



2021 Annual
Water Quality Report

Drinking Water Quality Data from 2020

CITY OF *Salem*
AT YOUR SERVICE



To our valued customers,

I'm pleased to present the 2021 Annual Water Quality Report for your review. The report contains essential information about your drinking water, including where it comes from, treatment techniques, and what, if any, contaminants it may contain. The Environmental Protection Agency (EPA) mandates many sections of the report; however, the City of Salem prides itself in providing a more comprehensive report that is accessible to all our customers.

In 2020, the City of Salem drinking water met or surpassed every public health requirement—more than 120 drinking water standards—set by the Oregon Health Authority and the EPA.

The City of Salem continues to finish construction of a state-of-the-art ozone treatment system to remove algal toxins, known as cyanotoxins, as well as contaminants caused by wildfires. Ozone is one of the strongest disinfectants used to treat water – it is even stronger than chlorine. Ozone also makes our water crystal clear, improves the taste, and can remove odors. Once in operation in early summer of 2021, ozone will be our robust, long-term insurance policy against cyanotoxins.

Water is the most valuable natural resource in the world today, and the City of Salem is fortunate to have an extremely high-quality, reliable, and abundant source. It's easy to take this precious resource for granted until you learn about the troubles other areas of the United States and the world are experiencing with their water supply, and the quantity and quality of the water source. We often forget about the treatment process, hundreds of miles of water mains, pump stations, reservoirs, and dedicated staff it takes to deliver water to the average residential customer for less than a penny a gallon. As always, the City of Salem strives to deliver high-quality water to your tap, as well as provide prompt service to our valued customers.

For more information about Salem's drinking water, please visit www.cityofsalem.net.

**Respectfully,
Dwayne Barnes**

**Utility Operations Manager
City of Salem Public Works Department
503-588-6211**



City of Salem Continues with Electronic Delivery of Annual Water Quality Report

The City of Salem continues to provide the Annual Water Quality Report via electronic delivery as a favorable option for faster access and reduction in costs affiliated with printing and mailing.

If you prefer a hard copy, you can request one by calling (503) 588-6311.



The average person uses around 90 gallons of water per day, and around 32,850 gallons a year.



Important Information Regarding 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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. Environmental Protection Agency (EPA) Safe Drinking Water Hotline at 1-800-426-4791. You can also submit questions on the EPA Safe Drinking Water Act Hotline webpage.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as a person with cancer undergoing chemotherapy, a person who has undergone an organ transplant, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

The EPA and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.



Please Share!

If you are a manager or owner of a business or multi-family dwelling, please share this report with your employees or residents.

For additional copies, please call the City of Salem Public Works Dispatch at 503-588-6311

Español?

Este documento contiene información sobre su agua potable y su fuente. Si desea recibir una copia de este documento en español, llame al Despacho de Obras Públicas de la Ciudad de Salem al 503-588-6311 y solicite un informe de calidad del agua o visite nuestro sitio web www.cityofsalem.net/water.

This document contains information about your potable water and its source. If you would like to receive a copy of this document in Spanish, call the City of Salem Public Works Dispatch at 503-588-6311 and ask for a water quality report or visit our website at www.cityofsalem.net/water.

What the EPA Wants You to Know About Contaminants in Source Water

The sources of drinking water, both tap water and bottled water, include rivers, lakes, streams, ponds, reservoirs, springs, and groundwater wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases, radioactive materials, and can pick up contaminants resulting from the presence of animals or human activity. Contaminants that may be present in any source water include:

Sediments and turbidity, including loose dirt, topsoil, minerals, sand and silt from roads and highways, excessive removal of vegetation from grazing animals, forest practices, and farming practices.

Microbial contaminants, such as viruses and bacteria, which come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, road maintenance, individual homes and businesses, and urban stormwater runoff.

Organic chemical contaminants, including synthetic and volatile chemicals, which are by-products of industrial processes, petroleum processes, wood processes and mills, gas and fueling stations, and auto and mechanical shops.

Inorganic contaminants, such as salts and metals, which can occur naturally in the geology, or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas productions, and mining or agriculture.

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

In order to ensure that the drinking water from your tap is safe, the EPA has regulations that limit the amount of certain contaminants in the water provided by public water systems. This requires monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.



Understanding Salem's Source Water Assessment

The City of Salem's Source Water Assessment was completed in 2003 with assistance from the Oregon Department of Environmental Quality (ODEQ). In 2018, ODEQ revised an Updated Source Water Assessment to all drinking water providers in the state of Oregon. As required by the Federal Safe Drinking Water Act, the original assessment identifies sensitive areas where the water supply may be more vulnerable to impact by potential contaminant sources. The North Santiam River is Salem's primary source for drinking water supply. The updated assessment provides more detailed information to assist drinking water providers and their community in implementing local drinking water protection efforts. This information may assist with supporting restoration projects within the watershed.

Contaminants in Drinking Water

The City regularly monitors activities that may impact its drinking water source, within the North Santiam River Watershed. The City works together with federal, state and local agencies, as well as groups, nonprofits and individuals to reduce these impacts to the drinking water source. Throughout the year, City employees routinely collect water samples and monitors and surveils the water quality at various locations within Salem's drinking water distribution system, and in the watershed to assure safe and high-quality water be provided to its customers.

