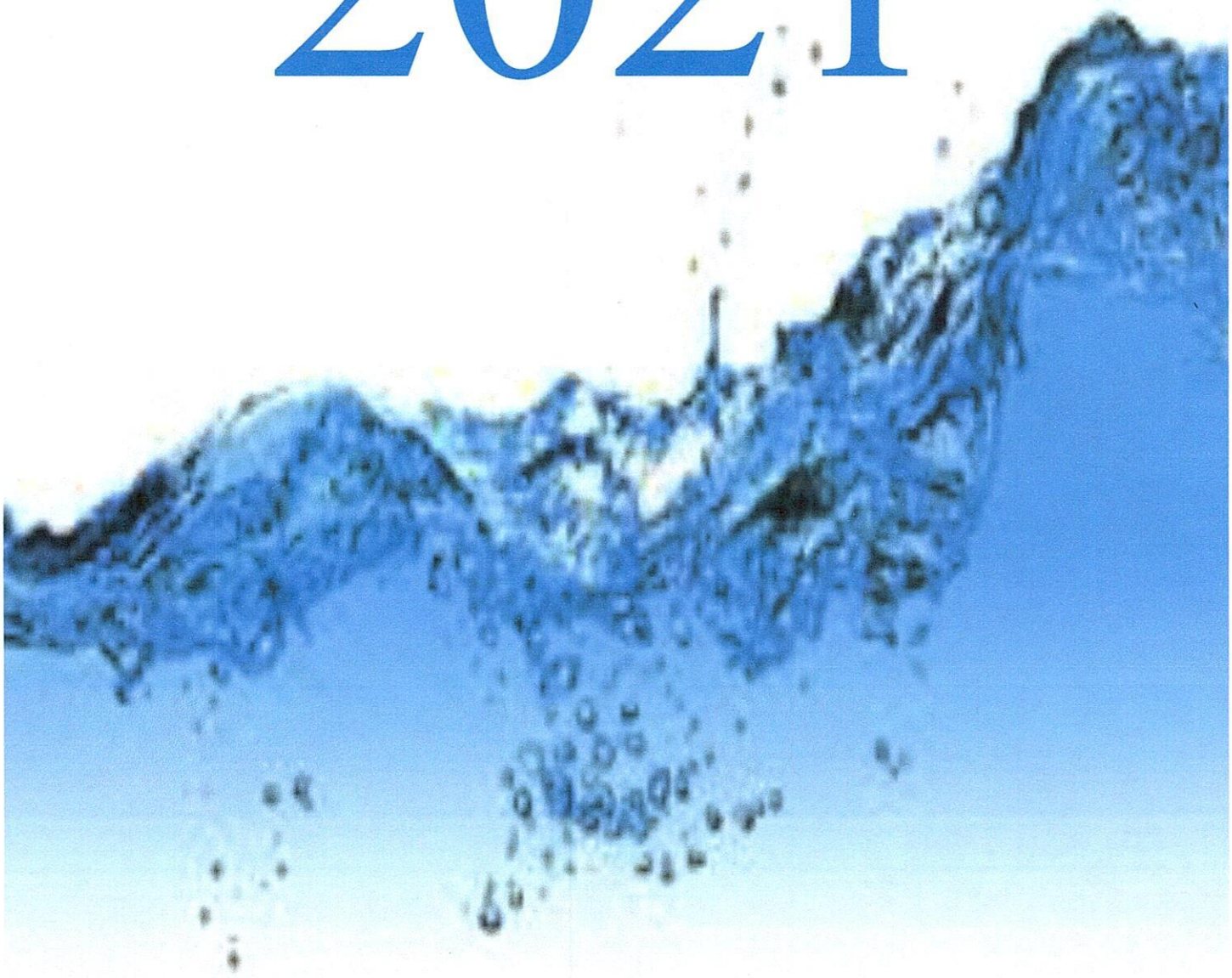
The City of Fairfax
Public Water Supply

Water Quality Information and Helpful Tips

2021



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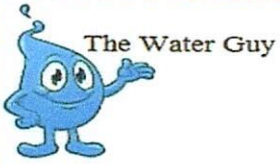
Mission, Vision, & Values

Mission: It is our mission as a public water supply for the City of Fairfax to provide clean, clear and safe drinking water under the regulations of the EPA to our users.

Vision: To manage our department and water recourses, to meet evolving regulatory requirements, water supply needs and customer expectations in the future.

Values:

- **Service:** Our core purpose is to provide our customers with safe and reliable water, in compliance with regulatory requirements. We strive to treat every customer fairly and respectfully and to address their needs quickly and effectively.
- **Accountability:** Our department is the steward of public funds collected to provide a defined service to our constituents. We manage these funds responsibly, fairly, and with integrity. We believe that our constituents are best served through continuous improvement and value enhancement.
- **Customer Confidence:** We foster customer confidence through clarity, honesty, and transparency in all communications. We work to educate our customers and employees on the issues pertinent to responsible water resources management. The Water Department is committed to community visibility and education of the public.
- **Personnel Dedication:** We encourage employees to increase their professional value through personal growth, expanding their knowledge base, and gaining experience within their field. We proactively build a competent, effective, and loyal staff.
- **Environmental Stewardship:** We recognize and take seriously the responsibility of managing limited and precious environmental resources that are vital to human life and the economic health of our community. We are committed to safely complying with all applicable regulations to preserve the environment and economy in and around our service area.
- **Long Range Planning and Preparation:** We challenge ourselves to meet the evolving needs of the future through foresight, solid and specific planning efforts, and maintenance of department flexibility. We prepare for the unforeseen through commitment to safety, security, and emergency preparedness.



My Commitment to You:

In my 30+ years of public service operating and maintaining water and wastewater systems in the State of Iowa, I have learned that You the customer is the most important part of the job. Every decision and action that I make with our drinking water is not taken without serious evaluation. Your health and well being are my utmost first concern and my transparency of actions is second. The City of Fairfax is my employer but I am held to the much higher Federal Standard of ethics relating to water and wastewater. Clean and safe drinking water should be available to everyone without concern. I promise to provide the safest water to everyone within my ability and available resources.

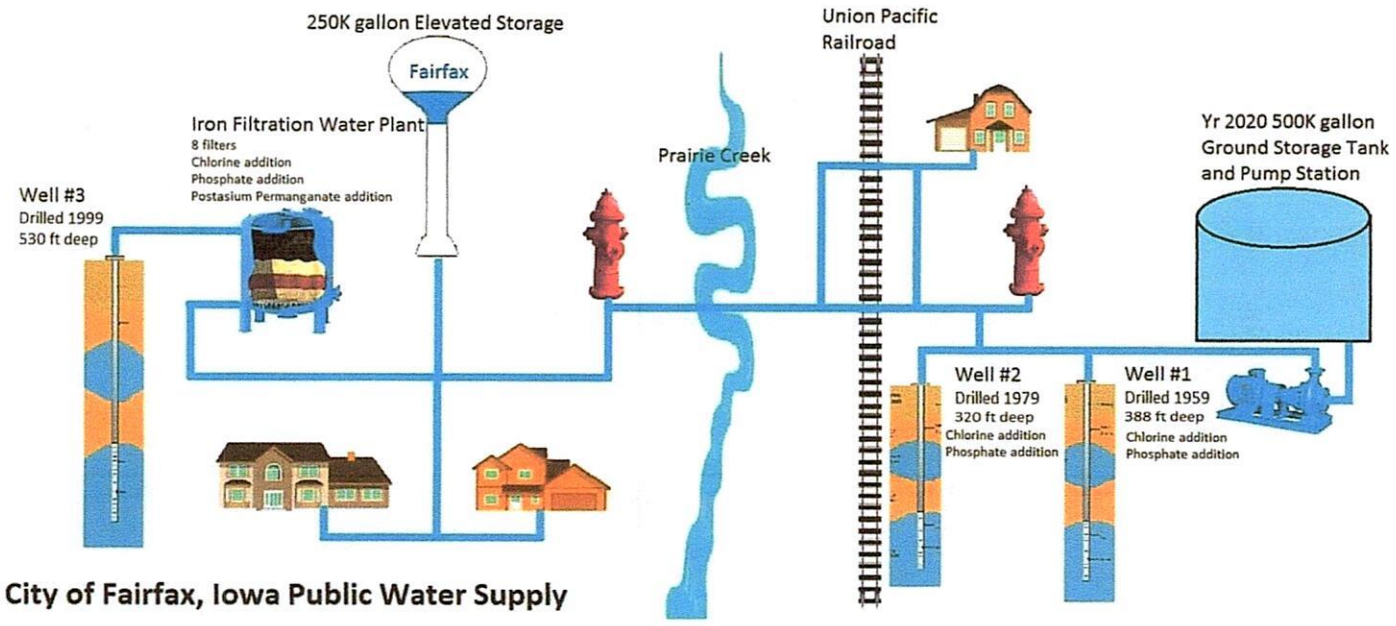
Thank You for serving You. Kevin W. Stensland

