



**2013** Water Quality Report  
Reporte de Calidad de Agua





## WHAT IS THIS REPORT?

The U.S. Environmental Protection Agency requires public water suppliers that serve the same people year-round (community water systems) to provide consumer confidence reports to their customers. These reports are also known as annual water quality reports. This report summarizes information regarding water sources used, any detected contaminants, compliance and educational information.

## WHERE DOES YOUR WATER COME FROM?

Denver's drinking water comes from rivers, lakes, streams, reservoirs and springs fed by high-quality mountain snow runoff. Denver Water's supply is 100 percent surface water that originates from sources throughout the watershed that encompasses 3,100 square miles on both sides of the Continental Divide.

## MOUNTAIN WATER SOURCES

Denver's water sources are the South Platte River and its tributaries, the streams that feed Dillon Reservoir and the creeks and canals above the Fraser River. Denver Water stores its water in five mountain reservoirs — Antero, Eleven Mile Canyon, Cheesman, Dillon and Gross. From these reservoirs, the water is then sent to one of three treatment plants in the city through a complex system of streams, canals and pipes.

After treatment, drinking water is fed by both gravity and pumps to a system of underground, clear-water reservoirs before continuing to your home or business. More than 3,000 miles of pipe carry water to Denver Water customers.

## SOURCE WATER ASSESSMENT

The state health department has completed a source water assessment of the potential for contaminants reaching any of Denver Water's three terminal reservoirs at Strontia Springs, Marston and Ralston. The potential sources of contamination that may exist are: EPA Areas of Concern; Permitted Wastewater Discharge Sites; Aboveground, Underground and Leaking Storage Tank Sites; Solid Waste Sites; Existing/Abandoned Mine Sites; Other Facilities; Commercial/Industrial/Transportation; Residential, Urban Recreational Grasses; Quarries/Strip Mines/Gravel Pits; Agriculture; Forest; Septic Systems; Oil/Gas Wells and Road Miles. For more information on the report, contact the Colorado Department of Public Health and Environment by calling 303-692-2000.



# DENVER'S WATER SYSTEM



## DEDICATED TO WATER QUALITY

Denver Water proudly serves high-quality water and promotes its efficient use to 1.3 million people in the city of Denver and many surrounding suburbs. Established in 1918, the utility is a public agency funded by water rates, new tap fees and the sale of hydropower, not taxes. It is Colorado's oldest and largest water utility. Denver Water has a total water service area of approximately 300 square miles.

Denver Water serves 25 percent of Colorado's population with only 2 percent of the state's water.

We take our water quality very seriously. Last year we collected more than 13,000 samples and conducted more than 50,000 tests to ensure our water is as clean and safe as possible.

Denver Water vigilantly safeguards our mountain water supplies, and the water is carefully treated before it reaches your tap. This brochure provides data collected throughout 2012.

## INFORMACIÓN IMPORTANTE ACERCA DE LA CALIDAD DEL AGUA

Para recibir la versión en español del Reporte de Calidad de Agua de 2013 de Denver Water, llame a Servicio al cliente al 303-893-2444 o visite [www.denverwater.org/Espanol](http://www.denverwater.org/Espanol).



DILLON RESERVOIR



RALSTON RESERVOIR

## WATER AT A GLANCE

**ALL DRINKING WATER** can reasonably be expected to contain small amounts of some contaminants. The presence of these substances in drinking water does not necessarily pose a health risk. Immunocompromised individuals — such as people who have undergone organ transplants, those with HIV-AIDS or other immune system disorders, and some elderly and infants — can be particularly at risk of infections. These people should seek drinking water advice from their healthcare providers. For more information about contaminants and potential health effects, or to receive a copy of the U.S. Environmental Protection Agency and the U.S. Centers for Disease Control 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.

### 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. Denver Water is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

### CRYPTOSPORIDIUM AND GIARDIA

Denver Water has tested for *Cryptosporidium* (*Crypto*) and *Giardia* in both raw and treated water since the 1980s. Since that time, Denver Water has never detected a viable indication of either in the treated drinking water.

*Crypto* and *Giardia* are microscopic organisms that, when ingested, can cause diarrhea, cramps, fever and other gastrointestinal symptoms. *Crypto* and *Giardia* are usually spread through means other than drinking water.

While most people readily recover from the symptoms, *Crypto* and *Giardia* can cause more serious illness in people with compromised immune systems. The organisms are in many of Colorado's rivers and streams and are a result of animal wastes in the watershed. At the treatment plants, Denver Water removes *Crypto* and *Giardia* through effective filtration, and *Giardia* is also killed by disinfection.