Salem's original and updated Source Water Assessment reports are available on the City of Salem website at: www.cityofsalem.net/water. The reports are also available by calling Public Works Dispatch at **503-588-6311**, or by emailing a request to water@cityofsalem.net.

Salem's Source for Drinking Water

For more than 80 years, the North Santiam River has served as the primary water supply for the City of Salem. This high-quality river source flows over 90 miles from the high ridges near Mt. Jefferson, through Detroit Reservoir and down toward the Mid-Willamette Valley where it meets with the Willamette River. The North Santiam River Watershed is an area of about 760 square miles that is surrounded primarily by state and national forest. It provides clean and pristine river water for many canyon communities along its route. Due to the river's high-quality water, it is suitable for a more natural filtering process called Slow Sand Filtration at the Geren Island Water Treatment Facility located near Stayton. The City of Salem has been using this process since the 1930s, while making improvements to the facility and processes over time.

During normal operations, river water is diverted and follows the slow sand filtration process, then the water is disinfected by adding a regulated amount of sodium hypochlorite (liquid chlorine), fluorosilicic acid (liquid fluoride) for fluoridation, and sodium carbonate (soda ash). This treatment process adjusts the pH and minimizes the corrosion of lead and copper from household plumbing. From the treatment facility, the water is transported to Salem, distributed throughout the city and stored within the 17 reservoir systems located around the city.

As of 2018, the City has incorporated additional treatment barriers for mitigation and removal of emerging contaminants. When enhanced treatment is needed, water is treated using the same process as described above. The City can also use additional treatment options such as addition of powdered activated carbon, also known as PAC (contaminants in the raw water such as cyanotoxins adsorb

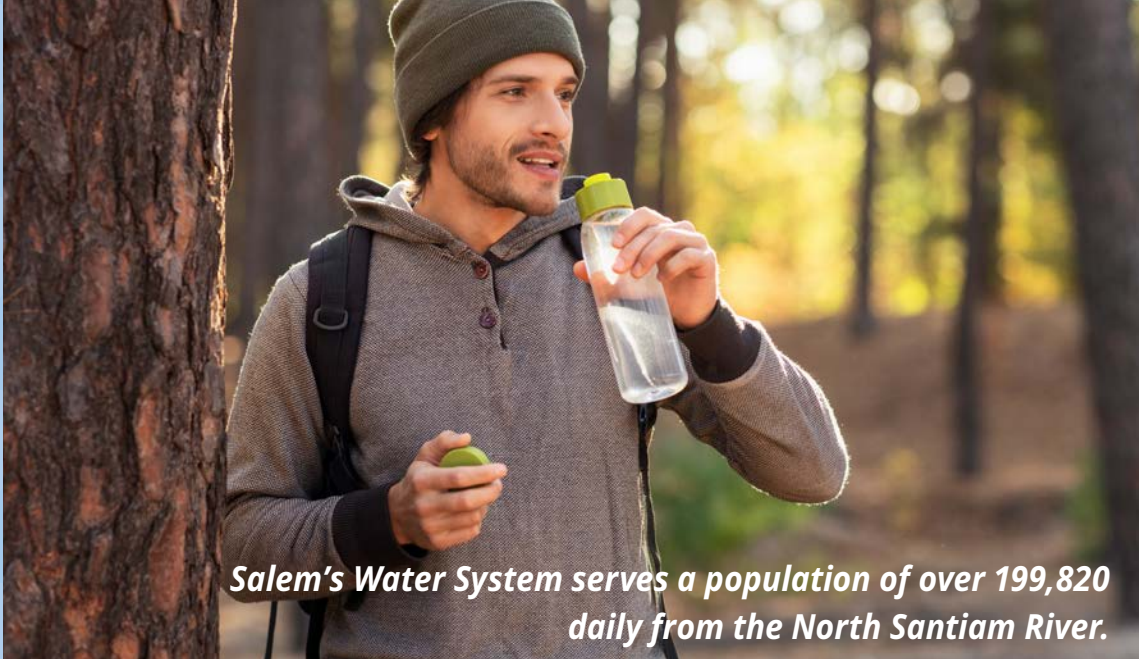
to the carbon and settle out of the water column), acetic acid (food source to keep the biological activity on the filters healthy), boosting of chlorine (further destruction of any cyanotoxin that has made its way past filtration), followed by chlorine reduction (to reduce chlorine levels to normal operating levels prior to customer taps).

The City of Salem is finishing construction of a state-of-the-art ozone treatment system to remove contaminants such as cyanotoxins. The new ozone treatment system, which is scheduled to be online during the summer of 2021, will provide an additional treatment barrier to ensuring high quality water continues to be delivered to Salem water customers.

Additionally, the City utilizes an Aquifer Storage and Recovery (ASR) system, located underground in south Salem, to store and recover finished water. During the winter months, when flows in the river are high and there is a low demand for water by customers, treated drinking water is injected into the ASR system. The water is stored in a naturally existing groundwater aquifer located 350 feet below Woodmansee Park. During the summer months, when the river is flowing low and customer water demand is high, water is pumped back to the surface, sampled for quality and recovered from the ASR system. The recovered water is treated with calcium hypochlorite (chlorine) for disinfection and then conveyed to the distribution system, serving the south Salem water customers.