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 2021 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 future 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 198,000 gallons in 12 hours. Well #2 is across the street from #1 and was drilled in 1979; it can produce 162,000 gallons in 12 hours. Well #3 was drilled in 1999; it produces 241,000 gallons in 12 hours going through eight filters to remove iron. **Fairfax produced over 81 million gallons of drinking water in 2021 or an average of 221,989 gallons per day, this is up by 13.8% from last year; 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.

Thank You.

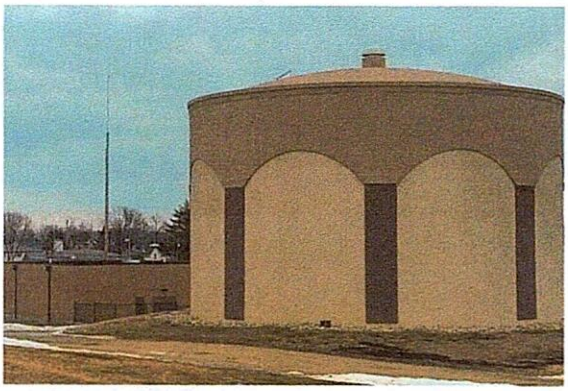


City of Fairfax, Iowa Public Water Supply

The Future of Our Water System…

Why do we need water storage? There are basically 2 types of water storage systems,
Elevated: which provides 1 psi of water pressure for every 2.31 ft. of elevation.
Ground Storage: which needs to be pumped to provide the pressure.

The City of Fairfax has both types, our elevated storage is 250k gallons @ 110 ft. high providing a range of pressure from 38-48 psi just below the tower. The ground storage tank is 500k gallons and can provide over 2500 gpm at range of pressures with its 3 pumps. (the rate of 2 firetrucks pumping together)
The American Water Works Association and Iowa Dept. of Natural Resources recommend that a community have at minimum of 24 hours of water storage on reserve in the case of water production problems, like well pump failure, contamination, power problems, etc. Also a large fire can deplete water levels at a alarming rate if not monitored. In the summer we maintain a range 450-650k gallon during the day cycles. Our average summer usage per day is 371k gal/day and a max of 624k gals/day. Winter time we lessen the storage amount to match the usage per day and this helps keep fresher and better water quality in the system. Our current water storage at the current growth rate should meet our needs for the next 15-20 years. Future storage sites will be evaluated as the city grows in different directions and changing needs.



Why do we need more wells pumping?

Water storage and well pumping are two totally different things. We need to make the water to fill the tanks. The City has 3 production wells of different ages. Currently the 3 wells can provide 740 gpm to our system. In the summer months they run about 12-15 hrs./day to maintain storage levels. The wells are scheduled to run during the night hours to help maximize flow rates during non peak times otherwise they could run over 20 hours. If any one of the 3 wells are out of service the pumping time would be between 20-26 hrs./day to meet the demand without any conservation requirements imposed (*some days not being able to keep up with demand*). Our last well was drilled in 1999 and all 3 wells have been upgraded to maximum efficiency in the last 3 years. A new well field is needed to secure a reliable water source for the future of our City. After a new water source is found the water is tested to determine what kind of treatment is needed to meet the EPA regulations. A good production well constructed and with quality material is a long term investment, 50-75 years as long as the water quality does not change. The area of drilling would be able to support numerous wells and one treatment plant that would support the City needs for many years to come.

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 2021 Lead and Copper results are in the booklet. 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 also completed on the south side of Fairfax by the corner of Hwy 151 and Williams Blvd. This facility was online summer 2021. The south side was chosen due to the City having 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 recommend that a community have a minimum of 24 hours water storage in the event all their wells are out of service. We now have 750,000 gallons storage available, in the winter we store about 450,000 gallons to prevent the tower from ice formation inside, this gives us about 48 hours of water available. In the summer the demand is much higher, we keep between 450,000-650,000 gallons for storage but consume between 400,000 and 600,000 gallons a day, this is about the 24 hours 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 a 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 ample water flows for fire protection. The IDNR strongly suggests that communities track there system water loss rate to help determine the need for additional water pumping needs and system repairs. Fairfax water loss is 7.08% average for the year 2021, the national average is 16% and as high as 40% in some Cities.

Biannually, every spring and fall, the City flushes all the fire hydrants to help control any sediment, debris, taste, and odor issues brought on by chlorine reacting with organic materials (TTHA's and HAA5's). These checks also verify that the hydrant is operating properly.

The City has a **Source Water Protection Committee** with assistance from the IDNR 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.

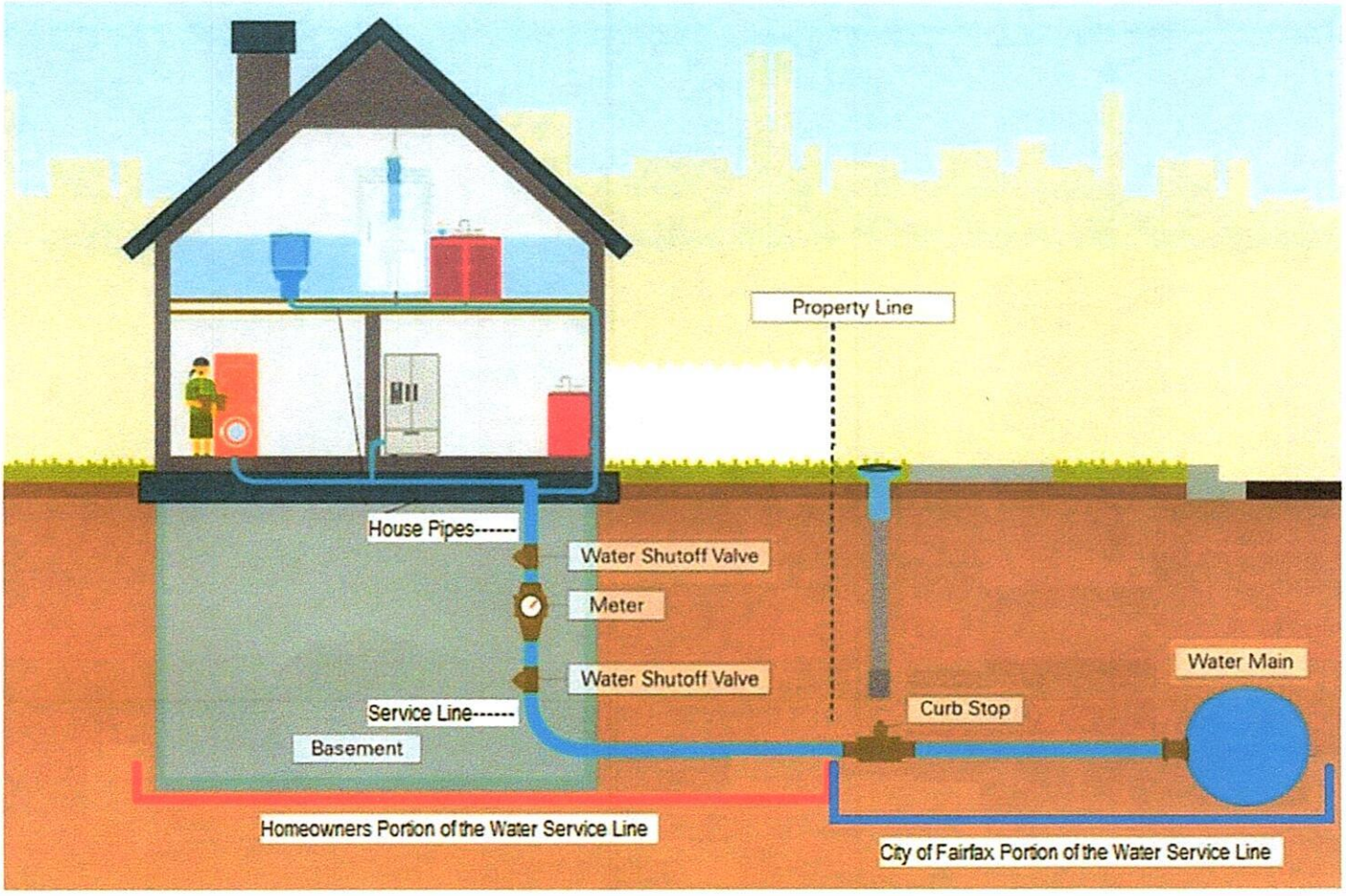
2021 last year water system projects that involved looping or connecting the water main from Linn St./Fairfax Rd. to Southview Rd. and west to Williams Blvd. connecting at the ground storage tank were completed. Looping systems helps with water quality and flow characteristics for firefighting.

