

City of Florence
A City in Motion

2016



WATER QUALITY REPORT

June 2017 Edition

Letter from the Director

Essential to a healthy, thriving and economically vibrant community is an abundant, reliable supply of high-quality water. Florence Public Works has played an integral role in meeting the growing demands of our area. Today, the City of Florence provides high-quality water to 8,750 consumers, and our services support the community's health, quality of life and economic growth.



Mike Miller,
Public Works Director

The one constant in this world is change. During 2016, the Water Division within Florence Public Works saw change, both in staffing and in bringing on new resources. During 2016 we saw the departure of one of the treatment plant operators and the superintendent. These changes allowed us to hire a new plant operator that is eager to learn, positive and energetic. I am also pleased to report that the departure of the former superintendent allowed us to recognize and promote from within the organization. It is with great pleasure to have August Murphy fulfilling that role. In the last 10 years, we have seen significant growth and responsibility placed before Mr. Murphy, and he has always risen to the top.

Last year, we also saw the completion of production well #13, a drinking water well that is capable of producing 220 gallons per minute. The addition of well #13 brings the total wellfield production ability to 3.7 million gallons per day and sets the City up nicely to meet peak summer water demands now and into the future.

The City initiated a major water line replacement and upgrade along Rhododendron Drive between 9th Street and Hwy 101, and along Kingwood from 2nd Street to Rhododendron Drive. The 16-inch and 12-inch water mains replaced older undersized 6-inch and 4-inch water lines. This project, which was completed in May 2017, allows the City to meet current and future fire demands for the hospital and gives us the ability to supply ample high quality water to the residents that live in the area.

In the pages that follow, you will also learn about where your water comes from and our multi-barrier approach to ensuring the highest quality water is available to you the consumer. This approach focuses on watershed and aquifer management to protect the quality of our drinking water source, treatment of the water prior to delivery, maintenance of the distribution system that delivers the water to the tap and monitoring the quality to ensure compliance.

Our record of excellence, trust and innovation is a proud reflection of our skilled employees who work hard every day to deliver high-quality water. We met all state and federal water quality standards in 2016 and continued to meet the outstanding performer requirements as set forth by the State of Oregon. We are proud to have such an important purpose. It is a privilege and a responsibility.

This edition contains information concerning the City of Florence Water System, Identification (WSID) #4100299, and covers all testing completed from January through December 2016. Florence Public Works employees are on call 24 hours a day, 365 days a year, to ensure that you always have access to safe drinking water. We invite you to read this report and welcome comments. If you have questions regarding water quality, please call us at 541-997-4106 M-F from 8AM-5PM. For after-hours emergency assistance, please call the Florence Police Department at 541-997-3515.

Your Drinking Water

We receive our water supply from the North Florence Sole Source Dunal Aquifer, designated as a “sole source” aquifer by the US Environmental Protection Agency (EPA) in 1987. It continues to be the only “sole source” aquifer in the State of Oregon. The EPA defines a sole source aquifer as “an underground water source that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas have no alternative drinking water source(s) that could physically, legally and economically supply all those who depend upon the aquifer for drinking water.” All streams, creeks, lakes and wetlands (surface waters) in the aquifer boundary are “hydrologically connected” with the groundwater system.

In 2016, the City of Florence supplied water to approximately 8,750 consumers within the City’s water service area. The water these customers received came from 13 dunal wells located just north of the City’s water treatment plant at 2500 Willow Street. The well field is City-owned and consists of approximately 80 acres of carefully managed land as recommended in the City’s well head protection plan. The source water assessment and aquifer protection plan is available for customer review. Please contact Public Works at 541-997-4106 for more information.



From left: Mike Unruh, Plant Operator II; Matt Hiatt, Plant Operator I; August Murphy, Water/Wastewater Treatment Plant Superintendent

The City of Florence water system uses two filter systems in a series to remove the iron from the raw groundwater. Three biological filters and six greensand filters comprise our filter system and these filters can treat up to three (3) million gallons of water per day (mgd). The City’s supply of raw groundwater contains dissolved iron in the range of 6-9 parts per million (ppm) before treatment. The water treatment plant oxidizes and removes all but 0.01 ppm through the treatment process.

