



WATER QUALITY REPORT

CONSUMER CONFIDENCE REPORT • 2021

CITY COUNCIL

Mayor Mark Gamba

Lisa Batey

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Photo by Hamid Shibata Bennett

A Message to Milwaukie Water Customers

Dear Milwaukie Water Customers,

Once again, the city is pleased to announce Milwaukie continued to provide community members with clean, safe drinking water by meeting or exceeding all federal Environmental Protection Agency (EPA) and Oregon Health Authority standards for 2021. The past year has posed challenges, but the public works department continued to work hard at improving the city's infrastructure and natural systems and make sure the community has uninterrupted access to excellent services.

During the last year, crews responded to 1,295 customer service/utility billing requests, replaced the media in three of the five aeration towers at treatment plants, replaced the disinfection piping at one treatment plant, repaired three water main breaks (*photo right*), replaced two pump station control valves, and installed three new water services.



Providing the community with a clean and reliable source for drinking water remains a top priority for the city. Everyone can help by lowering their overall use of potable water, which conserves water for future use, reduces the impacts from unnecessarily pumping water from underground, and decreases the volume of wastewater and stormwater requiring treatment. This can be done through a few easy lifestyle changes, such as planting native and climate-adapted plants that need less watering, fixing leaks and choosing water-smart appliances. To learn more about smart water habits, visit www.regionalh2o.org.

As drinking water systems age and require more upkeep, the public works department plans on completing necessary improvements to maintain and improve upon Milwaukie's drinking water system. In 2019, the city drilled a new well to replace well #2. Construction began in April 2019 and the well was completed in September 2019. Construction on the new well house began in the fall of 2020 and is expected to finish soon. The Stanley Reservoir has undergone several high-

(continued on page 2)



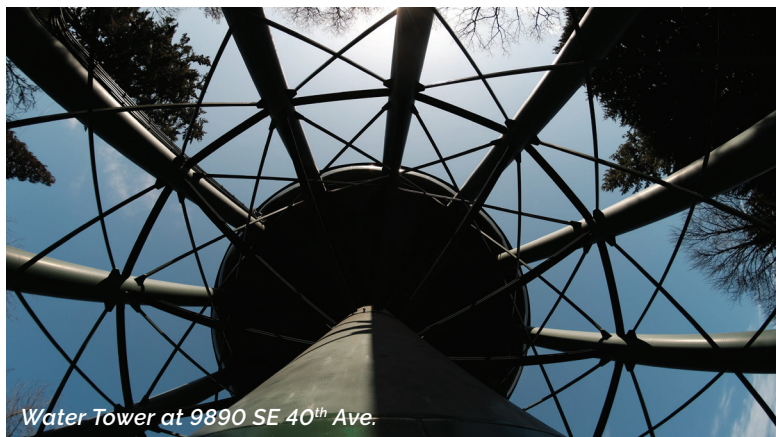
Message to Water Customers *(cont.)*

level inspections and some deficiencies were noted. Most prevalent was the exterior coating failure, improvement to the mixing of water in the tank to provide the freshest water possible and some seismic resiliency improvements. The anticipated cost of this project is \$2.8 million and work is expected to begin in fall 2022. The city is in the process of making major upgrades to the automated control system for the water system. Commonly referred to as SCADA, this system will be replaced in whole with upgrades made to the communications systems, field automation and cyber security. This project is anticipated to cost approximately \$1.2 million and expected to finish in late fall 2022.

The City of Milwaukie is proud to serve the community and committed to maintaining high standards for the city's water systems. Thank you for taking the time to read this Consumer Confidence Report for 2021.

Peter Passarelli
Public Works Director

Water Sampling Reports Available Online



Water Tower at 9890 SE 40th Ave.

The community can view all of Milwaukie's water sampling results anytime at the State of Oregon Drinking Water Program website. Just visit www.oregon.gov/oha/ph/healthyenvironments/drinkingwater/pages/index.aspx and enter "Milwaukie." This online tool allows anyone to browse through water sampling results for not only the City of Milwaukie, but any other water system in Oregon.

For more information or questions about the reports, contact Jamie Clark, water treatment operator, at 503.786.7622 or clarkj@milwaukieoregon.gov.

Eliminating Lead in Drinking Water

Milwaukie was founded in 1847 and incorporated in 1903. Did you know that most of the water mains for the city were installed between the 1920s and 1970s? In those days, concerns about ingesting lead through drinking water were not understood and precautions did not exist yet. If your home was built during this era and no water has been used for an extended length of time (i.e., returning from vacation), the city recommends flushing the water sitting idly in the home's water pipes for about 30 seconds to two minutes before pouring a glass to drink, or to use in cooking or brushing teeth to minimize the potential for lead exposure. Over the past several years, the city's water department has removed and replaced any lead from its distribution system, and Milwaukie's water can be consumed with little to no fear of lead toxicity—the last 100+ lab reports for lead sampling have returned "none detected."