Future projects for 2022 will involve connecting the water mains along Hwy 151 under the UPRR and under Prairie creek. This will give us more than one crossing between north and south. A new well is under preliminary planning for the SW corner of the UPRR and Hwy 151 along with the possible treatment plant. This should be completed and online by year 2025.

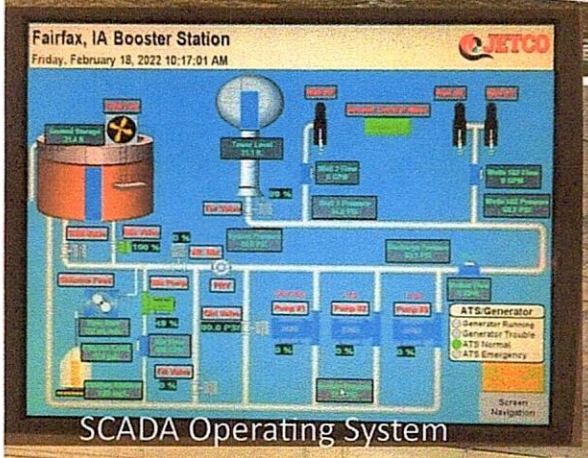
What am I responsible for in the plumbing of my HOME?

Homeowner: The homes ownership starts after the curb stop that is generally located on the property line by the sidewalk. This is the service shutoff from the water main to the home. Everything after the curb stop to inside the home is the homeowners to maintain and replace including (*service line, shutoff valves, house pipes , filters and water softeners*) except the water meter (City Owned). The City is available to assist in helping diagnose problems with the water systems at no charge.

City Owned: The curb stop to the public water main is the City's responsibility to maintain. The curb stop is very important to remain visible and not damaged. This is the only way to shut off the water to the home incase of a main valve failure or service line leak. If repairs to the curb stop are needed, please call City Hall and request that someone come look at the problem. City staff are not allowed to make repairs or adjustments to private property but may offer suggestions to help with the problem.



A Look at the New Storage Tank and Booster Station...



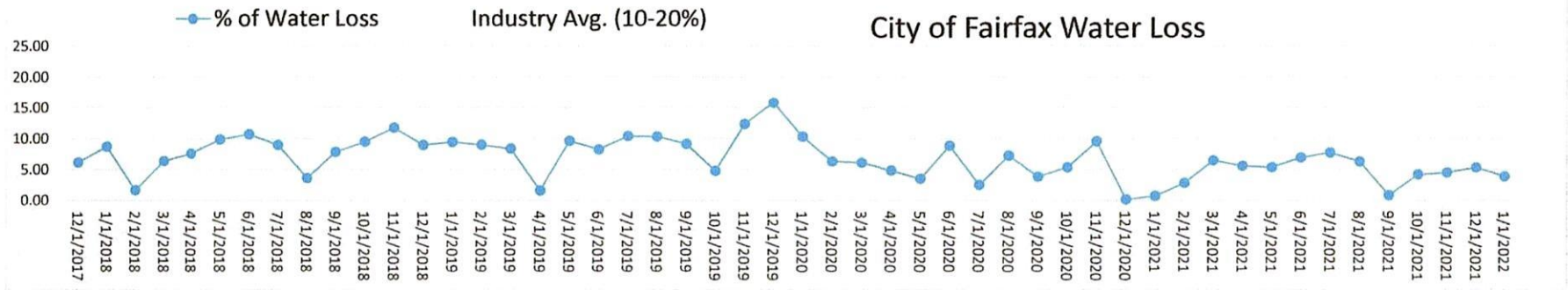
SCADA Operating System

City of Fairfax 2021 Water Usage in Million Gallons 81.026

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Total / MG Pumped		4.266	3.739	4.398	5.865	7.096	10.560	11.025	11.493	7.580	5.523	4.499	4.982
Average/Day		0.138	0.134	0.142	0.196	0.229	0.352	0.356	0.371	0.253	0.178	0.150	0.161
Max		0.203	0.162	0.189	0.499	0.379	0.533	0.566	0.624	0.375	0.477	0.294	0.430
Min		0.057	0.107	0.079	0.096	0.150	0.218	0.124	0.034	0.147	0.005	0.007	0.004
Chlorine / gallons Used		139.4	111.8	151.8	214.6	264.9	336.8	340.8	356.7	248.1	191.1	151.3	158.4
Phophate / lb. Used		175.0	147.6	181.9	241.4	285.6	438.3	419.4	422.0	271.2	202.8	170.2	177.5
	EPA Max Level												
Average Chlorine Residual mg/L	4 mg/L Annual Avg.	2.59	2.68	2.76	3.48	3.55	2.95	2.56	2.64	2.57	2.11	1.95	2.52
Average Nitrite NO2 mg/L	1.0 mg/L	0.017	0.017	0.013	0.045	0.016	0.014	0.015	0.039	0.063	0.163	0.15	0.022
Average Nitrate NO3 mg/L	10.0 mg/L	0.98	0.94	1.46	1.45	1.25	1.06	1.2	1.04	1.88	1.44	1.59	1.38

Water Loss from System:

The City track its water loss from non-metered and unaccounted water each month. This tells us the structual health of our system and the number of potential leaks that may exist. Small leaks in service lines and water main fittings are the most common problem for any system. Tracking this information helps us with future planning of system upgrades and replacement water projects. Keeping our percent of water loss as low as possible also keeps the cost of energy and chemicals lower. If you see a wet spot in your front yard or street please call City Hall so we can investigate and sample the water to determine if it is chlorinated or not, sometimes it takes weeks for the leaks to show up. Our system average is 7.08% over the last 4 years, some communities are as high as 40% around the country. **City Hall 319-846-2204**