As water flows through the treatment plant, 90% of the iron is removed through the use of biological oxidation and filtration. Air is injected into the water to increase the level of dissolved oxygen, and the naturally occurring iron bacteria assist in oxidation through various metabolic processes. The sand filters then separate the oxidized iron and bacteria from the water. The filtered water is then chlorinated to chemically oxidize the water and deactivate any residue bacteria. Potassium permanganate is added to the chlorinated water to provide additional oxidation before final filtration with greensand and anthracite coal. The color and odor of the water is removed with the iron, and the final product is cool, wet, colorless, odorless, and tastes great!

For more information, or to arrange a tour of the facility, please contact August Murphy, Mike Unruh or Matt Hiatt at the Water Treatment Plant at 541-997-7370.

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 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. Environmental Protection Agency and 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 1-800-426-4791.

Lead in Drinking Water

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 Florence 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 drinking water, you may wish to request a free lead-in-water test from the LeadLine. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the LeadLine at **503-988-4000**, www.leadline.org or the Safe Drinking Water Hotline at **1-800-426-4791** or www.epa.gov/safewater/lead.

For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Health Authority's Oregon Environmental Laboratory Accreditation Program at 503-693-4122.

Hardness in Water

The City of Florence water source is considered to be very soft. "Hard water" is caused by higher than ordinary levels of dissolved minerals, such as magnesium and calcium, often enhanced by carbon dioxide. Hard water does not dissolve soap readily, so making a lather for washing and cleaning is difficult. Conversely, water containing little calcium or magnesium is considered soft. The City of Florence's water has a hardness of 19 ppm or 1.1 grains of hardness per gallon.

Drinking Water Fluoridation

The City of Florence has been adding fluoride to its water service since the early 1960s. Currently, fluoride is added at the EPA recommended rate of 0.7 mg/l (milligrams per liter). According to the U.S. Center for Disease Control (CDC) and the U.S. Department of Health and Human Services, widespread use of fluoride has been a major factor in the decline of the prevalence and severity of tooth decay in the United States. When used appropriately, fluoride is both safe and effective in preventing tooth decay.

Water Quality Testing



Ongoing water quality testing continues to be one of the highest priorities for the City's drinking water program in its commitment to providing premium safe drinking water to residents. The City collects nine microbiological samples per month in addition to samples required by the Oregon Health Authority Drinking Water Program and the Environmental Protection Agency to ensure that the City's drinking water meets state and federal standards.

Test Findings

The City of Florence routinely checks for 42 Volatile Organic Compounds, 42 Synthetic Organic Chemicals and 16 Inorganic Chemicals, as required by the EPA. The City also takes nine Bacterial Samples at multiple locations throughout the City every month. The charts on the following page show the results of our most recent testing.

If a known health-related contaminant is not listed in this report, it was not detected in the drinking water.

In addition, in 2014 the City tested 20 homes in representative areas throughout the City for lead and copper. We are pleased to report that none of the homes exceeded the Action Levels as determined by the EPA. For those citizens concerned about sodium levels, currently the sodium level in our water is 30.5 mg/L.



WATER QUALITY DATA

Inorganics and Bacteria

Parameter	Units	Goal MCLG	Allowed MCL	Max Detected in City's Water	Violation?	Major Sources
Fluoride	ppm	4	4	0.91 mg/L	No	Water additive which promotes strong teeth;
Nitrate	ppm	10	10	ND	No	Erosion of natural deposits
Nitrite	ppm	1	1	ND	No	Erosion of natural deposits
Total Coliform	No units	0	0	0	No	Naturally present in the environment

Disinfection By-Products

Total Trihalomethanes	ppb	n/a	80	18.9	No	By-product of Chlorination
Haloacetic Acids	ppb	n/a	60	6.84	No	By-product of Chlorination

Lead and Copper Sampling*

Parameter	Units	Goal MCLG	Allowed MCL — or Action Level	90th Percentile	Violation? Yes/No	Major Sources
Copper	ppm	1.3	1.3	ND	No	Corrosion of household plumbing
Lead	ppb	0	15.0	3.5	No	Corrosion of household plumbing

*Based on 90% of homes tested being at or lower than the reporting limit. For lead and copper, a water supply is in compliance with the drinking water standards if 90% of the samples are less than or equal to the Action Level. This is a 3-year testing cycle. Last test was in 2014.

