

# City of Orem

## Annual Water Quality Report for the Year 2016

This Water Quality Report provides information about the excellent water the City of Orem delivers to you every day. Our number one goal is to provide you and your family a safe and dependable supply of drinking water. Our employees strive to deliver a quality product and protect the city's precious water resources. To ensure the safety of your water, the Water Resources Division routinely monitors for contaminants in your drinking water according to federal and state laws, rules, and regulations. This water report is based on the results from the most recent testing done in accordance with these laws and regulations.

### Ensuring Safe Tap 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 the water poses a health risk. National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the amount of certain contaminants in water provided by public water systems. Orem treats its water according to these regulations. The Food and Drug Administration (FDA) has established limits for contaminants in bottled water to protect public health. Some people may be more vulnerable to contaminants in drinking water than the general population.

### Safe Drinking Water

In 1974, the Federal Safe Drinking Water Act (SDWA) was passed to establish standards for public drinking water. The law was amended in 1986 and again in 1996 and requires many actions to protect drinking water. The United States Environmental Protection Agency (USEPA) and the Utah State Department of Health set water quality standards that require water suppliers to monitor and treat potentially harmful contaminants. Drinking water standards specifically relate to your health and are generally based on health affects which may occur if a person were to drink two liters (about two quarts) of water each day for seventy years.



### Bacteriological And Chemical Testing

More than 1,393 drinking water samples were analyzed for bacteriological contamination in 2016, no bacteriological contamination was confirmed in these samples. (Only trace amounts of chemicals identified in this document were detected in Orem source water.) Orem drinking water meets or exceeds water quality standards set by the USEPA and the State of Utah.

### Where Does My Water Come From?

Orem uses a variety of sources to provide water to its residents and customers. Approximately 60% of Orem's water comes from surface water sources, whereas 40% comes from ground water sources. Surface water sources include the Provo River, Deer Creek Reservoir, and Jordanelle Reservoir. All of Orem's surface water is treated (filtered and disinfected) at the Don A. Christiansen Regional Water Treatment Plant (DACRWTP), which is operated by the Central Utah Water Conservancy District (CUWCD). Orem's ground water sources consist of nine deep wells located throughout the city. Wells pump from subterranean aquifers and provide 25% of Orem's water. Two mountain spring sources located in Provo Canyon contribute 15% of Orem's water. Ground water (wells and springs) is pure enough to not require treatment. All of Orem's water, whether from surface or ground water, is blended together within the distribution system. In 2016, Orem produced over 8.6 billion gallons of clean, safe drinking water to its customers.

### Source Water Contaminants

The sources of drinking water for the City of Orem include rivers, lakes, streams, reservoirs, wells and springs. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive materials. It can also dissolve or pickup substances from human or animal activity. The following contaminants may be present in source water before it is treated:

- *Microbial contaminants*, such as viruses and bacteria, which come from sewage treatment facilities, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, are naturally occurring or can result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and farming.
- *Pesticides and herbicides* come from a variety of sources such as agriculture and residential uses.
- *Radioactive contaminants* are naturally occurring in water and soil.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, are by-products of industrial processes and petroleum production. These contaminants can also come from gas stations, urban storm water runoff, and septic systems.

## Water Quality Data

The following table lists all detected contaminants in Orem's drinking water system during the 2016 calendar year. The presence of these contaminants does not necessarily indicate the water poses a health risk. A list of definitions and abbreviations is found above the table for reference. Monitoring is required at least every 9 years for surface water and every 3 years for groundwater.