2021 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	<2.00 (ND-<2)	8/17/2021	No	By-products of drinking water chlorination
Total Haloacetic Acids (ppb) [HAA5]	60 (N/A)	LRAA	6.13 (6.13-6.13)	8/17/2021	No	By-products of drinking water disinfection
Inorganic Contaminants						
Lead (ppb)	AL=15 (0)	90th	6.0 (ND-31.4)	2021	No	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	AL=1.3 (1.3)	90th	0.940 (0.055-1.1)	2021	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 (2.2-3.55)	12/30/2021	No	Water additive used to control microbes
Water Characteristics 950 - Distribution System						
Iron (ppm)	SMCL 0.3	AA	0.38	2020	No	Rusty color; sediment; metallic taste; reddish or orange staining
Manganese (ppm)	SMCL 0.05	AA	0.006	2020	No	Black to brown color; black staining; bitter metallic taste
pH	SMCL 6.5-8.5	AA	7.34	2020	No	LOW pH: Bitter metallic taste; corrosion HIGH pH: Slippery feel; soda taste; deposits
Hardness-mg CaCO3/L	N/A (N/A)	AA	440 25.7 Grains	2020	N/A	Soft: 0-17.1 Slighty Hard: 17.1-60 Mod Hard: 60-120 Hard: 120-180 Very Hard: 180 & over
Ammonia - Free (ppm)	N/A (N/A)	AA	0.4 (0.00-1.37)	2021	N/A	Runoff from fertilizer use;leaching of septic tanks, sewage; erosion of natural deposits.
Nitrate (ppm)	10 (10)	AA	1.3 (0.04-2.15) 48 samples	2021	No	Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits.
Nitrite (ppm)	1 (1)	AA	0.049 (0.006-0.383) 48 samples	2021	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	10/30/2020	No	Erosion of natural deposits
Ammonia (ppm)	N/A (N/A)	AA	4.616 (3.4-4.99)	2021	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	4.4	2/16/2021	No	Erosion of natural deposits
Combined Radium (pCi/L)	5 (0)	AA	4.72 (3.9 6.3)	10/25/2021	No	Erosion of natural deposits
Ammonia (ppm)	N/A (N/A)	AA	4.53 (3.28-4.91)	2021	No	Runoff from fertilizer use;leaching of septic tanks, sewage; erosion of natural deposits.
Nitrite (ppm)	1 (1)	AA	0.02 (0.008-0.20)	2021	No	Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits.
Nitrate (ppm)	10 (10)	SGL	<1.0 (ND)	5/18/2021	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
Combined Radium (pCi/L)	5 (0)	SGL	0.52	10/25/2021	No	Erosion of natural deposits
Ammonia (ppm)	N/A (N/A)	AA	3.395 (2.34-5.2)	2021	No	Runoff from fertilizer use;leaching of septic tanks, sewage; erosion of natural deposits.
Manganese (ppm)	HAL 0.3 SMCL 0.05	AA	0.059 (0.025-0.4)	2021	No	Black to brown color; black staining; bitter metallic taste
Nitrate (ppm)	10 (10)	SGL	<1.0 (ND)	7/13/2021	No	Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits.
Nitrite (ppm)	1 (1)	AA	0.016 (0.009-0.027)	2021	No	Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits.
Fluoride (ppm)	4 (4)	SGL	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) Volatile Organic Compounds 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)	SMCL 250	SGL	6.7	5/8/2018	No	Erosion of natural deposits
Sulfates (ppm)	SMCL 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.

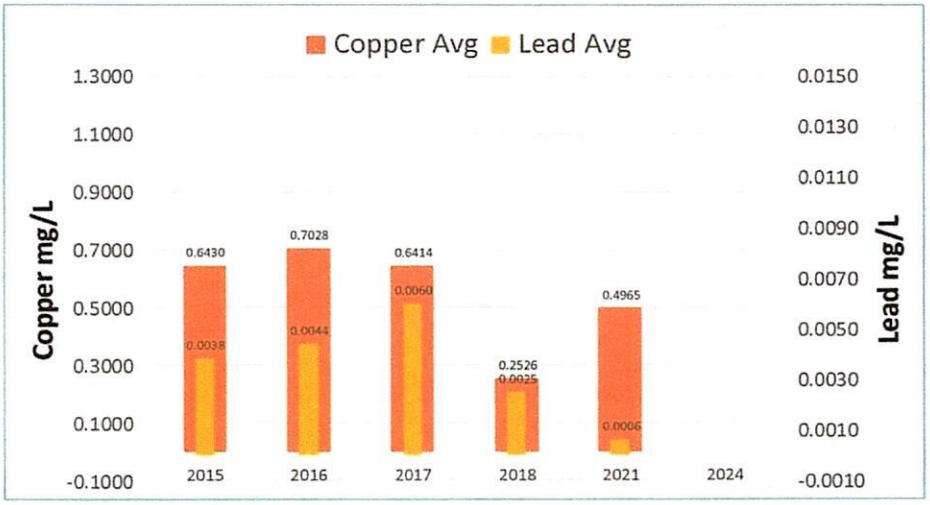
Definitions:

- 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
- Maximum Contaminant Level Goal (MCLG)— The level of the contaminant in drinking water below which there is no known
- 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
- Maximum Residual Disinfectant Level (MRDL)— The highest level of a disinfectant allowed in drinking water. There is
- SGL— Single Sample Result
- RTCR— Revised Total Coliform Rule
- NTU— Nephelometric Trubidity Units
- HAL - Health Advisory Level

Lead in Drinking Water from the CDC

The City of Fairfax Lead and Copper Reduction Program

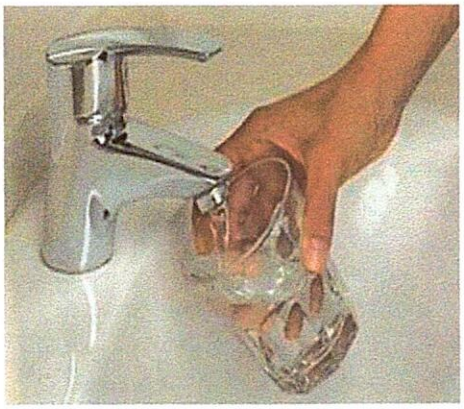
In 2018 the City started adding a blend of 70/30 Orthophosphate and Polyorthophophate to both of the well sites to help reduce the possible leaching of lead and copper into the drinking water from the homes plumbing fixtures. Orthophosphate provides a protective coating on the inside lining of the water pipes preventing erosion of the metals. Testing is done yearly unless very low results are seen, then a 3 year schedule is granted. 10 testing sites are chosen according to an EPA scoring for probability of lead plumbing. Over the last 10 years the City of Fairfax has replaced all of its older water mains with PVC and all new service lines to the home where installed, removing any lead service lines found. Some older homes in Fairfax may still have some lead pipes in their system. The latest testing was in 2021 and the following results are shown below.
EPA max level for lead is 0.015 mg/L and copper is 1.3 mg/L



EPA Lead and Copper Tier Rating 1,2,3	Lead and Copper Sample Year	Lead Results MCL 0.015 mg/L	Copper Results MCL 1.3 mg/L
1	2021	0.0060	0.414
2	2021	<0.0010	0.302
2	2021	<0.0010	0.293
2	2021	<0.0010	0.055
2	2021	<0.0010	0.524
2	2021	<0.0010	0.118
2	2021	<0.0010	0.154
2	2021	<0.0010	0.453
2	2021	<0.0010	1.100
1	2021	<0.0010	0.940

The most common sources of lead in drinking water are lead pipes, faucets, and plumbing fixtures. Certain pipes that carry drinking water from the water source to the home may contain lead. Household plumbing fixtures, welding solder, and pipe fittings made prior to 1986 may also contain lead.

How lead gets into tap water Steps taken during the last two decades have reduced exposures to lead in tap water. These steps include actions taken under requirements of the 1986 and 1996 amendments to the Safe Drinking Water Act and the U.S. Environmental Protection Agency's (EPA's) Lead and Copper Rule. Even so, lead in water can come from homes with lead service lines that connect the home to the main water line. Homes without lead service lines may still have brass or chrome-plated brass faucets, galvanized iron pipes or other plumbing soldered with lead. Some drinking water fountains with lead-lined tanks and other plumbing fixtures not intended for drinking water (e.g., lab faucets, hoses, spigots, hand washing sinks) may also have lead in the water.