In 2022, the city will test for lead and copper in numerous homes across Milwaukie. If you have received an invitation to participate in this in-home sampling, the city appreciates your cooperation and asks you to respond promptly.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Milwaukie is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

If you are concerned about lead, you can 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 www.epa.gov/safewater/lead.

Reporting Violations

The City of Milwaukie failed to submit the test report for the annual nitrate sampling taken in October 2021, which led to three violations with the state. These did not have any adverse health effects to the community. The report was delivered upon receiving notice of the violation. The city has returned to compliance and is in good standing.

Everyone Can Help Protect Our Groundwater

The community can help control which chemicals are used in yards and what falls onto driveways. The city encourages everyone to limit their use of chemicals and cleaners that are harmful to the environment. Please clean up any oil or gas spills in your driveway, do not wash them into the street. Do not store fertilizers, pesticides and herbicides outdoors. These chemicals should be stored in a weatherproof shed equipped with a floor.

Properly discard old or unused chemicals, including cleaners, solvents, paints and lubricants, through the Metro hazardous waste program. Free household hazardous waste collection events are held in communities across the Portland region each year. For a list of upcoming dates and locations near Milwaukie, or more information, visit www.oregonmetro.gov. Metro also maintains an online database for other disposal options in the area.

Do you have a septic system? If so, please contact the city's engineering department at 503.786.7600 and ask for information about connecting to the sewer. Old septic systems are the leading cause of high nitrate levels, which leads to viral contamination of the drinking water aquifer.

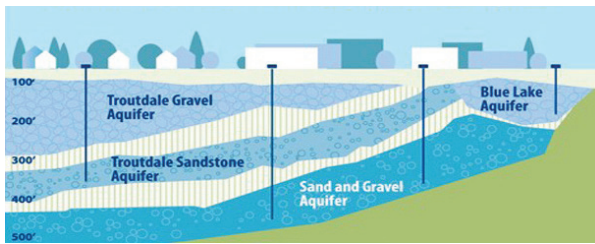
How Milwaukie Keeps Our Water Safe



The City of Milwaukie works hard to protect its ground water resources and water distribution system. Milwaukie works closely with the state's Department of Environmental Quality (DEQ) and federal Environmental Protection Agency (EPA). Together, they monitor and cleanup past contaminated sites, and properly evaluate and decontaminate any newly discovered sites. Contaminated sites include former gas stations, dry cleaners, as well as industrial and residential properties with contaminants ranging from naphthalene to heating oil to industrial solvents. DEQ maintains a complete listing of these sites that can be viewed at www.oregon.gov/deq/hazards-and-cleanup/Pages/default.aspx.

In addition, the city's stormwater, erosion control and cross-connection programs continuously work together to keep ground water, surface water and drinking water safe.

Where Does Milwaukie's Drinking Water Come From?



water levels within the aquifer. In Milwaukie, the groundwater flows primarily from the northeast to southwest.

Milwaukie reaches this water source through seven operating wells that range from 250 to nearly 500 feet deep. The city's wells are located in several locations around town. Emergency water connections with Clackamas River Water District (CRWD) and Portland Water Bureau, as well as a possible future connection with Oak Lodge Water Services, are capable of supplying the water Milwaukie may need in an emergency situation. These interties allow the city's water system to assist other water systems when they need water in times of emergency or high-level maintenance. Milwaukie's water system currently isn't using water from the interties. Typically, when the City of Portland issues a boil water notice, Milwaukie residents do not need to boil water. This is the same for the CRWD area as well. The only time Milwaukie would use City of Portland or CRWD water is during an emergency or extensive project, such as the elevated tank painting work in fall and winter of 2016-17. The project required city staff to drain the elevated tank to sand blast and make repairs before the interior and exterior of the tank was recoated. For more information about Milwaukie's drinking water, visit www.milwaukieoregon.gov/water.

The city strongly encourages everyone to sign up for the emergency alert system. To learn more about Clackamas County's emergency public alerts notification system or to sign up to receive alerts, visit www.clackamas.us/dm/publicalerts.



