

You've come a long way water

Working then

Working now

Working tomorrow



# CITY OF ARVADA

## 2014 WATER QUALITY REPORT

Colorado Public Water System Identification Number CO 0130001

*The CITY OF ARVADA is excited to provide you with our annual Water Quality Report. The purpose of this Report is to inform our customers about the high quality of their drinking water and their water system. We want you to know where your water comes from, what it contains, and how it compares to stringent Federal water quality standards.*



City WEB site

[www.arvada.org](http://www.arvada.org)

City of Arvada Main Number

720.898.7000

Utilities, Water Quality, Judy Schmidt

720.898.7802

If you are interested in learning more about your water department and water quality issues, information is available from the following sources: the City's WEB site, KATV - Channel 8, local newspapers, or by contacting any of the organizations listed inside.

Spanish - Esta es información importante. Si no la pueden leer, necesitan que alguien se la traduzca.

June 1, 2014

Dear Water Customer,

This is the annual Water Quality Report for the City of Arvada's drinking water system. This Report covers the calendar year 2013 and provides important information about the quality of your drinking water. Please take a few minutes to review the Report, and contact us with any questions or comments about the information it contains.

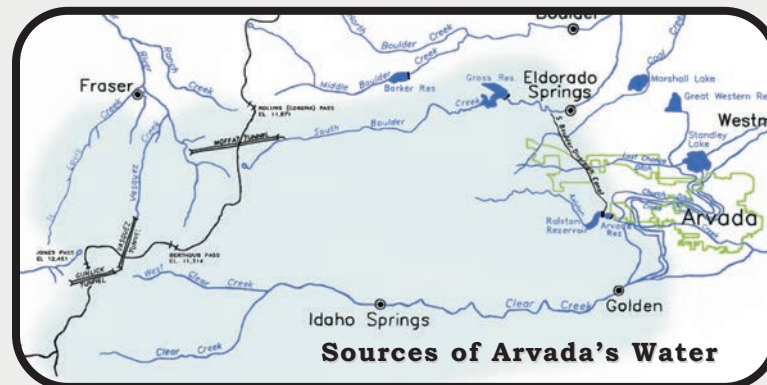
Some people who drink Arvada water are not billed directly, and may not receive a copy of this Report. If you own or operate a facility that provides water to customers, employees, or tenants whom we do not bill individually, please post copies of this Report on a message board or other common areas so everyone who relies on Arvada's water can view the Report. Additional copies of this Report may be obtained by calling 720.898.7802.

Thank you for giving us the opportunity to share with you this information about water quality in the City of Arvada.

Sincerely,




James M. Sullivan, Director of Utilities



Arvada's drinking water comes from two surface water sources: the Denver Water Department's Moffat System and Clear Creek. The Moffat water system is our year-round source and is diverted from Denver's Ralston Reservoir. This snow melt, mountain water is collected from the Fraser River and South Boulder Creek Basins and transported first to Gross Reservoir and then to Ralston Reservoir. Approximately 25% of the City's water supply is diverted from Clear Creek where it is stored in the Arvada/Blunn Reservoir until needed during the spring and summer months when water demand is high.

**The City tests the water supply for many types of contaminants. The following tables list contaminants that the Environmental Protection Agency (EPA) requires to be listed if they were detected. The data is from the 2013 monitoring period: January 1 to December 31, 2013.**

**Inorganic Chemical Contaminants:** These chemicals are metals, salts, and other non-carbon based compounds. Health concerns are not focused on cancer, but rather on their suspected link to physical and mental human disorders. Inorganics are regulated at the City's two Water Treatment Plants, at the entry into our distribution system.