### Definitions and Abbreviations

<b>MCL</b>	Maximum Contaminant Level: is 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.	<b>mg/L</b>	Milligrams per liter (mg/L) or parts per million (ppm). One part per million corresponds close to one minute in two years or a single penny in \$10,000.
<b>MCLG</b>	Maximum Contaminant Level Goal: is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.	<b>µg/L</b>	Micrograms per liter (µg/L) or parts per billion (ppb). One part per billion corresponds close to one minute in 2,000 years, or a single penny in \$10,000,000.
<b>AL</b>	Action Level: The concentration of a contaminant which, when exceeded triggers treatment or other requirements which a water system must follow.	<b>MNR</b>	Monitoring Not Required.
<b>Range</b>	The range of detection of multiple samples for a contaminant.	<b>ND</b>	Laboratory analysis indicates that the constituent is not present.
<b>pCi/L</b>	Picocuries per Liter: is a measure of the radioactivity in water.	<b>TT</b>	Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.
<b>NTU</b>	Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.	<b>UV-254</b>	A measurement of ultraviolet light absorption by organic carbon, measured at a wavelength of 254 nanometers per 1/cm (reciprocal centimeters).
<b>UR</b>	Unregulated.	<b>NE</b>	None established.
<b>µmhos/cm</b>	Micromhos per Centimeter: A measurement of conductivity.	<b>grains/gallon</b>	A unit of water hardness defined as 1 grain of calcium carbonate dissolved in 1 gallon of water.
<b>Test Date</b>	Due to sampling requirement intervals, i.e. yearly, 3 years, 4 years and 6 years, sampling dates may seem outdated.		

					City of Orem			DACR Water Treatment Plant			
Microbiological	Test Date	Units	MCL	MCLG	Highest No. of Positive	2016 Range	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant or Other Comments
Total Coliform	2016	% positive per month	5%	0	0	ND -1	No	0	0	No	Coliforms are naturally present in the environment; as well as feces; fecal coliforms and E. coli only come from human and animal fecal waste.
Escherichia coli (E. Coli)	2016	% positive per month	TT	TT	0	0	No	0	0	No	Fecal coliforms and E. coli only come from human and animal fecal waste.
	Test Date	Units	MCL	MCLG	Lowest Level Detected	Highest Level Detected	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant or Other Comments
Turbidity	2014, 2016	NTU	95% <0.3	NE	0	15	No	0.025	0.016—0.039	No	Erosion of natural deposits; naturally occurring and soil runoff.
Organic Material	Test Date	Units	MCL	MCLG	Highest Level	2016 Range	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant or Other Comments
Total Organic Carbon	2016	mg/L	TT	NE	MNR	0	No	1.9	1.4—2.55	No	Naturally occurring.
UV-254	2016	1/cm	UR	NE	MNR	0	No	0.021	0.001—0.041	No	Naturally occurring. This is a measure of UV-absorbing organic compounds.

					City of Orem			DACR Water Treatment Plant			
Inorganic Contaminants	Last Date Tested	Units	MCL	MCLG	Lowest Level Detected	Highest Level Detected	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant
Arsenic	2014, 2015, 2016	µg/L	10	0	0	1.5	No	2.2	ND—3.34	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.
Barium	2014, 2016	mg/L	2	2	0.03	0.106	No	0.061	ND—0.07	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Chromium (total)	2014	µg/L	100	100	ND	ND	No	ND	ND—7.9	No	Discharge from steel and pulp mills; Erosion of natural deposits.
Copper	2010, 2016	µg/L	NE	NE	ND	ND	No	0.25	ND—0.25	No	Erosion of natural deposits.
Cyanide	2014, 2016	µg/L	200	200	0	23.1	No	ND	ND	No	Discharge from plastic and fertilizer factories; Discharge from steel/metal factories.
Fluoride	2014, 2016	mg/L	4	4	0	0.5	No	0.2	ND—0.242	No	Erosion of natural deposits; discharge from fertilizer and aluminum factories.
Nickel	2014, 2016	µg/L	100	100	0	5.39	No	ND	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Nitrate	2016	mg/L	10	10	0.338	2.04	No	0.3	ND—0.3	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Selenium	2014, 2016	µg/L	50	50	0	3.95	No	ND	ND	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.
Thallium	2014, 2016	µg/L	2	0.5	0	0.3	No	ND	ND	No	Discharge from electronics, glass, and Leaching from ore-processing sites; drug factories.
Radioactive Contaminants	Test Date	Units	MCL	MCLG	Lowest Level Detected	Highest Level Detected	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant
Alpha Emitters	2014, 2016	pCi/L	15	0	0.52	2.9	No	3.8	ND—3.8	No	Erosion of natural deposits.
Combined Radium 226/228	2010, 2014	pCi/L	5	0	0.86	3.1	No	0.34	ND—2.79	No	Erosion of natural deposits.
Gross Alpha (including radon and uranium)	2014	pCi/L	0	0	1.6	1.6	No	3.8	ND—3.8	No	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as
Radium 226	2014	pCi/L	5	0	0.7	0.97	No	0	0	No	Erosion of natural deposits.
Radium 228	2010, 2014, 2016	pCi/L	5	0	0.17	2.3	No	0.34	ND—2.79	No	Erosion of natural deposits.
Pesticides/PCB's/SOC's	Test Date	Units	MCL	MCLG	Highest Level Detected	2016 Range	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant or Other Comments
Bis (2-ethylhexyl)	2011	µg/L	6	0	ND	0	No	ND	ND—0.67	No	Discharge of drilling wastes; Discharge from metal refineries;
All other Parameters	2016	µg/L	Varies	Varies	ND	0	No	ND	ND	No	Various sources.

