Residual Disinfectant Level Goal (MRDLG)— The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- 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 contaminates.
- SGL— Single Sample Result
- RTCR— Revised Total Coliform Rule
- NTU— Nephelometric Trubidity Units