Chemical Compound	MCLG	MCL	Ralston WTP AVG	Arvada WTP AVG	Lowest to Highest	Violation	Sample Date 2013	Typical Sources
Barium(ppm) Fluoride(ppm)	2.0 4.0	2.0 4.0	0.024 0.88	0.028 0.74	0.02 to 0.03 0.63 to 0.96	No No	Quarterly Quarterly	Erosion of natural deposits. Discharge of drilling waste. Erosion of natural deposits. Water additive which promotes strong teeth.
Unregulated Secondary Compounds	MCLG	MCL	Ralston WTP AVG	Arvada WTP AVG	Lowest to Highest	Violation	Sample Date 2013	Typical Sources
Sodium(ppm) Sulfate(ppm) Total Dissolved Solids(ppm)	NA 500 NA	10,000* 250* 500	6.8 26 107	22 39 140	5.1 to 22 14 to 46 15 to 176	No No No	Quarterly Quarterly Monthly	Naturally present in the environment.

\* Recommended level, this is a Secondary Maximum Contaminant Level.

**Secondary Standards** are non-enforceable guidelines for contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor or color) in drinking water. EPA recommends these standards but does not require water systems to comply.

Maximum Contaminant Level Goal (**MCLG**) - The "GOAL" is 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 "Maximum Allowed" 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.

Parts per million (**ppm**) or Milligrams per liter (**mg/l**): One part per million corresponds to one minute in two years or a single penny in \$10,000.

**Lead and Copper:** Regulated at the customer's tap. Water samples were collected at customers' homes between June 21 and September 27, 2011. The State allows us to monitor for certain contaminants less than once a year because they do not vary significantly from year to year. The City will sample residential homes again during the summer of 2014.

Chemical Compound	MCLG	MCL Action Level	90th Percentile	# of Samples	Sample Sites Above Action Level	AL or TT Violation	Monitoring Period	Typical Sources
Lead(ppb)	0	AL=15	7.0	59	0	No	01/01/2011 to 12/31/2013	Corrosion in household plumbing systems. Erosion of natural deposits.
Copper(ppm)	0	AL=1.3	0.271	59	0	No		Corrosion in household plumbing systems. Erosion of natural deposits.

Note: \*The 90th percentile is the 53rd largest result out of the 59 samples taken.

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

If present, elevated levels of lead can cause serious health problems (especially for pregnant women and young children). It is possible that lead levels at your home may be higher than other homes in the community as a result of materials used in your home's plumbing. If you are concerned about lead in your water, you may wish to have your water tested. 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. Additional information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the **Safe Drinking Water Hotline at 1.800.426.4791 or at <http://www.epa.gov/safewater/lead>**.

**Radionuclides Contaminants:** Radon is a radioactive gas and a known human carcinogen. Radionuclides are sampled at the City's two Water Treatment Plants.

Chemical Compound	MCLG	MCL	Ralston WTP AVG	Arvada WTP AVG	Lowest to Highest	MCL Violation	Sample Date 2013	Typical Sources
Radon(pCi/L)*	NA	NA	3.1	2.7	0-9	No	Monthly	Naturally present in the environment.

Picocuries per liter (**pCi/L**) - picocuries per liter is a measure of the radioactivity in water. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is four (4) picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that are relatively inexpensive. For additional information, call the State radon program at **303.692.3030** or call the **EPA Radon Hotline 1.800.SOS.RADON**.

**Organic Chemical Contaminants - Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s):** These compounds may be formed during chlorination by reactions with natural organic material in the water. Some TTHMs and HAA5s are thought to be cancer-causing agents at certain levels. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys or central nervous systems, and may have an increased risk of getting cancer.

Organic Compound	MCLG	MCL	# of Samples	Average of Individual Samples	Lowest to Highest	MCL Violation	Sample Date 2013	Typical Sources
TTHM(ppb)	NA	80	40	50.1	20.6-156	No	Quarterly	By-products of drinking water disinfection.
HAA5(ppb)	NA	60	40	41.3	23-68.5	No	Quarterly	

Parts per billion (**ppb**) or Micrograms per liter (**ug/l**): One part per billion corresponds to one minute in 2,000 years or single penny in \$10,000,000.

**Disinfectant:** Disinfectant is used in drinking water to kill microbes. The levels are monitored and regulated throughout the City's distribution system.

Organic Compound	MRDLG	MRDL	Annual Average	Lowest to Highest	MCL Violation	Typical Sources
Chlorine(ppm)	4	4	1.48	0.38-1.97	No	Water additive used to control microbes.