Lead can enter drinking water when a chemical reaction occurs in plumbing materials that contain lead. This is known as corrosion – dissolving or wearing away of metal from the pipes and fixtures. This reaction is more severe when water has high acidity or low mineral content. How much lead enters the water is related to:

- the acidity or alkalinity of the water,
- the types and amounts of minerals in the water,
- the amount of lead that water comes into contact with,
- the water temperature,
- the amount of wear in the pipes,
- how long the water stays in pipes, and
- the presence of protective scales or coatings in the pipes.

Find out if your tap water is contaminated with lead

You cannot see, taste, or smell lead in drinking water. The best way to know your risk of exposure to lead in drinking water is to identify the potential sources of lead in your service line and household plumbing.

Your local water authority is always your first source for testing and identifying lead contamination in your tap water. Ask your water provider if you have a lead service line providing water to your home. If you have a lead service line, ask if there are any programs to assist with removal of the lead service line going to your home. Understand that any work, such as water main or service line replacement, could increase exposure to lead while the work is ongoing and for up to six months after the work is completed.
Ask to have your water tested. Many public water systems will test drinking water for residents upon request. There are also laboratories that are certified to test for lead in water. Understand that water sampling results can vary depending on the time of day, season, method of sampling, flow of water and other factors.

Risk from lead in water

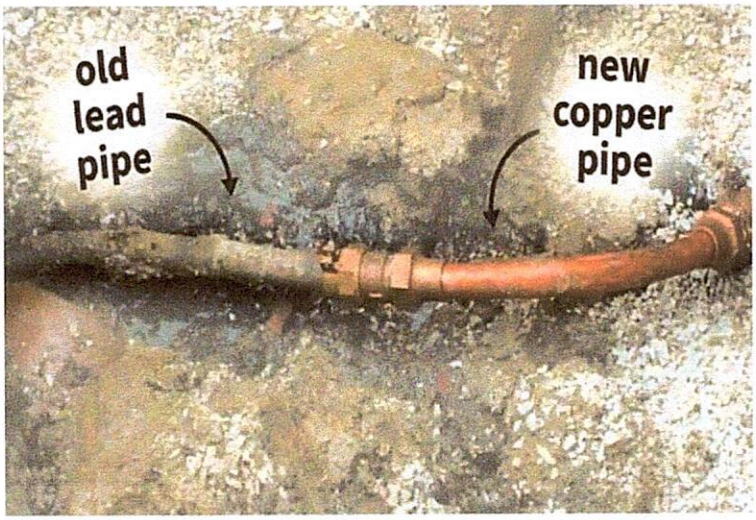
Because no safe blood level has been identified for young children, all sources of lead exposure for children should be controlled or eliminated. EPA has set the maximum contaminant level goal for lead in drinking water at zero because lead can be harmful to human health even at low exposure levels. Lead is a toxic metal that is persistent in the environment and can accumulate in the body over time. Risk will vary depending on the individual, the chemical conditions of the water, and the amount consumed. For example, infants who drink formula prepared with lead-contaminated tap water may be at a higher risk of exposure because of the large volume of water they consume relative to their body size. Bathing and showering should be safe for you and your children because human skin does not absorb lead in water.

Get your child tested for lead exposure

If you think that you or your child has been exposed to lead in water, contact your health care provider. Most children and adults who are exposed to lead have no symptoms. The best way to tell if you or your child has been exposed is with a blood lead test. Your health care provider can help you decide whether a blood lead test is needed and can also recommend appropriate follow-up actions if you or your child has been exposed. As levels of lead in the blood increase, adverse effects from lead may also increase.

Reduce or eliminate exposure to lead in tap water

If you are concerned about lead in water or know that your plumbing contains lead, you can take action to reduce the amount of lead in your drinking water and minimize your potential for exposure.
You can reduce or eliminate your exposure to lead in tap water by drinking or using only tap water that has been run through a



"point-of-use" filter certified by an independent testing organization to reduce or eliminate lead (NSF/ANSI standard 53 for lead removal and NSF/ANSI standard 42 for particulate removal). **If you have a lead service line, use a filter for all water you use for drinking or cooking.**
You can flush your water to reduce potential exposure to lead from household lead plumbing. This is especially important when the water has been off and sitting in the pipes for more than 6 hours. Before drinking, flush your home's pipes by running the tap, taking a shower, doing laundry, or doing a load of dishes. Drink or cook only with water that comes out of the tap cold. Water that comes out of the tap warm or hot can have higher levels of lead. Boiling this water will not reduce the amount of lead in your water.
You can virtually eliminate your exposure to lead in water by drinking or using only bottled water that has been certified by an independent testing organization. This may not be the most cost-effective option for long-term use.

City of Fairfax Water Department

Customer Questionnaire for Lead and Copper Testing of Drinking Water

The City of Fairfax Water System is required to do Lead and Copper testing at least every 3 years at locations within our system that meet the criteria from the EPA. In order to compile a database of materials used in our customer's service lines and plumbing required by our sampling plan, please take a few minutes to complete this questionnaire and return to one of the following:

Mail to:	City of Fairfax
	PO Box 337
	Fairfax, IA 52228
Drop Off:	Drive up window at City Hall @ 300 80th St Ct
Email To:	kstensland@cityoffairfax.org Water Supervisor

Thank you for your cooperation in helping us with this to continue to serve clean and safe drinking water to our customers.

Contact and Location Information:

Name of person filling out this questionnaire: _____

Phone Number should we have questions: _____

Property Information:

Address (use separate sheet for each address): _____

Type: ____ Single Family ____ Multi Family ____ Commercial ____ Industrial

Year Built: ____ Before 1982 ____ Between 1982 – 1987 After 1987 do not apply for lead

Materials List:

What material is your service line made of? (Check all that apply)

____ Lead ____ Copper ____ Galvanized Steel ____ P.E. (polyethylene) ____ Unknown

What material is your house pipe made of? (Check all that apply)

____ Lead ____ Copper ____ Galvanized ____ PVC ____ PEX ____ Unknown

Has the property had any plumbing pipes or fixtures replaced in the last 3 years? ____ Yes ____ No

Does the property have a water softener or a whole house water filtering system? ____ Yes ____ No

If Yes to the above question, do you have an untreated, cold water kitchen or bathroom faucet?

____ Yes ____ No

If your home meets the criteria for lead and copper sampling, would you be willing to participate in this testing? A Water Supply Employee will take the sample after instructions are explained to the customer. Samples are taken during summer months between 6 months and 3 years.

____ Yes ____ No

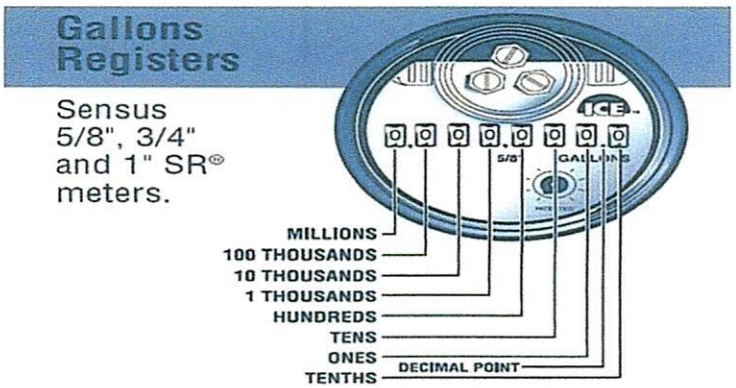
Facts About Your Water Meter

General Information

Your water meter is owned and maintained by The City of Fairfax Water Department. The Water Department has utilized Elster® Displacement Type Magnetic Drive Cold Water Meters and is currently using Bager® Displacement Type Magnetic Drive Cold Water Meters as they have been proven to be highly accurate and dependable. Each standard residential meter includes a register with a straight-reading (left to right), odometer type totalization display in gallons, a low flow (leak) detector, and it may have a 360° test circle with center sweep hand. Gears are self-lubricating, molded plastic for long life and minimum friction. All of our meters have electronic reading devices that allow the meter reader to drive or walk past your home and pick up the meter reading remotely.