# WATER QUALITY DATA

## TERMS, ABBREVIATIONS & SYMBOLS:

*Some of the terms, abbreviations and symbols contained in this report are unique to the water industry and might not be familiar to all customers. Terms used in the table on page 7 are explained below.*

**Contaminant:** A potentially harmful physical, biological, chemical or radiological substance.

**Maximum Contaminant Level (MCL):** Highest level of a contaminant allowed in drinking water. MCLs are set as close to the Maximum Contaminant Level Goal as feasible using the best available treatment technology.

**Maximum Level Contaminant 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.

**Action Level:** Concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

**Parts Per Million (ppm):** Equivalent to milligrams per liter. One ppm is comparable to one drop of water in 55 gallons.

**Parts per Billion (ppb):** Equivalent to micrograms per liter. One ppb is comparable to one drop of water in 55,000 gallons.

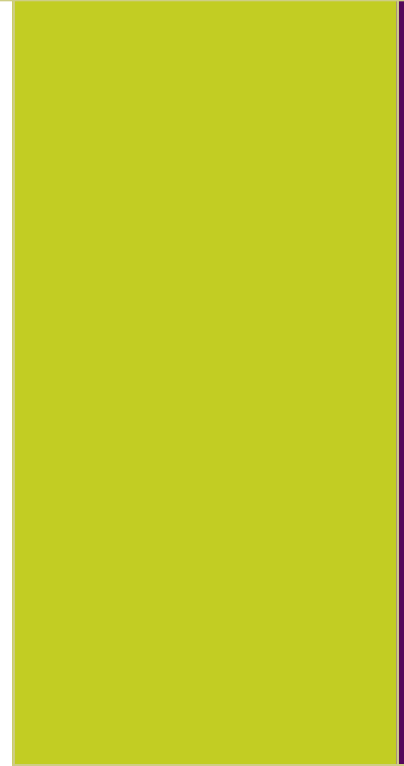
**Picocuries per liter (pCi/L):** Measures radioactivity.

**Turbidity:** A measure of suspended material in water. In the water field, a turbidity measurement (expressed in Nephelometric Turbidity Units) is used to indicate clarity of water.

**Secondary Maximum Contaminant Level (SMCL):** Nonenforceable, recommended limits for substances that affect the taste, odor, color or other aesthetic qualities of drinking water, rather than posing a health risk.

**Maximum Residual Disinfectant Level (MRDL):** Highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of disinfectant is necessary for control of microbial contaminants.

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





## SOURCES OF DRINKING WATER

Sources of drinking 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. It can also pick up substances resulting from human activity and the presence of animals. Contaminants may include the following:

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

## THE TREATMENT PROCESS

The treatment process consists of five steps:

1. **Coagulation/flocculation** — Raw water from terminal reservoirs is drawn into mixing basins at our treatment plants where we add alum and polymer. This process causes small particles to stick to one another forming larger particles.
2. **Sedimentation** — Over time, the now larger particles become heavy enough to settle to the bottom of a basin from which sediment is removed.
3. **Filtration** — The water is then filtered through layers of fine, granulated materials — either sand, or sand and coal, depending on the treatment plant. As smaller, suspended particles are removed, turbidity diminishes and clear water emerges.
4. **Disinfection** — As protection against any bacteria, viruses and other microbes that might remain, disinfectant is added before the water flows into underground reservoirs throughout the distribution system and into your home or business. Denver Water carefully monitors the amount of disinfectant added to maintain quality of the water at the farthest reaches of the system. Fluoride occurs naturally in our water but is also added to treated water.
5. **Corrosion control** — pH is maintained by adding alkaline substances to reduce corrosion in the distribution system and the plumbing in your home or business.