					City of Orem			DACR Water Treatment Plant			
Disinfectants And Disinfection By-products	Test Date	Units	MCL	MCLG	2016 Average	2016 Range	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant
Chlorine	2016	mg/L	4	4	0.32	0.05—1.51	No	0.86	0.24—1.70	No	Drinking water disinfectant.
Total Trihalomethanes (TTHM)	2016	µg/L	80	0	9.07	0—44.7	No	20.5	6.0—57.6	No	By-product of drinking water chlorination.
Haloacetic Acids (HAA5)	2016	µg/L	60	0	13.71	0—28.7	No	15.1	1.4—31.2	No	By-product of drinking water chlorination.
Bromate	2016	mg/L	0.01	0	MNR	MNR	No	ND	ND	No	By-product of drinking water disinfection.
Volatile Organic Compounds	Test Date	Units	MCL	MCLG	Highest Level Detected	2016 Range	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant or Other Comments
Chloroform	2016	µg/L	NE	70	ND	ND	No	12.8	2.9—44.4	No	By-product of drinking water disinfection; erosion of
Bromodichloromethane	2016	µg/L	NE	0	ND	ND	No	5.8	2.1—11.3	No	By-product of drinking water disinfection.
All other Parameters	2016	µg/L	Varies	Varies	ND	ND	No	ND	ND	No	Various sources.

### City of Orem Lead And Copper Results

The City of Orem collects 35 tap samples from homes every three years as required by the EPA. The City of Orem has never had a violation of the lead and copper standards since the EPA required sampling in 1992 and is not required to treat the water it provides for corrosivity. The city completed the last required sampling in July and August of 2015. Of the 35 homes sampled, 29 had no detectable levels. Orem's water has calcium and manganese in the water, which creates a protective lining or "scale" on the inside of the plumbing, protecting the materials from most corrosion. In addition to these samples, pH and conductivity samples are taken routinely in the distribution system and at the source water sites to monitor chemical changes and the corrosiveness of the water. If your home was built between 1982 and 1986 and has not had the plumbing replaced and you would like to participate in the next lead and copper sampling in 2018, please contact Orem Public Works Department at (801) 229-7500 or email us at [oremcitywater@orem.org](mailto:oremcitywater@orem.org). Because of the limited numbers of samples collected, replacement of original plumbing or point-of-use treatment (e.g. water softener, carbon filter system, etc.), your home may or may not be selected for testing.

					City of Orem					
Lead and Copper	Test Date	Units	AL	MCLG	Lowest Level Detected	Highest Level Detected	90th Percentile	# of sites over AL	Violation	Typical Source of Contaminant
Copper	2015	mg/L	1.3	1.3	0.004	0.717	0.229	0	No	Erosion of natural deposits; corrosion of household plumbing.
Lead	2015	mg/L	0.015	0	0	0.013	0.00327	0	No	Erosion of natural deposits; corrosion of household plumbing.

### Health Care Alert

The Central Utah Water Conservancy District's Don A. Christiansen Water Treatment Plant has found evidence that cryptosporidium may at times be present in its untreated source water. However, cryptosporidium has never been found in its finished (treated) water. Cryptosporidium must be ingested to cause disease and it may be spread through means other than drinking water. Ingestion of this parasite may cause abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Based on current knowledge, cryptosporidium does not present a health risk for the general public.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791. They can provide EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants.