Units ppm - parts per million

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 contaminants.

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.

**Total Organic Carbon - TOC:** (Disinfection By-Products Precursor) percentage removal ratio of raw and finished water. TOC has no health effects. However, Total Organic Carbon provides a medium for the formation of disinfection byproducts. These byproducts include Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s). TOC is regulated at the City's Water Treatment Plants.

Total Organic Carbon	Average of Individual Ratio Samples	Range of Individual Ratio Samples (Lowest to Highest)	Number of Ratio Samples	Unit of Measure	TT Minimum Ratio	TT Violation	Sample Date 2013	Typical Sources
Ralston WTP	1.1	0.61-1.4	24	Ratio	The TT Minimum Ratio is 1.0	No	Twice a Month	Naturally present in the environment.
Arvada WTP	1.1	0.91-1.27	9	Ratio		No	Twice a Month	

**Turbidity:** Turbidity measurements indicate the clarity of the finished water. High levels may pose a health hazard by interfering with disinfection. Samples of the system's filtered water must be less than or equal to 0.3 NTU in at least 95% of the samples. Turbidity is regulated at the City's two Water Treatment Plants.

Turbidity	Sample Date	Highest Single Measurement Found	TT Requirement	TT Violation	Typical Sources
Ralston WTP	9/12/2013	2.0 NTU	Maximum 1 NTU for any single measurement	Yes	Soil runoff from storm event in September 2013.
Arvada WTP	8/20/2013	0.29 NTU		No	
Ralston WTP	Month: Sept 2013	Lowest monthly percentage of samples meeting TT requirements for our technology 99%	In any month, at least 95% of samples must be less than 0.3 NTU	No	Soil runoff.
Arvada WTP	May 2013			100%	

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

Nephelometric Turbidity Unit (NTU) - A measure of the clarity of the water. Turbidity in excess of 5 NTU is just noticeable to the average person.

### Treatment Technique Violation

Name	Category	Time Period	Health Effects	Compliance Value	TT Level or MCL
Turbidity Ralston WTP	Single combine filter effluent treatment technique	September 12, 2013	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.	N/A	N/A

**Additional Violation Information** - Note: If any violation relates to failing processes, or has had a failure of such equipment or processes, then the water may be inadequately treated. Inadequately treated water may contain disease-causing organisms. An explanation of the violation and steps taken to resolve them are as follows:

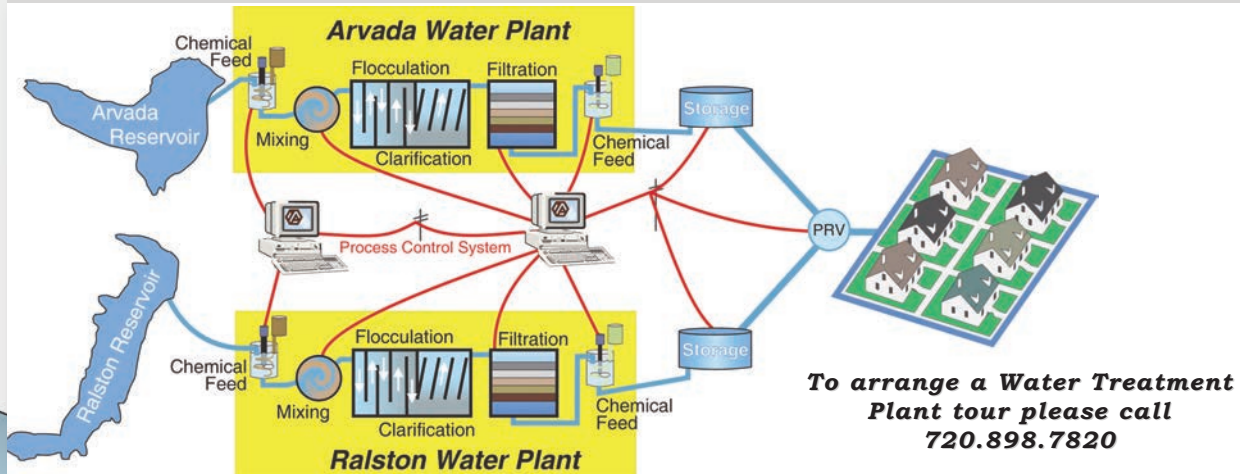
On September 12, 2013 heavy rains carried a larger than normal amount of sediment into Ralston Reservoir. The City's Ralston Water Treatment Plant was taking water directly from this reservoir into the Plant. This excessive sediment increased the measurement known as turbidity in the treated water. The treatment process did not remove enough turbidity, so the Ralston Plant was shut down and production shifted to the Arvada Water Treatment Plant. The turbidity levels were elevated enough at the Ralston Plant to warrant a Tier 1 Treatment Technique Violation.

