A close-up, artistic photograph of water droplets falling from a faucet. The droplets are in various stages of falling, some are large and spherical, others are elongated and teardrop-shaped. The background is a soft, out-of-focus light blue. The overall color palette is monochromatic, consisting of various shades of blue and teal.

ANNUAL WATER
QUALITY
REPORT

WATER TESTING PERFORMED IN 2016

Presented By

OAK  **LODGE**
WATER SERVICES

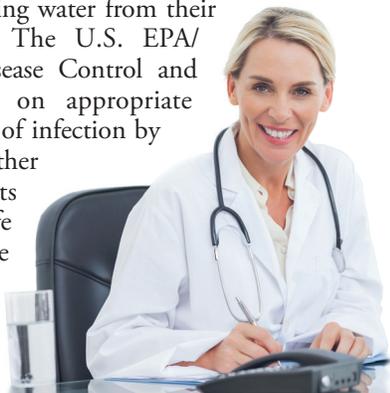
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We've Come a Long Way

Once again we are proud to present our annual water quality report covering the period between January 1 and December 31, 2016. In a matter of only a few decades, drinking water has become exponentially safer and more reliable than at any other point in human history. Our exceptional staff continues to work hard every day—at any hour—to deliver the highest-quality drinking water without interruption. Although the challenges ahead are many, we feel that by relentlessly investing in customer outreach and education, new treatment technologies, system upgrades, and training, the payoff will be reliable, high-quality tap water delivered to you and your family.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) 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 (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.



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, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances 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, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may 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 by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

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

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Alan Schacht, Water Quality Specialist, at (503) 723-3505.

Where Does My Water Come From?

Oak Lodge Water Services withdraws water from the Clackamas River, which is an extremely high-quality raw water source. The Clackamas River watershed covers almost 1,000 square miles, mostly located in Clackamas County, Oregon. Timothy Lake and Ollalie Lake make up the headwaters of the Clackamas River, and many tributary streams contribute to the flow of the river. Drinking water for Oak Lodge Water Services is produced by three treatment techniques: slow sand filtration, conventional filtration, and membrane filtration. The Allen F. Herr Water Treatment Facility began production in August 1999. Oak Lodge Water Services, Sunrise Water Authority, and the City of Gladstone—known as the North Clackamas County Water Commission (NCCWC)—jointly own the slow sand and membrane filtration systems. Water is occasionally received from the South Fork Water Board's conventional treatment plant facility. The South Fork Water Board treatment facility was constructed in 1958 and started providing water to Oak Lodge customers in 2002. The South Fork Water Board plant is used primarily as a backup supply.

The commission added membrane filtration in 2005. Membrane filtration is a state-of-the-art treatment technique that filters water through a series of small tubes with openings one micron in size. This ultra-filtered water allows for a continuous supply of water even when raw water turbidities rise in the winter months.

Approximately 100 miles of water mains make up the distribution system that carries water to Oak Lodge customers. The District has four reservoirs with a combined storage of 15.6 million gallons.

Lead in Home Plumbing

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. We are responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned



about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/lead.

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. The board of directors holds regular public meetings on the third Tuesday of each month, beginning at 6 p.m., at the Oak Lodge Water Services office, 14496 SE River Road, Oak Grove. Interested members of the public are welcome to attend. Please call (503) 654-7765 for further information.

How is My Water Treated and Purified?

Oak Lodge Water Services customers receive their water from the North Clackamas County Water Commission (NCCWC). The South Fork Water Board also serves as a backup supply to the NCCWC. The NCCWC began using slow sand filtration in August 1999.

The slow sand filtration process operates as follows: Untreated water is pumped onto four half-acre beds. As the water is passed down through the filter media, the top six inches of sand at the surface provide an area where pathogenic organisms are trapped or ingested by non-pathogenic organisms. This treatment zone, known as the zoogeal mass, filters out particles and helps break down organic matter. Chlorine is added to the filtered water as a follow-up treatment measure to disinfect any pathogenic organisms that may have passed through the filter media. An adequate amount of chlorine is added to provide a detectable residual throughout the distribution system.

Membrane filtration processes operate as follows: Raw water flows from the river into a cell where the filters are submerged. Each filter cell has 288 membrane modules, and each module has 9,500 individual hollow fibers. The flow is drawn through the walls of the membrane fibers by vacuum to the inside of the fiber by a pump. After the membranes have filtered a predetermined flow, the water goes through a backwash procedure for cleaning. The backwash procedure is a process in which water and air are used to scour the particles that have accumulated on the fibers. This water is then chlorinated and combined, at most times, with the water from the slow sand filters.