Unregulated and Secondary** (regulations provide advisory limits only) Tested in 2014

Parameter	Units	Max Detected in City's Water	Major Sources
Sodium	ppm	30.5	Erosion of natural deposits, water treatment additive

**Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to help EPA determine their occurrence in drinking water and potential need for future regulation. There is currently no drinking water standard for sodium. At the levels found in drinking water, they are unlikely to contribute to adverse health effects.

Radioactive Contaminants

Parameter	Units	Goal MCLG	Highest Level Detected in City's Water	Violation? Yes/No	Major Sources
Gross Alpha	pCi/L	15	4.0	No	Erosion of natural deposits
Radium Combined (226 and 228)	pCi/L	5	1.2	No	Erosion of natural deposits

Definitions

ND: None Detected.

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. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

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.

Parts per Million (ppm) or Milligrams per Liter (mg/L): A unit measurement describing the level of detected contaminants that is one part by weight of analyte to one million parts by weight of the water sample. One part per million corresponds to one penny in \$10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Parts per Billion (ppb) or Micrograms per Liter (µg/L): A unit measurement describing the level of detected contaminants that is one part by weight of analyte to one billion parts by weight of the water sample. One part per billion corresponds to one penny in \$10,000,000 or approximately one minute in 2,000 years.

Picocuries per Liter (pCi/L): A standard measurement of radioactivity in water.

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

Action Level (AL): The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements.

Unregulated Contaminants: Water quality standards for unregulated contaminants are established as guidelines to assist public water systems in managing drinking water for aesthetic considerations such as taste, color, and odor. These contaminants do not present a risk to human health.

What the EPA Says About Drinking Water Contaminates



Drinking water, including bottled water, may be reasonably 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 Environmental Protection Agency's (EPA) Safe Drinking Water Hotline **1-800-426-4791** or at www.epa.gov/safewater.

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 from 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 or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as farming, urban stormwater runoff and home or business use.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff and septic systems.
- **Radioactive contaminants**, which can occur naturally.

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and 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.

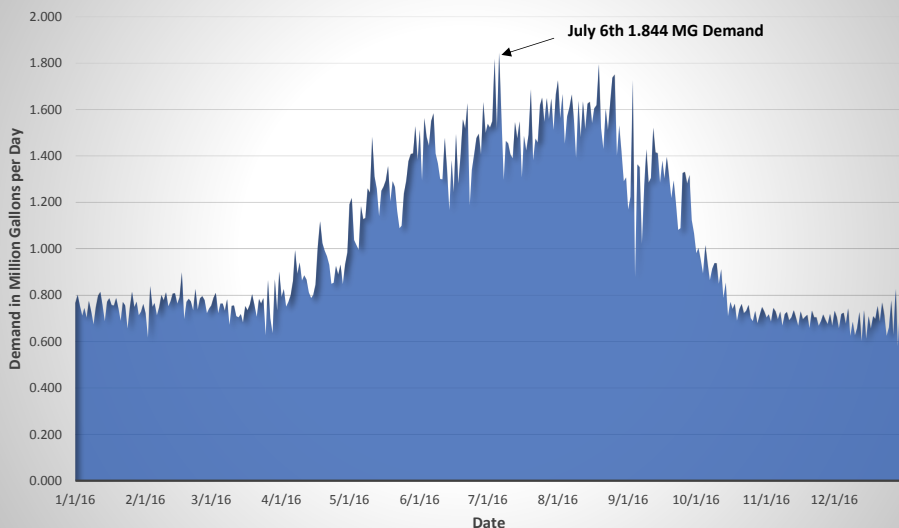
Water Conservation

By reducing water consumption at home and work, we will remain good stewards of the resources we manage. Below are some common tips to help reduce your water use:

- Use 2 to 4 inches of organic mulch around plants to reduce evaporation and save hundreds of gallons of water a year.
- Look for leaks. One drip every second adds up to 5 gallons per day!
- Consider purchasing a dual flush toilet. It has two options: a half flush for liquid waste and a full flush for solid waste.
- If you accidentally drop ice cubes, don't throw them in the sink. Drop them in a house plant instead.

2016 Water Demands

2016 Water Demands



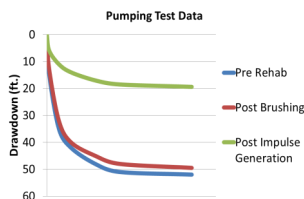
The above chart represents our system water demands for the 2016 calendar year. Our peak demand day occurred on July 6, 2016, with 1.844 million gallons used.