How do Water Meters Work?

Water flows through the meter's strainer and into the measuring chamber where it drives the piston. The hydro-dynamically balanced piston oscillates around a central hub, guided by the division plate. A drive magnet transmits the motion of the piston to a driven magnet located within the hermetically sealed register. The driven magnet is connected to the register gear train. It reduces the piston oscillations into volume totalization units displayed on the register dial face. The register dial face has 8 odometer wheels for totalizing flow. See reference diagram below.



Left is a picture of a standard residential mechanical water meter located inside the house, on the right is an ERT (Encoder Receiver Transmitter) which will be mounted on or near the meter. Wires are used to connect the meter to the ERT which allows us to read the meter without entering your home.

Meter Accuracy

The mechanical design of water meters does not allow for adjustments of the dials or accuracy calibration of the meter. Similar to automobiles, odometers, or other mechanical devices, the meter slows down with age and eventually stops registering completely. The Water Department has the ability to send in the meter to an outside vendor to test for meter accuracy and a meter will be used until the accuracy is less than 97% accurate. The meter will not arbitrarily run faster than it was designed to run or run backwards. The mechanical parts are not capable of "speeding up" or registering a significantly higher reading than actual usage. Having a meter register 20,000 gallons of consumption when the usage was actually 4,000 gallons would be like a vehicle with a maximum speed of 100 mph suddenly being able to intermittently run at speeds of 500 mph, it isn't mechanically possible.

Is it possible for a meter to be read incorrectly?

The Water Department utilizes a monthly report through the billing system that creates a report showing suspected high or low consumption numbers. This report is reviewed and we try to contact each address which seems to have an extremely high usage. The radio transmitter records each gallon of usage based on an electrical impulse from the meter, but if the wiring is broken or the battery is dead the City will not be able to obtain an electronic reading. A manual read will need to be taken from the dials and the City will need to determine why we were not able to obtain an electronic reading.

How to Lower Your Water Bills

If you feel your water consumption is higher than it should be, you should check for leaks. Leaking water produces a high water bill. Some leaks are sporadic and require some detective work. Other leaks are very obvious. One of the first things you should do is read your meter each day for a week. If you call City Hall with the readings, we can do the calculations and let you know how many gallons you are currently using each day. It doesn't matter what type of leak you have, there is a solution. **High usage is almost never related to a mechanical meter running fast!**

The most common cause of high water usage and leaks in the home are a toilet or water softener!

Toilet leaks often occur without audible or visual evidence. When a toilet does not shut off after flushing the water usage can be heard and seen. Leaking toilets can waste 200 gallons or more of water per day and if undetected it could lead to significantly higher usage over the course of a month. Pin-pointing a toilet leak is easy and usually inexpensive. Follow these procedures to locate a toilet leak:

Wait 5-10 minutes after the last flush.

Remove tank cover. Is the water level in the tank too high and spilling into the overflow tube? If it is you have a leak.

While you have the tank cover off, put food coloring in the toilet tank. Wait at least 30 minutes. If the colored water appears in the bowl, you have a leak.

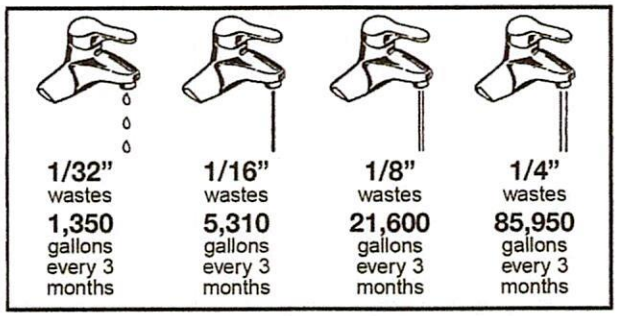
How to Detect a Leak

First make sure all water using fixtures in your home are not in use. Check to see if the flow indicator on the face of the meter is moving. If it is moving, you either have a leak or something in your home is using water. Go find it. Places to look are:

Toilets: (flappers get old and wear out, chains stick or floats not adjusted correctly) Lower level bathrooms not used often.

Faucets and Hot water heaters

Water softeners: (check drain line for discharge, programmed correctly or control valve malfunction)



Note above how many gallons even a very small leak can use during a 3-month period:

Is Chloramines Safe for My Furry Pets?

Yes. **Chloraminated Water is Safe for Everyone to Drink,** including:

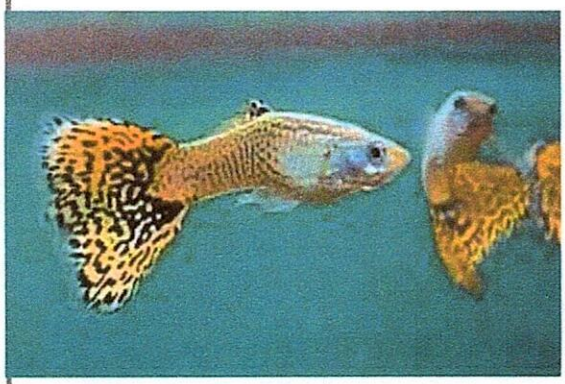
- Pregnant women
- Children and infants
- People on kidney dialysis
- People on low sodium diets
- People with diabetes
- Warm blooded pets (dogs, cats, birds, pigs, etc.)

Chloraminated water is safe for all warm blooded animals, including humans, to drink because the digestive process neutralizes the chloramine before it reaches the blood stream.

Chloraminated water is <u>NOT</u> safe for all cold blooded animals (fish, reptiles, amphibians, etc.)

Your Aquarium and Fairfax City Water

The article below helps explain how to treat your tap water before adding it to your aquarium. The City of Fairfax water supply has naturally accruing ammonia in its source water (3.0-4.5 ppm). Ammonia in its self is not harmful to humans but it will convert to nitrite then to nitrate. These two compounds are regulated by the IDNR and EPA. The City uses the chlorine to combine with the natural ammonia to form chloramines, this is a type of disinfection that lasts longer in the system before breaking down. We manage the chlorine levels so to limit the free ammonia left in our system to about <1.0 ppm, this keeps the amounts for nitrite and nitrate conversion to limits under the EPA mandated regulations *(the conversion rate is 1 ppm NH3 ammonia to 1ppm NO2 nitrite to 1ppm NO3 nitrate).*



Most aquarists use tap water for their aquariums, both for the initial fill up and to top off the tank to replace water lost due to evaporation. If your tap water comes from a private water system that uses a private well for its source, in all probability the water will come from a well which will not be treated with chlorine or chloramine before being distributed to the end users. This water does not need to be treated before using in an aquarium.

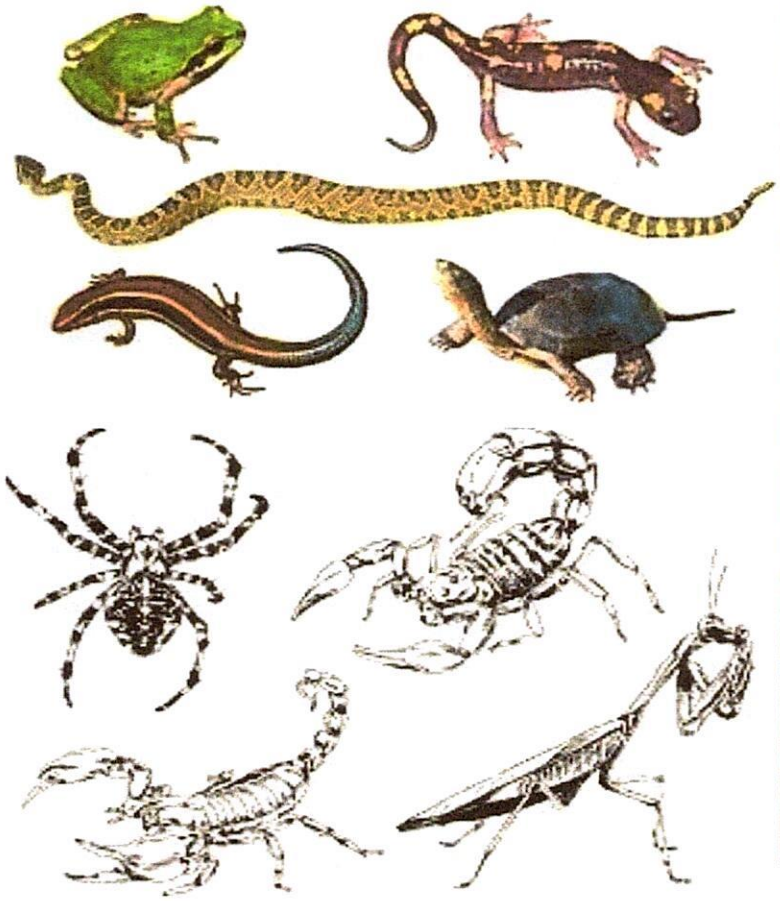
Municipalities, on the other hand, are required to treat their water with chlorine and/or chloramine whether it comes from a well, a river or any other source. Treating the water with chlorine and/or chloramine is a great idea, since this has the potential to destroy a wide variety bacteria and other nasties that we really don't want to be ingesting if we want to stay healthy, nor do we want any stray bacteria finding its way into our tanks.