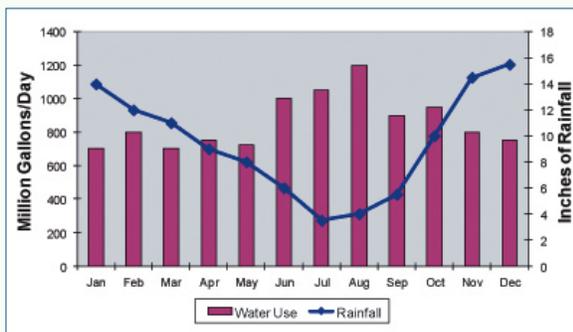
The water from South Fork Water Board is treated in the following fashion: Water is pumped to a basin where alum and polymer are added to the raw water as a coagulant. The water then enters hydraulic flocculators and goes to a sedimentation basin where the floc settles. The supernatant water is collected in weirs and sent to rapid filters. The filtered water is then chlorinated and provided to the North Clackamas County Water Commission on an as-needed basis.

Water Conservation

You can play a role in conserving water and save yourself money in the process by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever you can. It is not hard to conserve water. Here are a few tips:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water-using appliances. Then check the meter after 15 minutes. If it moved, you have a leak.

With the abundant rainfall we have in the Pacific Northwest, it is sometimes difficult to understand why we need to conserve water. As our communities have grown, our water needs have also grown. Water conservation is something that we should all practice. Except for the air we breathe, water is the single most important element of our lives. It is too precious to waste. Regardless of the availability of water now and in the future, we must get the most for our current supply. Not only is conservation the smart thing to do, it is the right thing to do from a natural resource perspective.



Municipal Water Management and Conservation Plans (WMCP) provide a process for municipal water suppliers to develop plans to meet future water needs. All Clackamas River Water Providers (CRWP) members are required to develop these Plans as part of their water right permit conditions. These Plans are used to demonstrate our communities' needs for increased diversions of water under their water

permits as our communities and water demands grow. The Plans explain how we will manage and conserve water supplies and are intended to represent a proactive evaluation of conservation measures that we can undertake.

All water providers must implement the following conservation measures:

- Conduct annual water system audits.
- Full metering of the water system.
- Meter testing and maintenance programs.
- A rate structure based, at least in part, on the quantity of water metered.
- Leak detection programs.
- Public education programs focused on efficient water use and low water use landscaping.

In addition, many water providers are required to implement technical and financial assistance programs such as rebate programs, in which the costs of purchasing water-efficient fixtures or equipment are partially offset.

In 2007, the Clackamas River Water Providers adopted the water conservation program that was being implemented by South Fork Water Board and expanded it to cover most of the CRWP members. The CRWP currently provides water conservation programs and services to the following members: City of Estacada, the City of Gladstone, Oak Lodge Water Services, South Fork Water Board (Oregon City and West Linn), and Sunrise Water Authority (Happy Valley and Damascus). Clackamas River Water, the city of Lake Oswego and the city of Tigard have opted not to participate in the CRWP water conservation program.

The CRWP implements a Public Outreach and Education Program as well as a Conservation Rebate Program on behalf of its members to encourage efficient water use and meet WMCP requirements. These programs have a number of individual programs or components that provide awareness, information, motivation, and action for efficient indoor and outdoor water use practices.

Water conservation is an important tool in meeting the water supply needs of our communities and can help us reduce the cost of developing new water supplies. It also allows us to leave more water in the rivers for fish and recreation.

For more detailed information about the CRWP Water Conservation and Public Outreach & Education programs, visit our Web site at www.clackamasproviders.org or give us a call at (503) 723-3511.

Test Results

Our water is monitored for many different kinds of contaminants on a very strict sampling schedule. The information below represents only those substances that were detected; our goal is to keep all detects below their respective maximum allowed levels. The State recommends monitoring for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chlorine (ppm)	2016	[4]	[4]	1.20	0.31–1.20	No	Water additive used to control microbes
<i>E. coli</i> (# positive samples)	2016	Routine and repeat samples are total coliform-positive and either is <i>E. coli</i> -positive or system fails to take repeat samples following <i>E. coli</i> -positive routine sample or system fails to analyze total coliform-positive repeat sample for <i>E. coli</i>	0	0	NA	No	Human and animal fecal waste
Haloacetic Acids [HAAs] (ppb)	2016	60	NA	49	18–49	No	By-product of drinking water disinfection
Nitrate [as Nitrogen] (ppm)	2016	10	10	0.241	0.241–0.241	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2016	80	NA	58	26–58	No	By-product of drinking water disinfection
Total Coliform Bacteria (# Positive samples)	2016	TT	NA	0	NA	No	Naturally present in the environment
Turbidity ¹ (NTU)	2016	TT	NA	0.95	0.02–0.95	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2016	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2014	1.3	1.3	0	0/60	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2014	15	0	0	0/60	No	Corrosion of household plumbing systems; Erosion of natural deposits

¹ Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

Definitions

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

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as LRAAs.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): 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.

MRDL (Maximum Residual Disinfectant Level): 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.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.