



2013 ANNUAL WATER QUALITY REPORT

Drinking Water Quality Data From 2012

CITY OF *Salem*
AT YOUR SERVICE
PUBLIC WORKS DEPARTMENT

Please Share!

If you are a manager or owner of a business or multifamily dwelling, please share this report with your employees or residents. If you would like additional copies, please call the Water Quality Hotline at **503-588-6323**.

¿Español?

Este documento contiene información importante sobre su agua potable. Si usted desea recibir una copia de este documento en Español, por favor, llame al **503-588-6323** y pida una copia del Reporte de Calidad de Agua o visite nuestra página electrónica website www.cityofsalem.net.

This document contains information about your potable water. If you would like to receive a copy of this document in Spanish, please call **503-588-6323** and ask for a Water Quality Report or visit our website at www.cityofsalem.net.

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 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**.

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

Guidelines from the EPA and Centers for Disease Control about 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**.

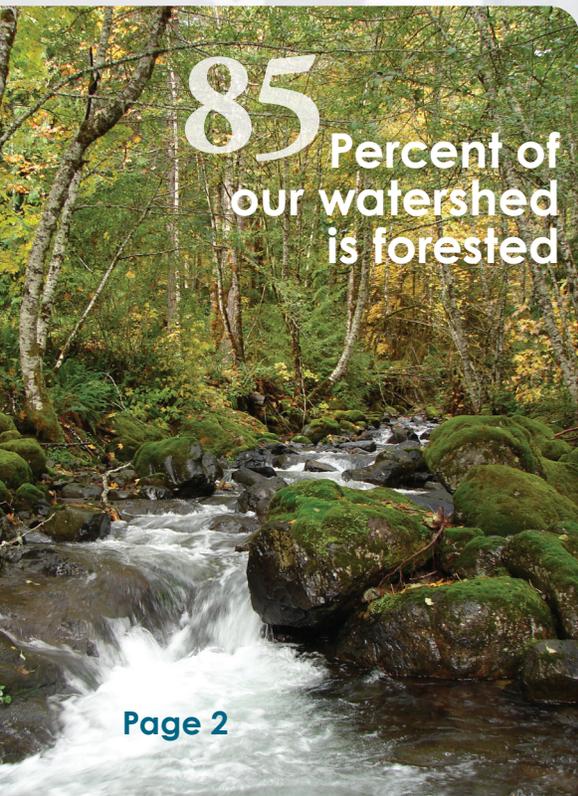
City Remains on Reduced Monitoring for Lead and Copper Sampling

The City of Salem remains on a reduced monitoring schedule that requires analyzing water samples for lead and copper once every three years. As part of this plan, Oregon Health Authority requires the City to collect samples from “Tier 1” homes only, which are those designated most at risk because they were constructed using lead or lead-based plumbing components. The EPA considers homes built between 1983 and 1985 most at risk. The City conducted assessments in the 1990s that identified 147 Tier 1 homes that qualified for ongoing lead and copper sampling. The last round of testing occurred in 2010, and another round will be conducted during the summer of 2013. The City will notify Tier 1 property owners to provide them an opportunity to have their drinking water tested for lead and copper levels.

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 Salem Public Works Department 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 Available for 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**.



Sampling Required for Unregulated Contaminants

During 2013 the City of Salem will be sampling for more than 28 unregulated contaminants ranging from naturally-occurring metals to pesticides, flame retardants, hormones, and pharmaceuticals. One requirement of the Federal Safe Drinking Water Act, known as the Unregulated Contaminant Monitoring Rule, requires water providers nationwide to sample for unregulated contaminants once every five years. The EPA utilizes these sampling efforts to collect information about contaminants suspected to be present in drinking water but which are not currently regulated by health-based limits under the Federal Safe

Drinking Water Act. The data collected also helps prioritize future regulatory actions intended to protect public health.

Results from the City of Salem's unregulated contaminant sampling will be available in next year's Annual Water Quality Report.