During the summer of 2021, the ASR treatment process system will be upgraded to include corrosion control and a common treatment facility where water recovered from all ASR wells will be disinfected.

Please visit the City's Water webpage, under www.cityofsalem.net/utilities for more details about Salem's treatment process.



Salem's Water System serves a population of over 199,820 daily from the North Santiam River.

Where Does Salem's Water Come From?

The supply of Salem's water begins with a raindrop or snowflake that falls on the west side of the Cascade Range, near Mt. Jefferson and Three Fingered Jack. As that droplet of water moves downhill, it flows over land, through soil and rock to the mainstem of the North Santiam River. It is stored temporarily in Detroit Reservoir until it is released through the dam gates and flows downstream towards the canyon communities. A small portion of the river is diverted, treated and distributed to the City of Salem.



The total miles of water mains, from point of entry to the Salem water system to resident's faucet, is just under 700 miles!

2020 Water Quality Data from Geren Island Treatment Facility, Distribution System, and Salem Water Customers

Test	Date Tested	Unit	MCLG (MRDLG)	MCL (MRDL)	Detected Level	Range		Violation	Major Sources
						Lowest	Highest		
Inorganic									
Fluoride	2020	ppm	4	4	Average: 0.63	0.50	0.74	NO	Erosion of natural deposits; water additive-promotes strong teeth
Copper	2020	ppm	1.3	AL = 1.3	0.021	0.015	0.030	NO	Corrosion of household plumbing systems
Nitrate	2020	ppm	10	10	0.11	ND	0.11	NO	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Nitrate-Nitrite	2020	ppm	10	10	0.11	ND	0.11	NO	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Barium	2020	ppm	2	2	Average 0.0023	0.0021	0.0024	NO	Discharge of drilling wastes; discharge from metal refineries; Erosion of natural deposits
Copper ¹	2019	ppm	1.3	AL=1.3	90th Percentile: 0.447; Homes exceeding: 0	<0.030	0.598	NO	Corrosion of household plumbing systems
Lead ¹	2019	ppb	0	AL =15	90th Percentile: 5.6; Homes exceeding: 1	<0.1	20	NO	Corrosion of household plumbing systems
Microbiological									
Turbidity	2020	NTU	n/a	TT	100% of samples meet turbidity standards Average: 0.10	0.04	0.50	NO	Erosion and soil runoff
Total coliform	2020	no units	n/a	TT	1,440 samples collected	None	0 positive of 120 samples or 0.0%	NO	Naturally present in the environment
E. coli bacteria	2020	no units	0	Routine and repeat samples are total coliform-positive and either E. coli-positive or the water supplier fails to collect repeat samples following E. coli-positive routine sample or system fails to analyze total coliform-positive repeat sample for E. coli	E. coli bacteria were not detected	None	None	NO	Human and animal fecal waste
Disinfection By-products, By-product Precursors, and Disinfectant Residual									
Haloacetic acids	2020	ppb	0	60	Locational Running Annual Average: 44	6.0	48	NO	By-product of drinking water disinfection
Total Trihalomethanes	2020	ppb	0	80	Locational Running Annual Average: 43	22	57	NO	By-product of drinking water disinfection
Haloacetic acids ¹	2017	ppb	0	60	Entry Point: 12	One Sample Collected		NO	By-product of drinking water disinfection
Total Trihalomethanes	2020	ppb	0	80	Entry Point: 6.3	12	19	NO	By-product of drinking water disinfection
Total Organic Carbon	2020	ppm	n/a	TT	Raw Water Annual Average: 0.95	0.86	1.0	NO	Naturally present in the environment
Chlorine Residual	2020	ppm	4	4	Entry Point Average: 1.45	0.91	2.20	NO	Remaining chlorine from disinfection process
Radioactive Constituents									
Gross Beta Particle Activity	2020	pCi/L	40	50	4.2	One Sample Collected		NO	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta particle and photon radioactivity in excess of the MCL over many years may have an increased risk of getting cancer.
Organic Constituents									
2,4-D	2020	ppb	70	70	0.21	ND	0.21	NO	Runoff from herbicide used on row crops
Unregulated Constituents									
Sodium	2020	ppm		20 ²	6.6	One sample collected		NO	Erosion of natural deposits

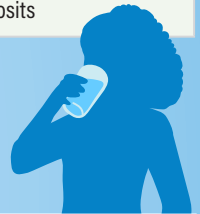
2020 Water Quality Data from Aquifer Storage and Recovery Wells

Inorganic									
Barium	2020	ppm	2	2	0.0029	One sample collected	NO	Discharge of drilling wastes; discharge from metal refineries; Erosion of natural deposits	
Fluoride	2020	ppm	4	4	0.67	One sample collected	NO	Erosion of natural deposits; water additive-promotes strong teeth	
Disinfection By-Products, Byproduct Precursors, and Disinfectant Residual									
Haloacetic acids ¹	2018	ppb	0	60	ND	One sample collected	NO	By-product of drinking water disinfection	
Total Trihalomethanes ¹	2018	ppb	0	80	4.1	One sample collected	NO	By-product of drinking water disinfection	
Total Organic Carbon ¹	2018	ppm	n/a	TT	0.33	One sample collected	NO	Naturally present in the environment	
Organic Constituents									
Hexachlorocyclopentadiene	2020	ppb	0	50	0.056	One sample collected	NO	Discharge from chemical factories	
Unregulated Constituents									
Sodium	2020	ppm		20 ³	5.2	One sample collected	NO	Erosion of natural deposits	

¹The City of Salem is required to report any detected contaminant within the last five years.