By the Numbers: Milwaukie Water Quality Data

The table below shows the results of the city's most recent water quality analyses. Staff examine Milwaukie's water at each of the city's wells and entry points, which are points where treated water enters the drinking water system. The city doesn't test for every contaminant each year. Some pose greater risks than others and are, therefore, tested more frequently. Others are less harmful and tested for sporadically. Each regulated contaminant, no matter how small the trace, is listed in this table. The name of each substance, highest level allowed by regulation, ideal goal for public health, amount detected and usual sources for contamination are presented in this data table.

Substance	MRDL	MRDLG	Results	Violation?	Typical Source	Possible Health Effects
CHEMICALS						
Nitrates (2021)	10 ppm	0	1.958 Range 0.115-3.16	No	Major component of animal manure, human sewage waste and commercial fertilizers	Infants younger than 6 months old who drink water in excess of the MCL could become seriously ill and, if untreated, die. Symptoms include shortness of breath and blue baby syndrome.
Barium (2015)	2 ppm	2	.004 Range 0.0033-0.0045	No	Discharge from drilling waste, discharge from metal refineries, and erosion of natural deposits.	Drinking water containing barium in excess of the MCL can cause an increase in blood pressure, gastrointestinal problems, muscle weakness, and have effects on the nervous and circulatory systems.
Fluoride (2015)	4 ppm	4	0.117 Range 0-0.18	No	Naturally occurring in groundwater	For children, drinking water with fluoride in excess of the MCL can have adverse effects on tooth enamel. For adults, it can increase the likelihood of bone fractures, or lead to bone pain and/or tenderness.
Chlorine (2021)	4 ppm	4	0.24 Range 0.18-0.30	No	Disinfection chemical used to remove bacteria and prevent waterborne illnesses.	Drinking water containing chlorine in excess of the MCL could lead to irritating effects to the eyes and nose, as well as stomach discomfort.
DISINFECTION BYPRODUCTS						
Total Trihalomethanes (TTHM) (2021)	80 ppb	N/A	11 Range 0.29-11	No	Byproduct of the disinfection process when organic matter is present in the raw water	Drinking water containing Trihalomethanes in excess of the MCL over many years may cause problems with the liver, kidneys or central nervous system. It may also increase the risk of getting cancer.
Haloacetic acids HAA5 (2021)	60 ppb	N/A	0 Range ND	No	Byproduct of the disinfection process when organic matter is present in the raw water	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
MICROBIAL CONTAMINANTS						
Total Coliform bacteria	Presence of coliform bacteria in 5% of samples	0	0	No	Naturally present in the environment. Generally harmless and serves as an indicator of other pathogens	Coliforms are bacteria naturally present in the environment, and used as an indicator that other potentially harmful bacteria may be present. Repeat sampling revealed false positive or sampling error.
Fecal coliform & E. coli	If routine sample and repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive	0	0	No	Human & animal fecal waste	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal waste. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches or other symptoms. They may pose a special health risk for infants, young children and people with severely compromised immune systems.



OTHER SUBSTANCES

Substance	MCL	MCLG	Results	Violation?	Typical Source	Possible Health Effects
Trichloroethylene (2021)	5 ppb	0	0.6	No	Can enter drinking water through leaks, evaporation and spills from industrial storage tanks.	Drinking water containing trichloroethylene in excess of the MCL can cause central nervous system impairment, increased risk of cancer, harm to kidney, liver and male reproductive system, increased risk of autoimmune disease.
Tetrachloroethylene (2021)	5 ppb	0	1.500	No	Can enter drinking water from industrial discharge from factories or dry cleaners.	Drinking water containing tetrachloroethylene in excess of the MCL can cause liver, kidney and central nervous system dysfunction, problems with muscle coordination, and increased risk of cancer

COPPER & LEAD

Substance	Units	Goal	Action Level	Amount Detected (90 th Percentile)	Homes Exceeding Action Level	Violation?	Source of Contaminate
Copper (2019)	ppm	1.3	1.3	0.02	0	No	Corrosion of household plumbing
Lead (2019)	ppb	0	15	0	0	No	Corrosion of household plumbing

UNREGULATED CONTAMINANTS

The Environmental Protection Agency (EPA) uses the UCMR program to collect data for contaminants suspected of being present in drinking water, but do not yet have regulatory standards set by the EPA. The purpose of monitoring for these contaminants is to help the EPA decide whether the contaminants should have a standard. UCMR4 requires monitoring for 30 chemicals to understand the frequency and level of occurrence of unregulated contaminants in the nation's public water systems. Every five years, the EPA develops a new list of UCMR contaminants. For a copy of the UCMR4 results, contact Riley Gill at 503.786.7656 or email at gillr@milwaukieoregon.gov.