More information about the Unregulated Contaminant Monitoring Program is available from the Safe Drinking Water Hotline at **1-800-426-4791** or at <http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr>.

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

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

- **Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;
- **Inorganic contaminants**, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and which can also come from gas stations, urban stormwater runoff, and septic systems; and
- **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure tap water is safe to drink, the EPA establishes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations set limits for contaminants in bottled water that must provide the same protection of public health.

Salem's Sources for Drinking Water

For more than 75 years, the City of Salem has been getting its drinking water supply from the North Santiam River, which flows from the foothills of the Cascade Range and provides high quality river water suitable for slow sand filtration at the Geren Island Water Treatment Facility. Following slow sand filtration, the water is further treated with sodium hypochlorite (liquid chlorine) for disinfection, fluorosilicic acid (liquid fluoride) for fluoridation, and sodium carbonate (soda ash) to minimize the corrosion of lead and copper from household plumbing.

Additionally, the City utilizes an Aquifer Storage and Recovery (ASR) system, located in south Salem. In the winter months, during peak river flows and low customer water demand, treated drinking water is injected into the ASR system. The water is stored in a naturally existing aquifer located 350 feet below Woodmansee Park. During the summer months, when low river flows and high customer water demand exist, water is recovered from the ASR system. The recovered water is treated with calcium hypochlorite (chlorine) for disinfection, and conveyed to the distribution system serving south Salem water customers.



450,000 Acres
Salem's source watershed

31 Watershed sampling sites

2012 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		
Fluoride	2012	ppm	4	4	Average: 0.74	0.67	0.85	NO	Erosion of natural deposits; water additive-promotes strong teeth
Nitrate	2012	ppm	10	10	Average: 0.06	One Sample Collected		NO	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Nitrate-Nitrite	2012	ppm	10	10	Average: 0.06	One Sample Collected		NO	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Barium	2012	ppm	2	2	0.0018	One Sample Collected		NO	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Copper ¹	2010	ppm	1.3	AL=1.3	90th Percentile: 0.578 Homes exceeding: 1	<0.03	1.35	NO	Corrosion of household plumbing systems
Lead ¹	2010	ppb	0	AL=15	90th Percentile: 6.1 Homes exceeding: 3	<0.1	40.1	NO	Corrosion of household plumbing systems
Microbiological									
Turbidity	2012	NTU	N/A	TT	100% of samples meet turbidity standards Average: 0.09	0.05	0.25	NO	Erosion and soil runoff
Total coliform	2012	No units	0	Presence of coliform bacteria in >5% of monthly samples	1,560 samples collected; no coliform bacteria were present in any samples	None	None	NO	Naturally present in the environment
Fecal coliform or E. coli bacteria					Fecal coliform or E. coli bacteria were not detected	None	None	NO	Human or animal fecal waste
Disinfection By-Products, By-Product Precursors, and Disinfectant Residual									
Haloacetic acids	2012	ppb	0	60	Annual Average: 35	ND ²	54	NO	By-product of drinking water disinfection
Total Trihalomethanes	2012	ppb	0	80	Annual Average: 33	6	51	NO	By-product of drinking water disinfection
Total Organic Carbon	2012	ppm	N/A	TT	Raw Water Annual Average: 0.99	0.86	1.2	NO	Naturally present in the environment
Chlorine Residual	2012	ppm	4.0	4.0	Entry Point Average: 1.32	1.08	1.62	NO	Remaining chlorine from disinfection process
Radioactive Contaminants									
Combined Radium ³	2011	pCi/L	0	5	0.26	One sample collected		NO	Erosion of natural deposits
Unregulated Constituents									
Sodium	2012	ppm		20 ⁴	6.77	One sample collected		NO	Erosion of natural deposits