²EPA considers 50 pCi/L to be the level of concern for beta particles.

³EPA advisory level only.



UNITS OF MEASUREMENT

Parts per Million (ppm)

One part per million is equal to one cup of food coloring in an Olympic size swimming pool.

Parts per Billion (ppb)

One part per billion is equal to one drop of food coloring in an Olympic size swimming pool.

Nephelometric Turbidity Unit (NTU)

The standard unit of measurement used in water analysis to measure turbidity in water samples.

Picocuries per Liter (pCi/L)

One part per billion of a curie per liter of water, used to measure radiation at very low levels.

DEFINITIONS

Maximum Contaminant Level Goal (MCLG)

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

Maximum Contaminant Level (MCL)

The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Action Level (AL)

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

Treatment Technique (TT)

A required process intended to reduce the level of a contaminant in drinking water.

Maximum Residual Disinfectant Level (MRDL)

The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG)

The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

Geren Island is the nation's largest slow sand filtration system.





Cyanotoxin Test Results*

Site Location	Test	Test Date	Unit	Health Advisory Level for Vulnerable Population	Health Advisory Level for All Population	OHA Lab Lowest Result	OHA Lab Highest Result	Willow Lake Lab Lowest Result	Willow Lake Lab Highest Result	Advisory Issued?	Advisory Type	Advisory Dates
Raw Water - North Santiam River - Middle Intake	Microcystin	May - October 2020	ppb	0.3	1.6	ND	0.1	ND	ND	NO	None	None
	Cylindrospermopsin			0.7	3	ND	ND	ND	ND			
Finished Water - Entry Point: Aldersgate	Microcystin	May - October 2020	ppb	0.3	1.6	ND	ND	ND	ND	NO	None	None
	Cylindrospermopsin			0.7	3	ND	ND	ND	ND			

Notes: *The source of cyanotoxins are from a harmful algal bloom of cyanobacteria

Algal blooms are a natural process. Typically, algae are regularly observed in Detroit Reservoir, Salem’s drinking water source, from April or May through September or October. Algal blooms, which are large amounts of algae growth in a short time, occur when conditions – such as light, warm water and nutrients – are just right. When triggered, certain types of algal blooms known as cyanobacteria can produce cyanotoxins as a defense mechanism. The City maintains a robust watershed monitoring program that tracks and monitors harmful algal blooms and cyanotoxins – toxins produced by harmful algal blooms.

Oregon Health Authority drinking water regulations require testing of two cyanotoxins – Total Microcystins and Cylindrospermopsin annually from May 1 – October 31.

If the levels reach the Oregon Health Authority Health Advisory notification threshold, the City will issue an advisory. The City will continue to provide water quality updates on its website.

Definitions:

Harmful Algae Bloom means a dense colony of cyanobacteria that can rapidly multiply in surface waters when environmental conditions are favorable for growth.

Cyanobacteria are photosynthetic bacteria that share some properties with algae and are found naturally in freshwater and saltwater. Some species of cyanobacteria can produce toxins, which are known to be harmful to human health above certain concentrations.

Cyanotoxins means total microcystins and cylindrospermopsin produced by cyanobacteria.

ND refers to a non-detection meaning that the analytical result is less than the reporting limit for the analytical method being used to quantify the concentration.

Consuming water containing concentrations of cyanotoxins over the health advisory level for more than ten days may result in upset stomach, diarrhea, vomiting, as well as liver or kidney damage. Seek medical attention if you or your family members experience illness.

All daily water quality results of data collected during the year of 2020 specific to cyanotoxins are available on the City of Salem’s website. For more detailed information on the monitoring program and the data results of cyanotoxins, please visit the City of Salem website under:

www.cityofsalem.net/Pages/water-quality-test-data.aspx

Unregulated Contaminant Monitoring Rule

Round 4 (UCMR4) Detected Contaminant Results

The Unregulated Contaminant Monitoring Rule (UMCR) requires water providers nationwide to sample for unregulated contaminants once every five years. The EPA uses these sampling efforts to collect information about contaminants suspected to be present in drinking water, but which are currently not regulated by health-based limits under the Federal Safe Drinking Water Act. The UCMR4 – fourth round of UMCR, requires monitoring for 30 chemical contaminants including cyanotoxins, metals, pesticides, brominated haloacetic acid (HAA) disinfection groups, alcohols, and semivolatile organic chemicals. More information about the UMCR is available from the Safe Drinking Water Hotline at 1-800-426-4791.