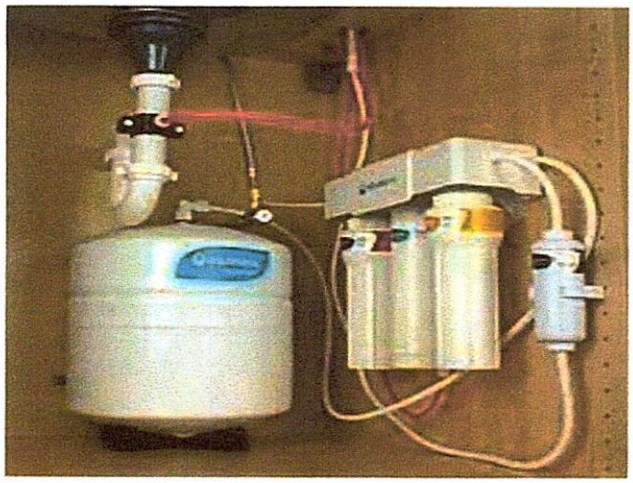
The Difference between Chlorine and Chloramine

Chlorine has been added to drinking water supplies for years to kill bacteria. It has only been fairly recently that chloramine (chlorine and ammonia chemically bonded) has been used in place of chlorine due to its tendency to remain stable and not break down over a short period of time, thus providing protection over a longer period of time.

As many people know, chlorine will evaporate (fizz off) from water left open to the atmosphere in a fairly short period of time. Chlorine can be removed from tap water by either leaving the water open to air for a period of time or by introducing air bubbles (via an air pump and air stone) which will accelerate the dechlorinating process. Chloramine, on the other hand, will remain in tap water for an extended period of time and requires a chemical or carbon treatment of the water to effectively remove it. In order to remove the chlorine, the chloramine must be deconstructed into its basic parts, chlorine and ammonia, with each part being treated to remove them.

Most tap water conditioners will break the chemical bond between the chlorine and ammonia and then destroy the chlorine, leaving the ammonia in the water. The better quality water conditioners will also neutralize the ammonia, which is toxic to fish and invertebrates.

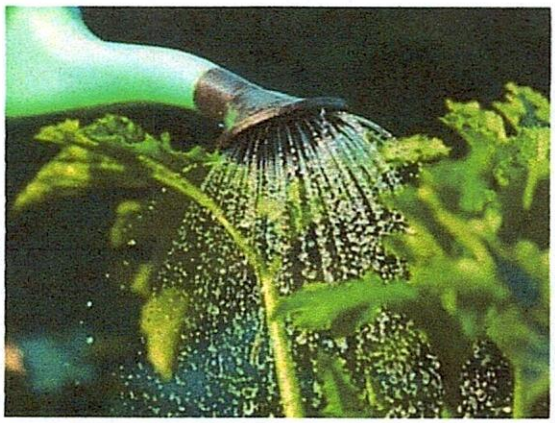




Three Methods to Remove Chloramines from Tap Water

1. The easiest and least expensive way is to use a chemical dechlorinating product but choose one carefully, because not all tap water conditioners or dechlorinates are the same. Read product labels closely, and if a product states that it removes chlorine and chloramines, but has no mention of ammonia, beware. Products such as these are designed to break the chloramine bond, separating the ammonia from the chlorine, at which point the chlorine is eliminated, but the released associated toxic ammonia remains in the water. Again, read labels carefully. In all likelihood, a product like this will also state that an additional brand name ammonia eliminating or detoxifying product should be used at the same time. The simplest solution to this problem is to buy a three-in-one chlorine, chloramines, and ammonia treatment tap water conditioner.
2. Install and filter the tap water through an RO (Reverse Osmosis) unit, but make sure it is a quality model that is designed to remove chlorine, chloramines, and ammonia.
3. A simple faucet or under the counter tap water drinking carbon type filter can be used, but the unit must contain high-quality carbon, and unless the water is allowed sufficient contact time, it may not be completely effective. Also, chloramines can exhaust carbon much faster than chlorine alone, and therefore filter cartridges need to be replaced more often. Buying a tap water filter that has an indicator that tells you when it's time to change the cartridge is a good investment.

Chlorine and Your Garden



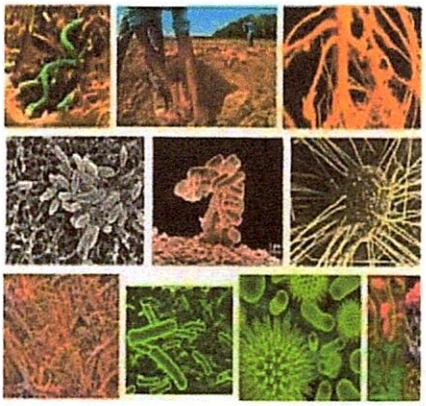
With chlorine added to many public water systems, it might seem that "water, water everywhere but not a drop to drink" is the order of the day for your garden. While chlorine does kill microorganisms that are necessary to your plants' growth, the levels in drinking water are so low and the beneficial beasties multiply so quickly that most gardeners can cross this worry off their list.

Chlorine Isn't Toxic in Small Quantities

Gardeners know that chlorine kills bacteria and fear that chlorinated water will not make the garden happy. In fact, chlorinated water kills microorganisms in garden soil and compost piles, organisms beneficial to plant growth and health. However, because the chlorine level is so low, the damage done is minimal. According to an article published by the Colorado State University Extension, treated water typically contains 0.05 to 0.90 parts of chlorine per million. Water must contain some 65 parts per million to kill soil microorganisms at a depth of 6 inches.

Chlorine Holds Tight to Surface Particles

One reason chlorinated water has little effect is that the chemical binds to soil-particle surfaces. This means that chlorine may kill off microorganisms in the upper few inches of soil, but lower levels of soil are not affected. While the water seeps on down, the chlorine does not. Even heavily chlorinated water -- 5 parts per million -- impacts microorganisms in only the top half inch of soil, according to a Colorado State University Extension article.



Microorganisms Reproduce Like Rabbits

Microorganisms hidden in dark garden soil reproduce early and often. This makes them more than a match for the bacteria killers in chlorine. A Colorado State University Extension article mentions a study in which researchers irrigated soil with highly chlorinated water for 126 days straight. Just 48 hours after they ceased watering, the soil microorganism populations rebounded to their before-treatment levels for all depths of soil.

Heavily Chlorinated Water Is Toxic

Swimming pool water can contain far more chlorine than drinking water, so don't drain your pool into the veggie patch. The effect of the chlorine on plants depends on the chlorine level in the water, but testing isn't mandatory. Since chlorine dissipates quickly, if you stop adding chlorine to your pool, in a week or 10 days, the chlorine level will have dipped to below that of drinking water.