2012 Water Quality Data From Aquifer Storage and Recovery Wells

Inorganic									
Barium	2012	ppm	2	2	0.0022	One sample collected		NO	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Fluoride	2012	ppm	4	4	0.61	One sample collected		NO	Erosion of natural deposits; water additive-promotes strong teeth
Chromium ³	2010	ppb	100	100	1.0	One sample collected		NO	From steel and pulp mills; Erosion of natural deposits
Lead ³	2010	ppb	0	15	0.8	One sample collected		NO	Corrosion of household plumbing systems; Erosion of natural deposits
Organic									
Hexachlorocyclo-pentadiene ³	2010	ppb	50	50	0.08	ND ²	0.08	NO	Discharge from chemical factories
Di(2-ethylhexyl)phthalate ³	2009	ppb	0	6	0.7	One sample collected		NO	Discharge from rubber and chemical factories
Unregulated Constituents									
Sodium	2012	ppm		20 ⁴	7.52	One sample collected		NO	Erosion of natural deposits

¹The City of Salem is on a reduced monitoring schedule for lead and copper sampling. The 2010 data is the latest lead and copper data. The City will be sampling for lead and copper during the summer of 2013.

²Non-detect

³The City of Salem is required to report any detected contaminant within the last five years.

⁴EPA advisory level only

Want to Learn More?

US EPA

Safe Drinking Water Hotline

1-800-426-4791

www.epa.gov

National Drinking Water Clearinghouse

1-800-624-8301

<http://www.nesc.wvu.edu/>

drinkingwater.cfm

Oregon Health Authority

Drinking Water Program

971-673-0405

<http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater>

(Salem's ID# 00731)

City of Salem Public Works Department

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.

503-588-6211

City of Salem Website

www.cityofsalem.net

Other Results

Turbidity is a measure of water's clarity. High turbidity (muddy water) results from suspended soil and organic matter in water. This can increase the risk of contamination by interfering with the drinking water treatment process. All of the City's turbidity samples were below required levels.

Radon is a naturally-occurring radioactive gas found throughout the U.S., more often in groundwater than surface water. Radon levels taken from Salem's Aquifer Storage and Recovery (ASR)

wells are consistent with normal levels typically found in Salem area groundwater.

Cryptosporidium is a harmful microbial pathogen found in surface water throughout the U.S. Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Cryptosporidium must be ingested to cause disease and may be spread through means other than drinking water. Monitoring in 2012 did not detect Cryptosporidium in untreated North Santiam River source water.

City Changes Backflow Prevention Program

The State of Oregon *Administrative Rules* and *Salem Revised Code* require the City of Salem to manage a Backflow Prevention Program in order to ensure safe drinking water for its customers. Backflow prevention assemblies are required in locations where contaminated water can flow back into the City's distribution system. Various levels of protection are required at locations ranging from mortuaries and hospitals to irrigation and fire suppression systems.

In 2012, the City enacted changes to its program that included notifying both utility account holders and property owners about annual backflow testing requirements. Property owners are responsible for ensuring backflow assemblies are tested annually; however, if a property owner does not comply, water service disconnection will occur at the property where the assembly is located.

Each backflow assembly is assigned a compliance month. The City now sends two notifications during the compliance period to remind customers of the required testing. If the City does not receive a valid test report during the compliance period, it will issue a 72-hour water disconnection notice to the utility account holder.

Beginning February 2013, water customers that have a backflow assembly also began paying a \$1.25 monthly fee, which provides funding for the City to administer the program. The City previously used water rates to support the program.

If you would like additional information, please call the Water Quality Hotline at 503-588-6323. A list of certified backflow assembly testers is available from Oregon Health Authority at: <http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/CrossConnection/Pages/publiclist.aspx>.

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.

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 (130,000 gallons)

Parts per Billion (ppb): one part per billion is equal to one drop of food coloring in an Olympic size swimming pool (130,000 gallons)

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.

Watershed Monitoring

“An ounce of prevention is worth a pound of cure.”