The City of Salem began Unregulated Contaminant Monitoring Rule – Round 4 (UCMR4) sampling in July 2018. The City completed biweekly sampling for cyanotoxins from July through October 2018. All other samples were collected quarterly in July 2018, October 2018, January 2019, and April 2019.

The table below lists only those unregulated contaminants which were detected during the 2018 and 2019 sampling events.

Detected Analyte	Date Tested	Unit	MRL ¹ (ppb)	Detected Level	Range	
					Lowest	Highest
Total Organic Carbon (TOC)	2018-2019	ppm	--	Average: 1.15	0.89	1.4
HAA5	2018-2019	ppb	--	Average: 30.97	1.3	51
HAABr	2018-2019	ppb	--	Average: 1.79	ND	3.5
HAA9	2018-2019	ppb	--	Average: 32.83	1.3	53

¹MRL is the UCMR Minimum Reporting Level



The City of Salem has employees whose jobs are to assure that water in the distribution system meets the Safe Drinking Water Act standards by sampling at over 40 locations multiple times a month.



Cascade Wildfires

What happened?

What started as a small, stubborn 10-acre fire in mid-August, located in the steep and rugged terrain of the Opal Creek Wilderness, expanded into one of Oregon's largest wildfire disasters in history.

On September 6th, the National Weather Service placed the region under a critical fire weather warning. The rare wind event that occurred shaped an extreme environment in which the small Beachie Creek fire was able to accelerate from an estimated 500 acres to over 130,000 acres at a rate of 2.77 acres per second overnight (U.S.F.S Information Incident System). Evacuation levels jumped directly to Level 3 immediate evacuation of the Santiam Canyon and Detroit area. Just to the east of the Beachie Creek Fire, the Lionshead Fire burned through the Warm Springs Reservation and Mount Jefferson Wilderness and merged with the Beachie Creek Fire. The Lionshead fire devastated the City of Detroit and Breitenbush community. By the time the fires were contained, the Beachie Creek Fire acreage burned 193,573 acres and the Lionshead Fire topped at 204,469 acres. Both fires destroyed roughly 1,500 structures and 700 homes in the watershed. Closures throughout the burned areas and watershed remain in place to keep the public safe from hazards like falling trees, unstable structures and ash pits that can remain hot and smolder for months after the wildfire event.

What are the post-fire impacts in relation to Drinking Water?

Wildfires can compromise water quality during active burning, and even for years after the fire has been contained. During active burning, ash of various burned materials can settle on lakes and reservoirs

used for drinking water supplies. Wildfires increase susceptibility of watersheds to flooding and erosion which have both short- and long-term impacts on water supplies. Destabilization of terrain may result in landslides and debris flows in areas that were heavily burned, and with loss of vegetation and can occur as far out as ten years after a fire. Movement of soils and debris can increase turbidity in the river water which impacts filtering and treatment processes at Geren Island Treatment Facility. Rainfall events in burned areas of the watersheds are also likely to move large amounts of contaminants such as heavy metals, major ions, carbon and nutrients from landscapes, buildings and infrastructure impacted by fires into downstream water supplies. Depending on where these landslides, debris flows and sediment-loading occur, there can be a decrease of reservoir storage, and increased maintenance costs. Thus, the potential impacts from past, current, and future wildfires on the quantity and quality of runoff are considerable, and may greatly impact water used for domestic, agricultural, and ecological water supplies.

What is the City of Salem's response to the wildfires?

All drinking water utilities strive to provide safe drinking water for their communities. The City of Salem is monitoring post-wildfire impacts and has increased its rigorous water sampling program in the watershed and in various processes of water treatment year-round in order to better understand the impacts of the wildfires. Results of these samples help manage the water treatment operations and decision to add additional treatment barriers to the drinking water process. The water treatment facility has the capability to shut the intake to Geren

Island, from the river to allow the bypass of turbidity and potential contaminants. This has been a routine process for treatment operations during turbidity events prior to fires, and operators are well-versed in the process. Additional treatment barriers that remove potential contaminants include adding coagulation, flocculation and powdered activated carbon. There is also the option to add a preliminary filtering process prior to the routine filtering that occurs under normal conditions.

Additionally, the City of Salem is closely monitoring all activities occurring in the North Santiam Watershed and actively communicating with groups, organizations and agencies. City staff have also been involved with hands-on plantings of native species to landowners who have been impacted by the fires located in the Santiam Canyon. These planting events have been facilitated by the North Santiam Watershed Council, and Marion Soil and Water Conservation District who have also been rigorously assisting landowners impacted by the fires. There is a large water quality collaborative effort with agencies such as the U.S. Geological Survey, the U.S. EPA, U.S. Forest Service, U.S. Army Corps of Engineers, Oregon Department of Environmental Quality, Oregon and Washington universities researchers, Marion County, Natural Resource and Conservation Service, and the North Santiam Watershed Council. All of these invested professionals provide valuable expertise to help understand the short- and long-term impacts, and ultimately restore a more resilient watershed and Santiam community.