ELEVEN MILE CANYON RESERVOIR

# REGULATED WATER CONTAMINANTS: WHAT IS IN THE WATER?

Colorado Public Water System I.D. No. C0116001

Regulated at the Treatment Plant (Entry to the Distribution System)	Units of Measurement	MCLG	Highest Levels Allowed (MCL)	Average Level Detected (Range of Values)	MCL Violation?	Sample Frequency	Possible Sources of Substances
Aluminum	ppb	N/A <sup>1</sup>	50 - 200 (SMCL) <sup>2</sup>	34 (br <sup>3</sup> - 54)	No	Monthly	Erosion of natural deposits, water treatment chemical
Barium	ppb	2,000	2,000	38 (15 - 42)	No	Monthly	Erosion of natural deposits, discharge of drilling wastes
Manganese	ppb	N/A	50 (SMCL)	br (br - 6)	No	Monthly	Erosion of natural deposits, discharge of drilling wastes
Uranium	ppb	zero	30	br (br - br)	No	Monthly	Erosion of natural deposits and mine runoff
Cyanide, Total	ppb	200	200 (Regulated as Free CN)	br (br - 25)	No	Monthly	Byproduct of drinking water disinfection
Fluoride	ppm	4.0	4.0 (2.0 is SMCL) <sup>4</sup>	0.61 (0.56 - 0.69)	No	Monthly	From erosion of natural deposits, water additive that promotes strong teeth
Nitrate + Nitrite as N	ppm	10	10	0.13 (br - 0.16)	No	Monthly	Erosion of natural deposits
Total Dissolved Solids	ppm	N/A	500 (SMCL)	189 (32 - 205)	No	Monthly	Erosion of natural deposits
Sodium	ppm	N/A	N/A	12.9 (5.1 - 17.3)	No	Annually	Naturally present in the environment
Sulfate	ppm	N/A	250 (SMCL)	57 (18 - 67)	No	Monthly	Naturally present in the environment
Turbidity <sup>5</sup>	NTU <sup>6</sup>	N/A	TT <sup>7</sup> ≤ 0.3 NTU in 95% of samples/month	Highest Turbidity Level for 2012: 0.11 Percentage of samples < 0.3 NTU: 100%	No	12 times daily at treatment plants	Soil runoff
Carbon Tetrachloride	ppb	zero	5	br (br - 0.5)	No	Monthly	Byproduct of drinking water disinfection
Total Organic Carbon	Removal Ratio	N/A	TT	Compliance Description Denver Water used enhanced treatment to remove the required amount of natural organic material and/or we demonstrated compliance with alternative criteria.	No	Running Annual Average (RAA)	Natural organic matter that is present in the environment

Regulated in the Distribution System	Units of Measurements	MCLG	MCL	Average Level Detected (Range of Values)	MCL Violation?	Sampling Dates	Sources of contaminant
Total Trihalomethanes (TTHM) <sup>8</sup>	ppb	N/A	80	Highest locational RAA <sup>9</sup> : 25 (14 - 32)	No	Monthly	Byproduct of drinking water disinfection
Halacetic Acids	ppb	N/A	60	Highest locational RAA: 16 (<5 - 23)	No	Monthly	Byproduct of drinking water disinfection
Total Coliform	Absent or Present	Zero	No more than 5% positives per month	Highest monthly percentage: 0.23% in October 2012	No	Daily	Naturally present in the environment
Disinfectant as Total Cl <sub>2</sub>	ppm		TT	Number of positives out of number of samples for the year 1 out of 4,939 samples or 0.02% Lowest monthly percentage of samples meeting TT requirement: 99.47% For any two consecutive months, at least 95% of samples (per month) must be detectable.	No	376 in December 2012	Drinking water disinfectant used to kill microbes

Regulated at the Consumer's Tap <sup>10</sup>	Units of Measurements	MCLG	Action Level at the 90th Percentile	90th Percentile Value	No. of Samples Exceeding Action Level	Violation?	Sampling Dates	Sources of Contaminant
Copper	ppm	1.3	1.3	0.29	0 out of 60	No	June - September 2012	Corrosion of household plumbing
Lead	ppb	Zero	15	17	8 out of 60*	No	June - September 2012	Corrosion of household plumbing

- Not applicable.
- Secondary Maximum Contaminant Level (SMCL) is not enforceable.
- br means below the reportable level for an analysis; the reportable level is the lowest reliable level that can be measured.
- Exceeding the Fluoride Secondary Maximum Contaminant Level of two milligrams per liter triggers public notification.
- Turbidity has no known health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth.
- Nephelometric Turbidity Units.
- Treatment Technique refers to the water treatment process used in the treatment plants that must be optimized to control the levels of these contaminants.
- By-products of the disinfection process.
- RAA=Running Annual Average.
- Lead isn't found in Denver's treated water. However, lead might be present in the private plumbing of homes and businesses.

Last year, the Water Quality Lab at Denver Water collected more than 13,000 water samples and conducted 9,735 microbiological and 40,703 chemical tests.

To receive a copy of the 2012 Treated Water Quality Summary or to ask questions, please call Customer Care at 303-893-2444.