According to the EPA, communities, states, and consumers often bear the economic burden when drinking water sources become contaminated. The North Santiam River provides the City of Salem with high quality source water, and monitoring is an essential first step toward preventing contaminants from entering the City’s water supply.

A watershed is an area of land where all precipitation or snowmelt eventually flows into a common waterway, such as the North Santiam River. The area of the North Santiam Watershed located above the City’s drinking water treatment facility

encompasses more than 450,000 acres, and keeping track of current conditions in this region allows managers to identify and respond to any changes that threaten water quality in the North Santiam River.

Both natural and human-caused events can be a source of contaminants entering the North Santiam River. The City takes a two-tiered approach to monitor these conditions in the North Santiam Watershed:

- 1) The City collects water quality samples and uses monitoring equipment that measures the actual condition of the water, such as how much algae, sediment, nutrients, or other contaminants are present;
- 2) The City tracks weather patterns, natural occurrences, and human activities that have a potential to reduce water quality, such as landslides, construction, hazardous waste spills, and agricultural and forest practices.

During the summer of 2010, the City began a routine monitoring program in the North Santiam watershed that includes tracking water quality conditions at Detroit Reservoir and other points along the North Santiam River. The City is now entering into its fourth summer of data collection, which will help protect water quality and minimize impacts to customers and operations.

Salem Families Benefit From Low Income Assistance Program

The Low Income Assistance Program, sponsored by the City of Salem, is dedicated to helping individuals and families facing financial difficulties in paying their water, wastewater, and stormwater bills. The program is possible due to generous utility customers making voluntary tax-deductible donations used exclusively for low income assistance.

Since February 2008, a total of \$116,846.55 has been distributed to 1,472 families and individuals who would have otherwise faced possible water service disruption. Currently, the donation amounts received are not enough to keep up with the low income requests for distribution. If you would like to donate to the Low Income Assistance Program or if you are in need of low income assistance for your utility bill, please visit our website at www.cityofsalem.net or contact the Customer Services Call Center at 503-588-6099 for more information.

Understanding Salem’s Source Water Assessment

The City of Salem’s Source Water Assessment, completed in 2003 with assistance from the Oregon Department of Environmental Quality, provides an inventory of potential contaminant sources that could pose a risk to water quality of the North Santiam River. The assessment, as required by the Federal Safe Drinking Water Act, also identifies sensitive areas where contaminant sources may have a greater potential to impact the water supply.

Results of the assessment reveal that potential contaminant sources include sediments/turbidity, microbiological agents, and nutrients. Potential sources of these contaminants include highways,

leaking septic systems, grazing animals, forest practices, above-ground and below-ground storage tanks, wood processing and milling, junk yards, and auto and mechanical shops. The City continues to monitor activities within the North Santiam River Watershed that may impact its drinking water source.

Salem’s Source Water Assessment is available on the City of Salem website at www.cityofsalem.net. The report can be found under City Departments/Public Works/Operations/Water Services. The report is also available by calling the Water Quality Hotline at 503-588-6323 or via email at water@cityofsalem.net.





Salem's Water System | Serving a Population of 189,000 Daily From the North Santiam River Watershed

Water Conservation: Ways to Be Water Efficient

Water efficiency is the smart use of our water resources through water-saving appliances and simple steps we can all take around the house. Using water efficiently will help ensure reliable water supplies today and for future generations.

One way you can better understand water efficiency is to look at your utility bill—not just the amount due, but how much water you used. Does your water use increase during certain times of the year? For most of us, water use goes up during summer when hot weather arrives. However, regardless of when your water use is highest, there are ways to save each season:

Spring—Fix leaks

Cold winter weather can be hard on pipes, so to avoid water loss during the summer, check for plumbing and irrigation leaks now. If you turn off all the taps inside and outside your house and your water meter is still turning, chances are you have a leak. Even a small leak can translate into wasting thousands of gallons of water in a short period.