Post Wildfire Monitoring Results - 2020				
Primary Drinking Water Standards				
		EPA Standard	Detected Level	
Inorganic Chemicals			Lowest	Highest
Barium (dissolved)	mg/L	2	0.0022	0.0025
Barium (total)	mg/L	2	0.0021	0.0024
Copper (dissolved)	mg/L	1.3	0.019	0.03
Copper (total)	mg/L	1.3	0.015	0.03
Fluoride	mg/L	4	0.73	
Nitrate	mg/L	10	ND	0.11
Organic Chemicals				
2,4-D	mg/L	0.07	ND	0.00021
Disinfection By-Products				
Total Trihalomethanes (THMs)	mg/L	80	12	19
Secondary Drinking Water Standards and other Parameters				
Alkalinity	mg/L	n/a	16	26
Bicarbonate Alkalinity	mg/L	n/a	18	31
Calcium (total)	mg/L	n/a	4.2	5.2
Calcium (dissolved)	mg/L	n/a	5	5.3
Chloride	mg/L	250	4.1	
Dissolved Organic Carbon	mg/L	n/a	1.2	1.3
Specific Conductance	µmho/cm	n/a	67	71
Total Hardness	mg/L	250	15	18
Magnesium (total)	mg/L	n/a	1	1.3
Magnesium (dissolved)	mg/L	n/a	1.2	1.3
Orthophosphate as P	mg/L	n/a	0.011	0.012
Orthophosphate as P04	mg/L	n/a	0.034	0.037
Silica	mg/L	n/a	14	
Sodium	mg/L	n/a	6.6	9.3
Sulfate	mg/L	250	1.2	
Strontium (total)	mg/L	4	0.03	0.031
Strontium (dissolved)	mg/L	4	0.03	0.031
Total Dissolved Solids	mg/L	500	46	52
Total Organic Carbon	mg/L	n/a	0.76	1.3

Primary Drinking Water Standards: legally enforceable standards and treatment techniques to protect public health. This data is also included in the 2020 Water Quality Table.

Secondary Drinking Water Standards: non-enforceable guidelines for contaminants that cause aesthetic or cosmetic effects.

2019 Lead and Copper Sampling Results

Lead and copper sampling occurred during the summer of 2019. The City is currently on reduced monitoring which requires sampling every three years. From June 1, 2019 through September 30, 2019, 77 water samples were collected from Tier 1 homes and analyzed for lead and copper. Of the 77 samples, only one sample exceeded the Action Level (AL) for lead and none of the samples exceeded the AL for copper.

The Oregon Health Authority requires that the City collect and analyze a minimum of 50 water samples from Tier 1 homes during the three month monitoring period. Assessments made in the 1990s identified 147 Tier 1 homes in Salem that met the qualifications for ongoing lead and copper sampling. Tier 1 homes, built between 1983 and 1985, are considered most at risk because of lead or lead-based plumbing components used during construction.

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

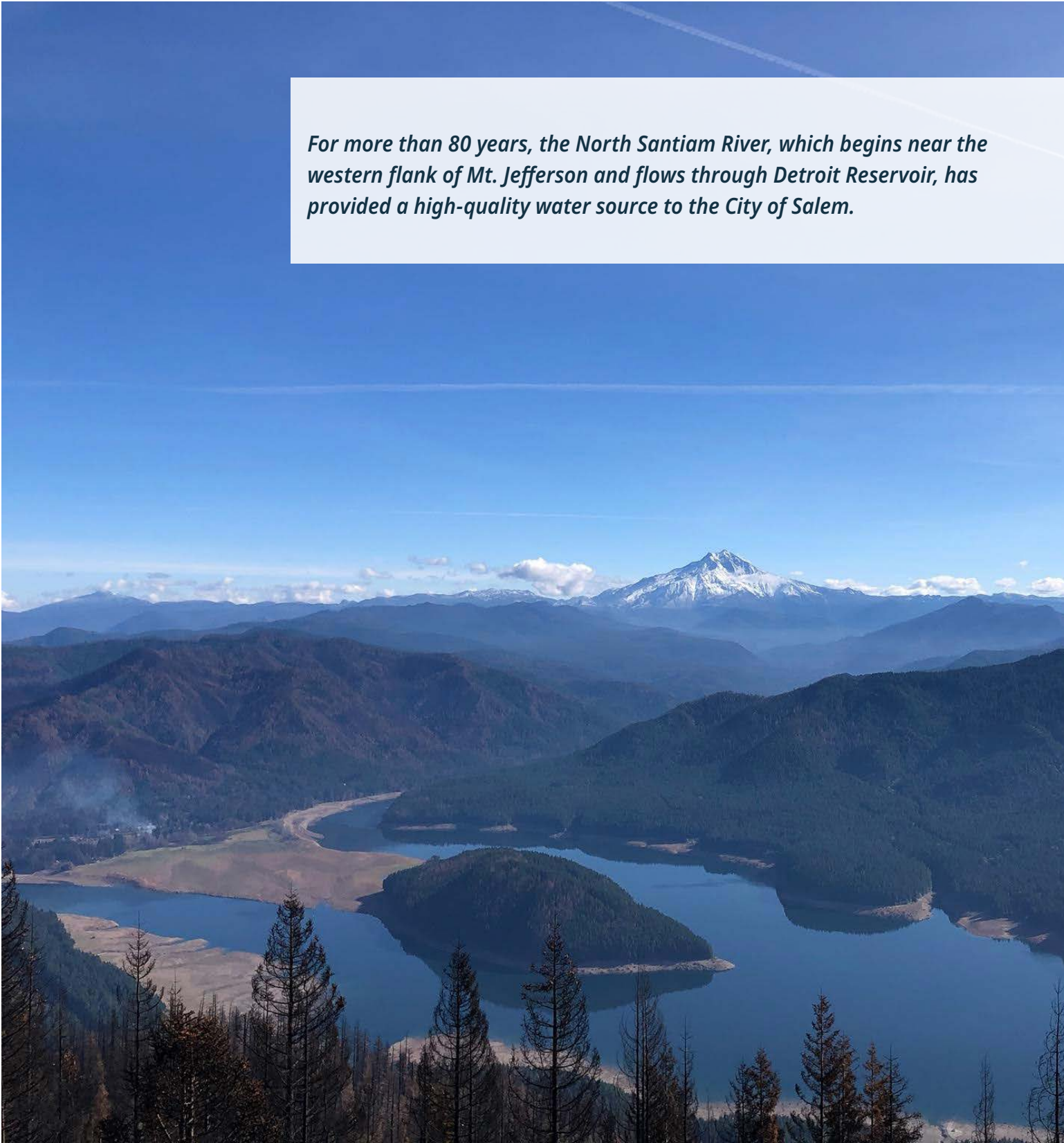
When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize your exposure is available from the Safe Drinking Water Hotline at 1-800-426-4791 or at www.epa.gov/safewater/lead.