The greatest demand for water occurs during the summer months each year (June to September), as can be seen on our Daily Water Demand graph above. Florence's summer water use increases dramatically due to outdoor watering. The spiking of the water use during the summer is an indication of dry weather patterns and heavy outdoor water use.

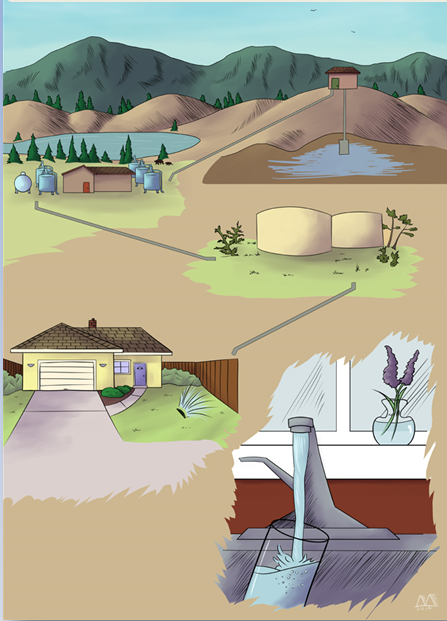
Well Rehabilitation Program

Due to the amount of naturally occurring iron in the groundwater, the City's supply of raw groundwater contains dissolved iron in the range of 6-9 parts per million (ppm), which can create fouling (build-up of deposits) of the well screens, well pump, piping systems, and if significant, fouling of the actual soils surrounding the well.

The City has been successfully rehabilitating the groundwater wells through a process that uses compressed nitrogen that creates impulses that remove the buildup of iron not only from the well screens, but actually from within the foundation of the aquifer. By using this latest technology, we are able to improve production in a cost-effective and sustainable manner. During 2016, the City rehabilitated Wells #8, #9 and #10. Through our rehabilitation efforts we were able to increase the individual well capacities from 100-125 gpm to 200-220 gpm and dramatically reduce the drawdown of the individual wells. Drawdown is the drop of the level of water in a well that is being pumped. The green line on the graph to the right indicates that the drawdown was only 20 feet after rehab. Prior to rehab, the drawdown was over 50 feet.

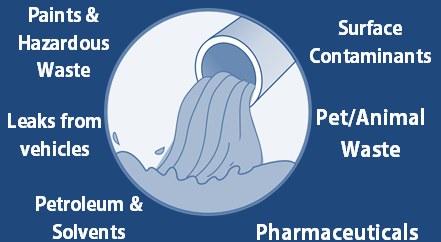


Source Water Protection



- 12 wells located in the North Florence Dunal Aquifer supply water to the City.
- The Water Treatment Plant treats 1-3 million gallons of water per day.
- Water is distributed to over 3,700 water connections through 62 miles of distribution pipes.
- The City of Florence can store up to 4.5 million gallons of water in our storage tanks.
- 69 inches of rain per year recharges the aquifer.

When It Rains, It Drains



Below are some tips for how we can all help protect our water:

- Properly dispose of pharmaceuticals.
- Inspect septic systems to ensure they are working properly. Septic systems that do not operate properly contaminate our ground water.
- When enjoying the dunes, remember their ecological importance. Ensure that equipment is functioning properly and not leaking fluids that can seep into the groundwater.
- Always dispose of RV/Campground waste properly.
- Properly use, store and dispose of herbicides and pesticides.
- Properly dispose of petroleum, solvents and volatile organic compounds (VOCs).
- Use car-wash facilities for cleaning vehicles, RVs and boats.
- Switch to environmentally safe household cleaning products.
- Don't put anything except water down storm drains. These drains carry stormwater to our local waterways, including Munsel Creek, the Siuslaw River and the Pacific Ocean. Used motor oil, detergents, lawn fertilizers, pesticides, trash and other contaminants get carried by stormwater to local waterways and cause unnecessary harm to fish and aquatic life.
- Utilize the Lane County Special Waste Program to dispose of hazardous wastes instead of sending it to the landfill. For information about special and hazardous waste disposal, call 541-682-4120.

Fascinating Facts About Water!