Summer—Water wisely

Fix sprinkler heads that are broken or spraying on the sidewalk, street, or

driveway. Know how much water your lawn and garden need, and water them in the early morning or late evening to avoid water loss due to evaporation during the heat of the day. Remove water-stealing weeds from gardens, so you will not have to water as often. Mulching helps prevent weeds and reduces water loss from evaporation.

Fall—Adjust and Prepare

As temperatures decrease and fall rains begin, watering demands for most plants go down. Adjust your irrigation systems to reflect the changing season. With winter approaching, disassemble irrigation systems and insulate outdoor or exposed plumbing to protect it from damage during the cold months ahead. Also, insulate indoor hot water pipes to reduce the amount of water needed in order to get hot water to the faucet.

Winter—Indoor Projects

Chances are you will be spending a lot more time indoors during the winter. Locate the master shutoff valve in your home so that if a pipe bursts, you will be able to quickly prevent flooding and excessive water loss. Look around the house and make a list of ways to save water: consider replacing old faucets,

shower heads, washing machines, and dishwashers with newer, more efficient models. Create a plan for next summer to improve landscaping with native plants.

To learn more about the ideas listed above or water conservation in general, visit the EPA “Water Sense” website at <http://www.epa.gov/WaterSense>.

One Inch Per Week

Your lawn only needs approximately one inch of water per week to stay healthy and green. Do you know how much water you apply every week? Request a free *One Inch Per Week* lawn watering gauge to find out. Call the Water Quality Hotline at 503-588-6323 or email water@cityofsalem.net.

City Offers Free Conservation Kits to Water Customers

Retrofitting existing fixtures can help reduce the amount of water you use every day and help save money on your utility bill. The City offers free indoor and outdoor water conservation kits to its customers. To request a free water conservation kit, please call the Water Quality Hotline at 503-588-6323 or email water@cityofsalem.net.

To Our Valued Customers,

It is my pleasure to present the City of Salem's 2013 Annual Water Quality Report. Each year, the EPA requires all drinking water suppliers to prepare an annual water quality report for its customers. This report includes information about Salem's drinking water, including where it comes from, how it is treated, and what, if any, contaminants that it may contain.

Our commitment is to provide drinking water that consistently meets state and federal regulations. Each day our staff strives to uphold this pledge, and as a result, in 2012, City of Salem drinking water met or surpassed every public health requirement—over 120 drinking water quality standards—set by the Oregon Health Authority and the EPA.

As always, we strive to continue to provide excellent customer service by delivering high quality drinking water to your tap. I hope you will take a moment to read this report or visit www.cityofsalem.net for more information on Salem's drinking water.



Sophia Hobet

Water Services Manager
Salem Public Works Department
503-588-6211

THE FEDERAL SAFE DRINKING WATER ACT

requires this annual water quality report be mailed to every customer to provide information regarding the quality of the community's drinking water. Each copy of this report costs \$0.28 to print and mail. If you have any questions or comments, please email water@cityofsalem.net or call the Water Quality Hotline at **503-588-6323**.

This report is printed on recycled materials.



Ways to Get Involved!

The Water-Wastewater Task Force, a citizen advisory committee, meets periodically to provide recommendations regarding water and/or wastewater policy to the Salem Public Works Department and City Council. For information and meeting dates, call **503-588-6211**.

Salem City Council is the policy-making body for the water system and meets on the second and fourth Mondays of each month at 6:30 p.m. The meetings are open to the public and are held in the **City Council Chambers, Room 240, Vern Miller Civic Center, 555 Liberty Street SE, Salem, Oregon**. Call **503-588-6091** or visit www.cityofsalem.net for more information.

North Santiam Watershed Council's mission is to promote and sustain the health of the North Santiam Watershed. The meetings are open to the public and are held in the **Stayton Community Center, 4000 W. Virginia Avenue, Stayton, Oregon** on the second Thursday of each month at 7 p.m. Call **503-930-8202** for more information.