Free Lead Testing for Salem Water Customers

The City of Salem offers free lead testing to its water customers. If you are concerned about the levels of lead in your home and would like to request a free test, please call the Water Quality Hotline at 503-588-6323.



For more than 80 years, the North Santiam River, which begins near the western flank of Mt. Jefferson and flows through Detroit Reservoir, has provided a high-quality water source to the City of Salem.



Ozone Treatment

In 2020, the City of Salem began the process of installing a state-of-the-art ozone treatment system to remove cyanotoxins at its drinking water treatment facility. The completion of this large improvement project is set for the summer of 2021. Ozone is one of the strongest disinfectants used to treat water – it is even stronger than chlorine. Ozone also makes drinking water crystal clear, improves the taste, and can remove odors. Once the ozone facility is operational, the City will have a robust multi-step approach to destroying contaminants such as cyanotoxins. The ozone contact chamber is located downstream of the existing roughing filter. The roughing filter removes the cyanobacteria which is the primary organism that produces cyanotoxins. Any remaining cyanotoxins in the raw water will be destroyed by ozone treatment. When the ozone treatment process is done, no ozone is left in the treated water. Water will then be further treated as it moves through the slow sand filters and is chlorinated. Ozone promises to be a robust, long-term insurance policy against cyanotoxins and other emerging contaminants.

Additionally, the City of Salem is investing in a groundwater system on the Geren Island Water Treatment Plant. In 2021, the construction of a ranney groundwater collector well began and is planned to be completed in 2022. This groundwater well will provide another source of water that is protected from cyanobacteria, storm events and post-wildfires effects that impact the North Santiam River water quality. For more information on ozone, please to go the City website under: www.cityofsalem.net/Pages/ozone-treatment-coming-spring-2021.aspx



Ways to Conserve Water

During the summer, a high demand of water comes at a time of year when water resources are already stressed due to hotter temperatures and drier conditions. The summer water demand almost doubles when compared to the winter demand. Below are some ways you can help conserve water and learn about keeping our waterways clean:

Take the WE Pledge to Help Protect Local Waterways

You can pledge to conserve water, reduce stormwater pollution, increase recycling, reduce plastic waste, and more by taking the Clean Streams Initiative's WE Pledge. Together WE Pledge to keep stormwater clean, streams pollution free, and be good stewards of the environment. You can take the WE Pledge by visiting www.CleanStreamsSalem.org.

City Offers Free Conservation Kits to Salem Water Customers

Retrofitting existing fixtures can help reduce the amount of water used daily and save money on your utility bill. It also leaves more water in the river for wildlife and fish. The City offers free indoor and outdoor water conservation kits to Salem water customers. To request a free water conservation kit, please call the Water Quality Hotline at 503-588-6323, or email us at water@cityofsalem.net.

Conservation Resources and Watershed Protection

Did you know that all Salem residents are eligible to receive grant funding to assist with local projects that protect or improve the health of our local watersheds? If interested, you can find more information on the City website under Community Resources – Financial Assistance & Grants. Additionally, there are many local agencies and organizations, like Marion Soil & Water Conservation District (SWCD), OSU Master Gardeners, Friends of Trees and the Natural Resources Conservation Services (NRCS) that host events such as native plant sales, tree-planting events, workshops and additional grants.



Free 1-inch-per-week Rain Gage
For a free one-inch-per-week rain gage, call the Water Quality Hotline at 503-588-6323, or email water@cityofsalem.net.