The majority of water affected remained inside the Ralston Treatment Plant; however it was possible that some water containing higher turbidity might have entered the water distribution system. The City flushed the affected water from the Ralston Water Treatment Plant and the portions of the distribution system that may have been affected. The City maintained an adequate chlorine disinfectant level to keep the water free from microbes. Additional bacteriological testing was completed in the distribution system and all tests were negative for harmful bacteria.

The City worked with the Colorado Department of Public Health and Environment, provided a press release and postings on our website at [www.arvada.org](http://www.arvada.org). The City responded to customer concerns and answered questions in a timely manner.

## Water System Information

All of the City's water is processed through one of two Water Treatment Plants (WTP) for purification and disinfection before it is conveyed to the customer. Extensive monitoring of the process takes place to ensure high quality drinking water. This diagram shows how the treatment process for each of the City's Water Treatment Plants work.



**We are connected  
Every drop along the way  
Clean  
Safe  
Sustainable**

### Drinking Water Compliance

The Drinking Water Compliance Professionals conducted 2,598 water sampling events in 2013. They evaluated 1,457 microbiological and 14,892 water quality parameters. All regulatory monitoring reports were then submitted to the Colorado Department of Public Health and Environment and the EPA for evaluation and interpretation of water quality parameters ahead of any compliance deadline date.

Peak  
**City of Arvada**  
water consumption usually occurs during June/July/August. The highest daily usage in 2013 was 38.9 million gallons on June 27. The City's two water treatment plants can produce and pump **52 million gallons a day.**

### Water System Operations Division

With more than: 602 miles of drinking water distribution pipes, nine large water tanks, six pump stations, 5,018 fire hydrants, 35,402 water meters and nearly 14,144 valves to operate and maintain, the City of Arvada's Water System Operations Staff works hard to ensure that drinking water flows to your tap every day.

It takes an accomplished professional staff to perform the various preventative maintenance programs designed to extend the life cycle of Arvada's water system components. After the storms of September 2013, the Division flushed the entire water system, which is usually a three year process, in less than six months. Benefits of flushing include:

- Flushing the mainlines of sediment from iron and minerals that are harmless, but may affect the color, odor and taste of the water.
- Bring fresh water into areas of low water flow.
- Exercise maintenance of fire hydrants to keep them working properly in case of an emergency.

The Division is on call 24 hours a day to make water system repairs that keep customer outages at a minimum and to respond to all customer calls with the goal of achieving customer satisfaction in a timely and effective manner.

### Ralston and Arvada/Blunn Water Treatment Plant Facilities

Superior water quality is the main goal for the Water Treatment Plant Division. State Certified Water Plant Operators analyze, treat, monitor, and ensure the safety, taste and aesthetics of your drinking water 24 hours a day, seven days a week, 365 days a year.

Water Plant personnel routinely perform over 97,479 bench tests annually and monitor continuous analytical readings to ensure safe drinking water before it enters the distribution system that delivers the water to your home or business.

Skilled Electro-Mechanical Technicians maintain, repair and/or replace components necessary for the proper operation of the Water Treatment Plants. Both the Ralston and the Arvada/Blunn Water Treatment Plants are the "first line of defense" when it comes to water quality, ensuring that all your water is as clean and potable as possible.