Softened Water and My Garden

Most of the time it is not a good idea to water your garden with softened water. The reason for this is that softened water typically has a high amount of sodium, which is attained from salt. Most plants cannot tolerate high amounts of salt. The sodium in softened water actually interferes with the water balance in the plants and can kill plants by "fooling" them into thinking they have taken up more water than they have. ***Softened water essentially causes the plants in your garden to die of thirst.***

Not only does the salt in softened water hurt the plants you water with it, the salt in the water will build up in your soil and will make it difficult for future plants to grow.

Soft Water Homes and Watering

This is not to say that if you have softened water you cannot water your garden and lawn. You have a few options if you have softened water.

First, you can have a bypass spigot installed. This means that you can have a special spigot installed on the exterior of your house that takes water from the water line before the water is treated in the water softener.

Second, you can try mixing your softened water with collected rainwater or distilled water. This dilutes the effects of the salt in your softened water and makes it less harmful to your plants. But be aware that the salt in softened water will still build up in the soil. It will be very important that you regularly test the soil for salt levels.

How to Treat Soil Affected by Softened Water

If you have soil that has been watered too much with softened water, you will need to work to correct the salt levels in the soil. There are no chemical ways to reduce the amount of salt in your soil, but you can do this manually by frequently watering the affected soil. This is called leaching. Leaching will draw the salt out of the soil and will either push it deeper in the soil or will wash it away. While leaching will help to draw the salt out of the affected soil, it will also draw out nutrients and minerals that plants need to grow. This means that you need to make sure to add these nutrients and minerals back into the soil.

Colors and Smells

Noticeable water problems tend to involve unusual colors, smells, and tastes. Once identified, these aesthetically displeasing elements can be eliminated using a variety of different methods. Federal guidelines are set up to monitor these aesthetic problems.

Taste and Odor

Since taste and odor work together it is often difficult to distinguish the two. Common complaints include:

Strong Chlorine taste or smell - Generally this occurs when the water is treated at the water treatment plant to disinfect it. The addition of chlorine is used to kill off bacteria and other harmful microorganisms.

Metallic taste - Some water systems have a high mineral concentration giving the consumer a salty or soda taste. In the case of Iron and Manganese, a strong metallic taste is readily detected.

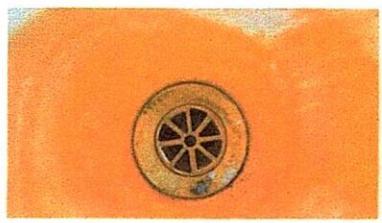
Rotten egg odor - This is usually a result of decaying organic deposits underground . As water flows through these areas, hydrogen sulfide gas is picked up, and when this water reaches the surface or comes out of the faucet, the gas is released into the air. Hydrogen sulfide gas produces the rotten egg odor, can be corrosive to plumbing at high concentrations, and can tarnish silver rapidly. In large enough quantities, it is toxic to aquarium fish. As little as 0.5 PPM (parts per million) can be tasted in drinking water.

Musty or unnatural smells - These smells are normally a result of organic matter or even some pesticides in the water supply. Even very low amounts can introduce unpleasant odors into the water.

Turpentine taste or odor - This smell can be a result of MTBE (Methyl tert-butyl ether) contamination in your water. The odor threshold of MTBE is fairly low, so even though you can smell it, the MTBE is more than likely not at a level to cause harmful effects.

Color

"Clean" water should be clear with no noticeable color deposits. Common colors include:



Red or Brown Color - A red, brown or rusty color is generally indicative of iron or manganese in your water. Disadvantages to iron in your water include stains in sinks, or discolored laundry.

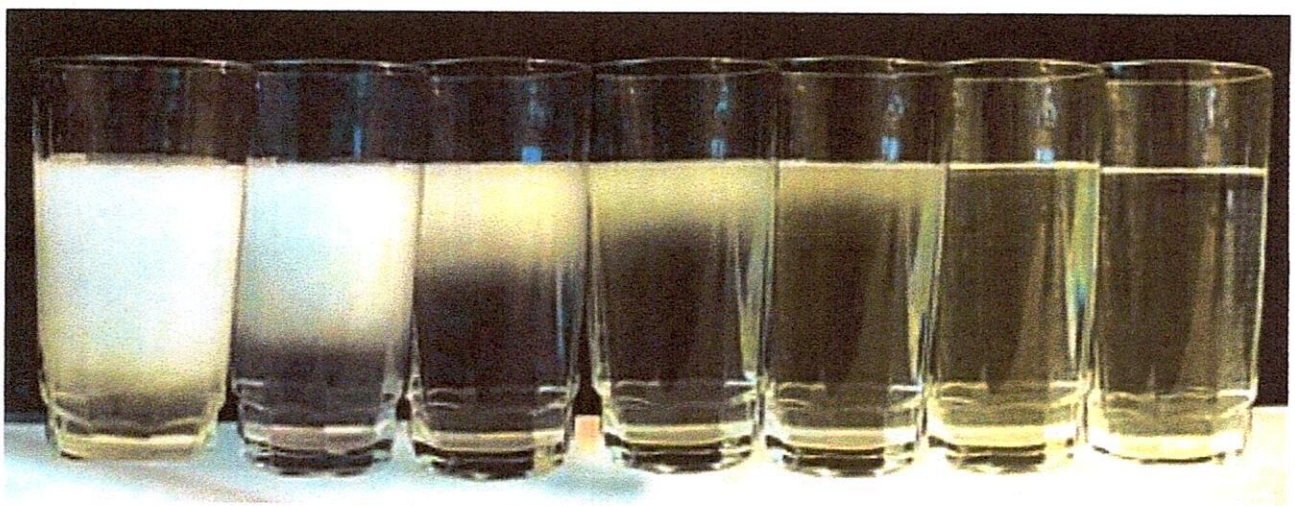
Yellow Color - This coloration occurs in regions where the water has passed through marshlands and then moved through peat soils. In the United States, these conditions occur in the Southeast, Northwest, New England, and Great Lakes regions. It is more commonly found in surface water supplies and shallow wells. Although the yellow color may be displeasing, it presents no health hazard, as it is only small particles suspended in the water.

Blue or Green Color - A green or blue color is generally a result of copper in your water supply, or copper pipes and corrosive water (1). The copper can cause staining of your fixtures and your laundry. Copper is regulated in drinking water by the EPA at 1.3 PPM. This is at a low enough concentration that the copper cannot be tasted (the taste threshold is around 5 PPM). Copper can become a problem if it is higher than 30 PPM in your water. Effects at this dose are vomiting, diarrhea, and general gastrointestinal distress (3). If you are using well water as your primary source of water, and copper is a concern in your area, it would be to your advantage to have your water tested for copper.

Cloudy White or Foamy - Cloudy water is usually due to turbidity. Turbidity is caused by finely divided particles in the water. When light hits the water, it is scattered, giving a cloudy look to the water. The particles may be of either organic or inorganic nature. Neither one causes any harmful effects to the body, although they can cause abrasions to pipes, or possible staining of sinks.

Why does my drinking water look cloudy sometimes?

Once in a while, you get a glass of water and it looks cloudy; maybe milky is a better term. After a few seconds it miraculously clears up! The cloudiness might be caused by the water in the pipes being under a bit more pressure than the water in the glass, but is more likely due to tiny air bubbles in the water. Like any bubble, the air rises to the top of the water and goes into the air above, clearing up the water. Cloudy water, also known as white water, is caused by air bubbles in the water. It is completely harmless.



Massachusetts Water Resources Authority

It usually happens when it is very cold outside because the solubility of air in water increases as water pressure increases and/or water temperature decreases. Cold water holds more air than warm water. In the winter, water travels from the reservoir which is very cold and warms up during its travel to your tap. Some of the air that is present is no longer soluble, and comes out of solution.

Also, water pressure has something to do with it. The water in the pipes is pressurized to a degree (which helps to get the water all the way from the water tower to your home). 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.