Salem Utility Customers Benefit from Emergency Utility Assistance Program

The Emergency Utility Assistance Program is dedicated to helping individuals and families facing short-term financial difficulties to pay their City of Salem single-family residential utility bills. Funding is provided by generous donations from the community and matching funds up to \$10,000 annually from the City of Salem. All donated and matched funds are used exclusively for Emergency Utility Assistance. The program provides eligible customers up to \$150 of assistance towards a past due bill or balance in a 12-month period.

In response to the COVID-19 pandemic, Salem City Council approved an additional \$500,000 of City funding and maximum assistance up to \$500 through December 31, 2021, to assist qualified customers experiencing financial hardship.

Customers are qualified or pre-qualified by partnering agencies: The Salvation Army, St. Vincent de Paul, and Mid-Willamette Valley Community Action Agency. Pre-

qualified applicants include customers who participate in the City's Utility Rate Relief Program or customers who are Salem Housing Authority clients receiving Section 8 Rental Housing Assistance or living in Salem Housing Authority units.

From January 2020 through February 2021, over \$140,000 was distributed to 837 families and individuals in need. We understand customers may continue to be financially impacted by the COVID-19 pandemic or have other short-term emergency financial needs, making it difficult to pay utility bills. If you need help paying a past due bill or balance, assistance is still available. If you are in need of financial assistance to pay your City of Salem utility bill or would like to learn more about donating to the Emergency Utility Assistance program to help those in need in the community, please visit www.cityofsalem.net or contact Customer Services Utility Billing at 503-588-6099 for more information.

\$27,014

assisted 296 local families and individuals



Ways to Get Involved

Salem City Council

Salem City Council is the policy-making body for Salem's water system. The meetings are held to allow Council to conduct business, make decisions in a public forum and formulate policy. These meetings also provide an opportunity for you to give input on issues and policies under consideration by the City. The Council meets virtually on the 2nd and 4th Monday of each month at 6:00 p.m. In December, it is the 1st and 2nd Monday at 6:00 p.m. Feel free to call at 503-588-6255, or visit cityofsalem.net/city-council for more information.

North Santiam Watershed Council

The North Santiam Watershed Council (NSWC) is a 501(c3) nonprofit made up of local volunteers who act together to provide opportunities for stakeholders to cooperate in promoting, improving and sustaining the health and economy of the North Santiam River Watershed and its communities. This organization facilitates large and small-scale restoration projects and hosts project tours, tree plantings and river clean-ups. Each year, the NSWC receives a grant from the City to help with operational costs and tree plantings. In 2020, the City of Salem provided a grant to the NSWC for purchasing erosion control weed-free straw at no cost to landowners to assist with those impacted by the Beachie Creek and Lionshead fires in the Santiam Canyon. The NSWC hosts virtual meetings that are open to the public and are held every second Thursday of each month (except December) at 6:00 p.m. via Zoom. Feel free to call 503-930-8202 if interested in participating in a meeting, or visit www.northsantiam.org for more information.



The City of Salem's Clean Streams Initiative has many ways you can get involved to help protect local stream health right from home.

- ▶ **Join the Capital Canine Club** by pledging to always pick up after your pet.
- ▶ **Take the WE Pledge** to reduce pollution and conserve water.
- ▶ **Create a rain garden** on your property with our DIY Guide.
- ▶ **Report high water in streams** via our website.
- ▶ **Report illegal dumping** to PW Dispatch at 503-588-6311.

You can find all of this and more on our website:

www.CleanStreamsSalem.org.

You can follow Clean Streams news, get water related information, tips on reducing pollution, and more by:

Following the City of Salem's Facebook at

[Facebook.com/CityOfSalemOR](https://www.facebook.com/CityOfSalemOR)

Signing up for the Clean Streams Monthly e-Newsletter, Stream Currents, mailchi.mp/cityofsalem/cleanstreams

Want to learn more?

US EPA

Safe Drinking Water Hotline

1-800-426-4791

www.epa.gov

Oregon Health Authority

Drinking Water Program

971-673-0405

public.health.oregon.gov/HealthyEnvironments/DrinkingWater

(Salem's ID# 00731)

City of Salem Public Works Department

City of Salem Website

www.cityofsalem.net

Water Quality Hotline

503-588-6323

water@cityofsalem.net

Water Conservation Hotline

503-588-6323

water@cityofsalem.net

Water Outreach and Education Program

To arrange a classroom presentation, field trip, or community service project, call 503-588-6211

THE FEDERAL SAFE DRINKING WATER ACT requires this annual water quality report be made available to every customer to provide information regarding the quality of the community's drinking water.

If you would like to receive a printed copy of this report, please call 503-588-6311. If you have any questions or comments, please email water@cityofsalem.net or call the Water Quality Hotline at 503-588-6323.



Public Works Department

**1410 20TH STREET SE BLDG 2
SALEM OR 97302-1200**



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It is the City of Salem's policy to assure that no person shall be discriminated against on the grounds of race, religion, color, sex, marital status, familial status, national origin, age, mental or physical disability, sexual orientation, gender identity, and source of income, as provided by Salem Revised Code Chapter 97. The City of Salem also fully complies with Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990, and related statutes and regulations in all programs and activities. Special accommodations are available, upon request, for persons with disabilities or those needing sign language interpretation or languages other than English. To request accommodations or services, please call 503-588-6211.