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. 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 [EPA.gov/safewater/lead](http://EPA.gov/safewater/lead).

## Secondary (Monitoring Not Required)

For your information, the following conditions are secondary standards and only affect the water aesthetically rather than an actual health risk.

				City of Orem				DACR Water Treatment Plant			
Test Date	Units	MCL	Lowest Level Detected	Highest Level Detected	Average	Violation	2016 Average	2016 Range	Violation	Typical Source of Contaminant	
pH	2015-2016	6.5—8.5	7.48	8.06	7.81	No	7.81	7.53—8.29	No	Naturally occurring.	
Sulfate	2014, 2016	mg/L	250	9.89	72.6	39.7	No	48	40—49.3	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills, runoff from cropland.
Total Dissolved Solids	2014, 2016	mg/L	500	110	468	289	No	274	189—429	No	Erosion of natural deposits.
Sodium	2014, 2015, 2016	mg/L	500	0	38.1	19.05	No	298	253—347	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.
Calcium Hardness	2015-2016	mg/L	NE	171	377	252	No	138	108—313	No	Naturally occurring.
	2015-2016	grain/gallon	NE	10	22	15	No	8.1	6.3—9.9	No	
Conductance	2015-2016	µmhos/cm	NE	230	648	473	No	416	277—473	No	Naturally occurring.
Iron	2016	µg/L	NE	MNR	MNR	MNR	No	21.6	ND-21.6	No	Erosion of natural deposits.
Alkalinity	2016	Mg/L	NE	MNR	MNR	MNR	No	131	108-313	No	Naturally occurring.

## Unregulated Contaminant Monitoring (UCMR)

For your information, the 1996 Safe Drinking Water Act (SDWA) amendments require that once every five years EPA will issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems. Between 2013 and 2015 UCMR 3 required monitoring for 30 contaminants (28 chemicals and two viruses) EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) to collect data for contaminants that are suspected to be present in drinking water, but do not have health-based standards set under the Safe Drinking Water Act (SDWA).

				City of Orem				
UCMR	Test Date	Units	MCL	Lowest Level Detected	Highest Level Detected	Average	Exceeds MCL	Typical Source of Contaminant
Chromium	2013, 2014, 2015	µg/L	50	ND	1.840	0.694	No	Discharge from steel and pulp mills; Erosion of natural deposits.
Chromium-6	2013, 2014, 2015	µg/L	10	ND	1.860	0.722	No	Naturally-occurring element; used in making steel and other alloys; chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation.
Molybdenum	2013, 2014, 2015	µg/L	40	ND	3.909	0.786	No	Naturally-occurring element found in ores and present in plants, animals and bacteria; commonly used form molybdenum trioxide used as a chemical reagent.
Strontium	2013, 2014, 2015	µg/L	NE	174.6	994.2	481.8	No	Naturally-occurring element; historically, commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions.
Vanadium	2013, 2014, 2015	µg/L	NE	ND	1.305	0.715	No	Naturally-occurring elemental metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst.

## Variations and Exemptions

Due to the high quality of Orem's Water, the State of Utah and the USEPA have granted the City of Orem and the Don A. Christiansen Regional Water Treatment Plant exemptions that allow for a reduction in conducting some chemical testing less frequent than yearly.

## Protecting our Valuable Water Resources, Source Protection

Many of the homes and businesses in Orem are built within the city's drinking water source protection zones as established in accordance with State regulations. The City of Orem obtains its drinking water from both ground water, such as wells and springs, and surface water. Much of Provo Canyon is the watershed area supplying Orem with high quality water we have come to expect. Improper usage, storage and disposal of chemicals or other substances could potentially contaminate the ground water and surface water supplying drinking water. Examples of such substances are fertilizers, pesticides, cleaning solvents, motor oil and fuels. All residents and property owners, are encouraged to use best management practices when using and storing these substances. Proper storage, mixing, spill cleanup, watering, and disposal procedures for chemicals are essential in protecting our environment. The complete Drinking Water Source Protection Plan for the City of Orem is available for review at Orem Public Works, 1450 West 550 North Orem, Utah, 84057 or can be accessed at [www.orem.org](http://www.orem.org) or the Utah Division of Drinking Water website.