Substance	Average Level (ppb)	Primary Sources in Drinking Water	Possible Health Effects
Haloacetic Acids	0.6 ppb	Occurs as disinfection byproducts when chlorine is added to clean water	Carcinogenic and developmental effects possible after long-term exposure
	RANGE 0-11.0		
Manganese	2.6 ppb	One of the most abundant metals in the Earth's crust. Exposure is most likely through food	Chronic exposure can lead to adverse physical and mental effects
	RANGE 0.4-4.8		
Total Organic Carbon	1062.5 ppb	Naturally occurring. Infinite sources.	Prone to react with disinfectants to produce other undesirable compounds, such as haloacetic acids
	RANGE 1010-1120		

KEY

MCL: maximum contaminant level

MCLG: maximum contaminant level goal

MRDL: maximum residual disinfectant level

MRDLG: maximum residual disinfectant level goal

ND: none detected

PPM: parts per million, or milligrams per liter

PPB: parts per billion, or micrograms per liter

PPT: parts per trillion, or nanograms per liter

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

Maximum Contaminant Level (MCL):

The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG as feasibly possible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG):

The level of contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL):

Highest level of a disinfectant allowed in drinking water. There is convincing evidence the addition of a disinfectant is necessary for control of microbial contaminants.



Is Milwaukie's Water Hard?

Water described as hard is high in dissolved minerals, specifically calcium and magnesium. Hard water is not a health risk, but is often a nuisance because of mineral buildup on fixtures and poor soap and/or detergent performance. Milwaukie's well water is classified as moderately hard with a hardness factor between 40-120 mg/L as calcium carbonate. Hardness is caused by compounds of calcium and magnesium, and by a variety of other metals. General guidelines for classification of waters are:

- **Soft** - 0 to 60 mg/L
- **Moderately Hard** - 61 to 120 mg/L
- **Hard** - 121 to 180 mg/L
- **Very Hard** - more than 180 mg/L

Water systems using groundwater as a source are concerned with water hardness. As water moves through soil and rock, it dissolves small amounts of naturally-occurring minerals and carries them into the groundwater supply. Water is a great solvent for calcium and magnesium, so if the minerals are present in the soil around a water-supply well, the hard water may be delivered to homes. Water hardness varies throughout the United States. In areas of the country where the water is relatively hard, industries might have to spend money to soften their water as hard water can damage equipment.

Living with moderately hard water can be easy by remembering to take some simple steps each day. Leaving water on a surface will leave behind tan colored minerals as it evaporates. Always dry the area around your sink and faucet, and be sure to use a good rinse agent in your dishwasher. A rinse agent also eliminates the need to use a heated dry cycle. There are also products to use in showers and tubs that help keep hardwater spots from getting out of control. These products are typically sprayed on shower walls and doors to prevent build-up. It's important to flush hot water heaters at least once a year as well to keep calcium levels under control.



To learn more about living with hard water, visit www.milwaukieoregon.gov/publicworks/hard-water or visit the U.S. Geological Survey's website at www.water.usgs.gov/edu/hardness.html.

Source Water Assessment

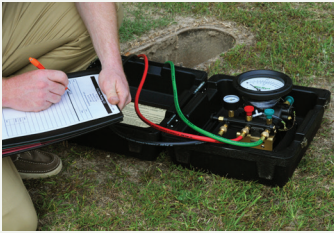


In 2004, a drinking water source assessment was conducted by Oregon DEQ and the Oregon Health Authority Drinking Water Program, with assistance from city staff. The report indicates that the water system would be moderately to highly susceptible to a contamination event inside the drinking water protection area. The drinking water protection area is defined in the Source Water Assessment Report based on the distance water moves toward a well over a specified amount of time. The presence of several high and moderate risk potential contaminant sources within the protection area were confirmed through a potential contaminant source inventory. Under a "worst case" scenario, where it is assumed that nothing is being done to protect groundwater quality at the identified potential contaminant sources, the assessment results indicate that the water system would be highly susceptible to several of the identified potential contaminant sources.

In 2010, the drinking water protection area around Well #4 was reevaluated and the area was expanded slightly to the north and west. Oregon DEQ is currently working to update source assessments and the city will publish any changes to the assessment when it is complete. In addition, the assessment results indicate that Milwaukie's water system is currently considered susceptible to viral contamination. Viral contamination is typically caused by failed septic systems.

A copy of the source assessment can be viewed or obtained for no charge at the Public Works and Community Development Facility, located at 6101 SE Johnson Creek Blvd. It can also be found online at www.deq.state.or.us/wq/dwp/swrpts.asp.