- Only 3% of Earth's water is freshwater. The other 97% of the water on Earth is salt water. Of the 3%, only 1% is available for use; the rest is frozen.
- Making one pound of plastic requires 24 gallons of water. Use less and recycle what you can. Look for items with less packaging.
- It takes about 37 gallons of water to grow coffee beans and process them to make one cup of coffee
- Water is part of a deeply interconnected system. What we pour on the ground ends up in our water, and what we spew into the sky ends up in our water.
- The average American uses 80-100 gallons of water per day. Florence residents use 110 gallons per day. Europeans use 40 to 85 gallons per day per person.
- Taking a bath requires up to 70 gallons of water. A five-minute shower uses 10 to 25 gallons with a low-flow shower head.
- In a 100-year period, a water molecule spends 98 years in the ocean, 20 months as ice, about 2 weeks in lakes and rivers and less than a week in the atmosphere.
- At any given moment, the amount of groundwater is 20 to 30 times greater than the amount in all the lakes, streams and rivers of the United States.
- More than 25% of bottled water comes from a municipal water supply, the same place that tap water comes from. It takes more water to make the bottle than the bottle contains.

<http://wateruseitwisely.com/>

https://www3.epa.gov/watersense/our_water/water_use_today.html

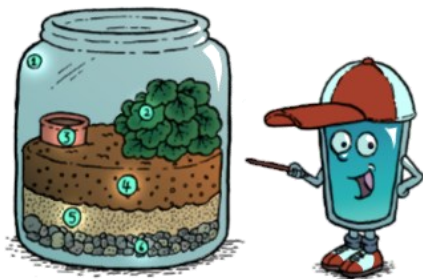
Water Cycle Activity for Kids

You will need:

1. Jar
2. Plants
3. Bottle cap or shell filled with water
4. Soil
5. Sand
6. Small Rocks

Directions:

1. Fill the jar as in the picture and put the lid on.
2. Put the jar in a sunny place and see how the water cycle works.

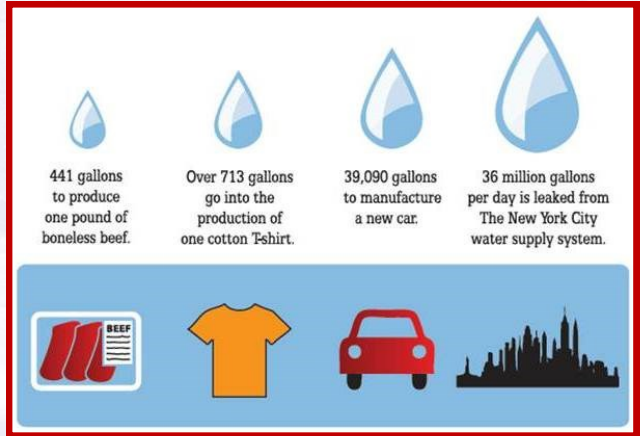


From the United States EPA, Office of Water www.epa.gov/safewater
Other activities can be found at: <http://wateruseitwisely.com/kids/kids-old/>

All About Water

One gallon of tap water costs less than 1/3 of 1 cent (\$0.0033). Compare that to one gallon of:

- Bottled Water: \$1.43
- Cola: \$2.60
- Milk: \$3.49
- Gasoline: \$2.99
- Orange Juice: \$7.19
- Wine: \$19
- Cafe Lattes: \$35
- Olive Oil: \$48
- Honey: \$67



(2009-2012 Prices from AWWA and NLRB)

Contact Information

City of Florence Public Works

989 Spruce St.
Florence, OR 97439
541-997-4106

Water Treatment Plant

2500 Willow St.
Florence, OR 97439
541-997-7370

The city of Florence is proud of the high quality of our water supply, which meets or exceeds all state and federal water quality requirements.

If you have any questions regarding your water quality or about information presented in this report, please call us at the Water Treatment Plant 541-997-7370 or the Public Works Department 541-997-4106 or visit our website at www.ci.florence.or.us.

We encourage public interest and participation in decisions affecting our drinking water. City Council meetings usually occur on the first and third Mondays of each month at 5:30pm at City Hall. City Hall is located at 250 Hwy 101. For information on meeting schedules and agendas contact 541-997-3437 or visit the City's website at www.ci.florence.or.us

This report contains important information about your community's water system. Have it translated or speak to a friend that understands it well.

Este informe contiene información muy importante. Encuentra un amigo que te ayude a entenderlo. Gracias.