## General Information about Drinking Water

In order to ensure that tap water is safe to drink, the Colorado Department of Public Health and Environment prescribes regulations, limiting the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. Some people may be more vulnerable to contaminants in drinking water than the general population. 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 of infections. These people should seek advice about drinking water from their health care providers.

For more information about contaminants and potential health effects, or to receive a copy of the U.S. Environmental Protection Agency (EPA) and the U.S. Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and microbiological contaminants, call the **EPA Safe Drinking Water Hotline** at **1.800.426.4791** or visit <http://water.epa.gov/drink/contaminants>.



### Watershed Protection

A watershed is somewhat like a bowl. It is rimmed by ridgetops and high ground that direct the flow of water downhill toward the river in the valley below. This downward gravity flow of water also carries with it the effects of human activities throughout the watershed.

Protection of our watershed begins with our *Source Water Assessment Plan (SWAP)*. The Colorado Department of Public Health and Environment has provided us with a report for our water supply. You may obtain a copy of the report by visiting <http://www.wgcdcompliance.com/ccr> and then Source Water Assessment Reports, Assessment by County. Select Jefferson County and find 130001, Arvada City of or by contacting the City of Arvada at 720.898.7802.

The Source Water Assessment Report provides a screening level evaluation of potential contamination that could occur. It does not mean that the contamination has or will occur. We can use this information to evaluate the need to improve our current water treatment capabilities and prepare for future contamination threats. This can help us ensure that quality finished water is delivered to your homes. In addition, the source water assessment results provide a starting point for developing a source water protection plan.

Potential sources of contamination in our source water area include EPA sites, permitted wastewater discharge sites, storage tank and mine sites, as well as various types of land use.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As the 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 which may be present in source water, include:

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

### Cross-Connection Control and Backflow Prevention

Backflow is the reversed flow of contaminated water into the City's distribution system through a cross connection. State regulations prohibit contaminated water from entering the public potable water supply through cross connections. To prevent backflow in plumbing systems, City Code requires backflow prevention assemblies to be installed at specific locations in the system. The assemblies must be inspected and tested annually by a certified technician. For more information about backflow prevention and cross-connection control, call the City at **720.898.7803**.

**Stormwater** - The biggest threat to the quality of water within Arvada's waterways is stormwater pollution. When it rains or snows, stormwater runs off of residences, commercial areas, parking lots, and construction sites washing litter, sediment, oil, grease, toxins, bacteria, and other pollutants into nearby storm drains. Once this pollution has entered the storm drains, it is discharged, untreated, into our local waterways. Activities such as picking up litter, keeping wash water out of gutter and storm drains, picking up after your pet, and always properly disposing of all waste materials can significantly improve water quality in our waterways. Remember that these waterways flow downstream to other communities, who need it for their use. Keep it clean because we're all downstream! For information, visit the City's website at [www.arvada.org](http://www.arvada.org) or call **720.898.7810**.

**Water Conservation** - Water is the most abundant resource on the planet, but clean drinking water is extremely precious. 97% of the Earth's water is in oceans, and 2% to 3% is stored in glaciers and polar ice caps. Less than 1% of the planet's water is actually usable. And while the amount of fresh water available will never increase, the human population increases daily.

Therefore, it is very important to protect and conserve our water resources. You can protect water resources by disposing of hazardous household waste appropriately. In Jefferson County, call the **Rooney Road Recycling Center at 303-316-6262**. Remember to always follow manufacturer's directions when applying or disposing of fertilizers or pesticides. This is also important when disposing of pharmaceuticals. Please read the directions on disposal of medical products.

You can conserve our water resources by using only what is necessary at home, at work, and at school. Outdoor water usage makes up 50% of Arvada's water consumption. Much of that water is wasted due to inefficient watering and/or poor landscaping. Always check your sprinkler systems for leaks and damaged or misaligned heads. Adjust your watering times at least once a month, and never water between 10 AM and 6 PM.

Conserving water cuts water and sewer bills and reduces water heating costs. Using water wisely helps the City reduce costs and energy used to treat and pump drinking water and wastewater. Information on water-saving programs, water conservation, and drought can be found online at [www.arvada.org/sustainability](http://www.arvada.org/sustainability) under Water.