Cross-Contamination & Backflow Assemblies



Cross-contamination is the leading cause of waterborne disease. This occurs whenever the water contacts anything that is contaminated or objectionable. Wherever this can occur is known as a cross-

connection. As the water supplier, the city is mandated by State of Oregon drinking water rules (OAR 333-061-0020, 0070 through 0074) to eliminate or control all actual and potential cross-connections.

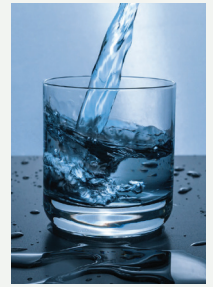
A cross-connection is any actual or potential connection between drinking water piping and any other substance. Examples of cross-connections include residential irrigation, fire sprinkler systems, commercial beverage dispensers, boilers and garden hose spray attachments. In most cases, a backflow assembly can be installed to prevent a cross-connection. If you would like to know if your home or commercial building is safe from cross-contamination, call the city's cross-connection control specialist at 503.786.7637 for a free safety survey.

If you know of any backflow assemblies on your property, have them tested annually by a certified tester—it's the law. The Oregon Drinking Water Program (DWP) provides a current list of Oregon Health Authority (OHA)-certified Backflow Assembly Testers at www.oregon.gov/oha/ph/healthyenvironments/drinkingwater/crossconnection/pages/publiclist.aspx. Community members can use this list to contact a tester who is appropriately licensed to test assemblies for compensation. Only OHA-certified testers can test assemblies in Oregon.

Certified public Backflow Assembly Testers on this list are also required to obtain licensing through the Construction Contractor's Board (CCB) at www.ccb.state.or.us/search or Landscape Contractor's Board (LCB) at www.oregon.gov/lcb/pages/index.aspx. DWP does not verify CCB or LCB licensing for individuals on this list of public testers. Customers should always verify the licensing of any contractor they hire by using the above links or by calling the CCB at 503.378.4621 or the LCB at 503.967.6291.

Drinking Water Information from the EPA

In order to ensure tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Drinking water, including bottled water, may be reasonably expected to contain small amounts of some contaminants. However, the presence of contaminants does not necessarily indicate that the water poses a health risk. For example, trace amounts of copper are required for proper organ function, but excessive copper can lead to gastrointestinal complications and disease. For more information, contact the EPA's Safe Drinking Water Hotline at 1.800.426.4791.



Let Us Know!

The city would like to hear from you! If you notice any of the following changes, contact the Water Department at waterquality@milwaukieoregon.gov or 503.786.7615.

- Water is pooling or the lawn is unseasonably green near the water meter. There may be a leak to repair.
- Water pressure decreases or increases unexpectedly. There may be constriction or leak in your plumbing.
- Water from the faucet has a color to it. There may be debris in the main line to be flushed.
- A fire hydrant is being used and no city staff are around. This may be a case of water theft or vandalism, and the water department prosecutes offenders.

Get Involved!

The city has many ways for community members to engage with staff. Check out the city website at www.milwaukieoregon.gov or Engage Milwaukie at engage.milwaukieoregon.gov for engagement opportunities and public meetings. Many are held virtually or using a combination of virtual and in-person options. Meeting schedules and locations are subject to change, see the city's online calendar for the most up-to-date information.

Special Notice for Immuno-Compromised Persons

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 infections. These people should seek advice about drinking water from their health care providers. EPA and Centers for Disease Control guidelines on the appropriate ways to reduce the risk of infection by microbiological contaminants are available at www.epa.gov/safewater or from the EPA's Safe Drinking water hotline at 1.800.426.4791.



CITY OF MILWAUKIE
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ECRWSS

POSTAL CUSTOMER



Water Tank at SE 40th Ave. & Harvey St., Mural by Jeremy Okai Davis

MORE INFORMATION

City of Milwaukie

Water Treatment Operator • Jamie Clark
503.786.7622 or clarkj@milwaukieoregon.gov

Utility Billing
503.786.7525 or utilitybilling@milwaukieoregon.gov

Public Works
503.786.7600 or publicworks@milwaukieoregon.gov

Public Works • 24-Hour Emergency Dispatch
503.786.7500

City Hall
503.786.7555

Johnson Creek Watershed Council
503.652.7477 or www.jcwc.org

North Clackamas Urban Watersheds Council
503.550.9282 or www.ncurbanwatershed.wordpress.com

Regional Water Providers Consortium
503.823.7528 or www.conserveh2o.org

Water Environment Services
503.742.4567 or www.clackamas.us/wes

Oregon Health Authority • Drinking Water Services
503.731.4010 or www.oregon.gov/oha

United States Environmental Protection Agency
1.800.426.4791 or www.epa.gov