When using herbicides:

- Store in a safe place that cannot be accessed by children.
- Never mix chemicals in street, gutter, sidewalk or driveway, or any area where chemicals can enter into storm drains or ditches.
- Mix on an impermeable surface so spills can be cleaned up thoroughly.
- Treat only the area needed, using the proper amount.
- Follow label instructions for proper mixing and dosage.
- Clean up spills and properly dispose of any extra chemicals by following manufacturer instructions.

When using pesticides:

- Be willing to accept a low level weed, insect, and plant disease infestation.
- Use pesticides only when absolutely necessary. Properly identify pests and use the proper pesticide.
- Read and follow label directions; the label is the law.
- Calibrate spreader/sprayer to keep from applying too much.
- Don't over water after application.



## Cross Connection Control

To protect Orem's water supply, the Water Resources Division has adopted a cross connection control program. This program is required by federal and state agencies and is designed to preserve safe drinking water once the supply has entered the system. A cross connection is any connection that provides a path for contamination to occur and is not protected by a backflow prevention device or assembly. A cross connection may be as simple as a hose-end sprayer for fertilizers or pesticides that you use in your yard or a hose forced into a drain pipe to free a plug. When this happens, it may be possible for contaminated water to be introduced into the drinking water system. Backflow prevention devices and assemblies provide protection from pollution or contamination of the drinking water system. The proper installation, use, and maintenance of this protection is required for backflow devices or assemblies and is outlined in Section 21-1-14 of the City Municipal Code, which can be accessed through the Government Menu at [www.orem.org](http://www.orem.org). All lawn sprinkler systems are required to have an approved backflow assembly installed on the system and all Backflow assemblies are to be tested within 10 days of installation and annually thereafter by a state certified backflow technician. A link to certified testers can be found at <https://waterlink.utah.gov/deqWater/public/publicBackflowComm.html>. Backflow reports are to be mailed to the City of Orem Public Works at 1450 West 550 North Orem, Utah, 84057 or emailed to [orembackflowreports@orem.org](mailto:orembackflowreports@orem.org). The City is available to meet with private or commercial property owners to consult on possible hazards that may contaminate their drinking water. Please contact the Orem Public Works Department at (801) 229-7500 with any questions regarding cross connection control or backflow.

## Hard Water & Scale

You may notice white flakes in your water, especially if you make ice from tap water, and whitish deposits (scale) on faucets, cookware and eating utensils. These flakes or deposits are most likely calcium and magnesium compounds that come out of solution, typically from freezing or heating. Sometimes, these substances will form a very thin film on the top of boiled water. Please be aware that hard water is not a health risk; calcium is vitally important for bone development. The City of Orem's source water is considered hard to very hard, ranging between 6 to 22 grains per gallon. Scaling of pipes and faucets may be made worse by setting your water heater above 120° F. Most water heater manufacturers recommend flushing the sediment (hardness scale) from your water heater twice a year.

## Citizen Participation

If you would like to participate in decisions that affect drinking water quality in the City of Orem, you are invited to attend an Orem City Council meeting. These public meetings are typically held on the 2nd and 4th Tuesday of each month at 6:00 p.m. in the City Council Chambers at the Orem City Center located at 56 North State Street in Orem, Utah. More information about contaminants and potential health affects can be obtained by visiting [www.epa.gov/safewater/](http://www.epa.gov/safewater/) or calling the USEPA Safe Drinking Water Hotline at (800) 426-4791.

If you have questions regarding any of the information contained in this document, please contact the Orem Public Works Department at (801) 229-7500 or visit us on the web at [www.orem.org](http://www.orem.org). For more information about the Central Utah Water Conservancy District please go to [www.cuwcd.com](http://www.cuwcd.com) or for a copy of the Don A. Christiansen Regional Water Treatment Plant consumer confidence report; please go to [http://cuwcd.com/assets/documents/Treatment/DACRWTP\\_CCR2016.pdf](http://cuwcd.com/assets/documents/Treatment/DACRWTP_CCR2016.pdf)