DENVER WATER

2014 Treated Water Quality Summary

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DENVER WATER

2014 TREATED WATER SUMMARY

Introduction

Denver Water provides its customers with high-quality drinking water. We want you to be aware of how that water quality is maintained and learn more about the water treatment process. Denver Water takes great care and effort in providing the Denver-metro area with water that meets the most stringent standards. This report was prepared to provide you with important information about the quality of your drinking water.

Explanation of Terms

To better understand this report, please refer to Table 1, which gives brief explanations of terms and measurement units that are used in the document. Parameters such as temperature is a measurement of physical characteristics and is expressed in units specific to its analyses.

Chemical results are generally expressed in terms of concentration, weight or amount per unit volume, for example, mg/L or µg/L. Microbiological results are generally expressed in terms of a count of organisms per volume of sample, for example, CFU/100 ml.

Table 1: Measurement Units Interpretation Table

Unit	Full Name	Equivalent to:
General Terms		
°C	Degrees Celsius (a measurement of temperature)	25°C ≈ (= approx.) 77°F (Fahrenheit)
µS	Micro Siemens (a measurement of Specific Conductance)	Micro mhos
NTU	Nephalometric Turbidity Units (a measurement of clarity, fine particulate matter)	
Chemical Terms		
mg/L	Milligrams per Liter	Parts per million (ppm)
µg/L	Micrograms per Liter	Parts per billion (ppb)
ng/L	Nanograms per Liter	Parts per trillion (ppt)
pCi/L	PicoCuries per Liter (a measurement of radioactivity)	
AU	Absorbance units (a measurement of the absorbance at a specific wavelength)	
gr/gal	Grains per gallon (a measure of water hardness, approximately = to 17.1 mg/L)	
Microbiological Terms		
CFU/100 ml	Colony forming units per 100 milliliters (a bacterial unit)	
Count/ml	Count of organisms per milliliter of sample (a bacterial unit)	

Report Data

This report includes graphs and tables summarizing data for samples collected throughout 2014 from the potable (drinking) water leaving Denver Water's treatment plants. This report also includes data from the source water that supplies the treatment plants, and data from the distributed water. The data in this report are directly related to drinking water compliance criteria. Denver Water uses these analyses to ensure the safety and aesthetic quality of the water.

Some of the data is presented as graphs to highlight changes over time in the parameters. Results are expressed primarily as averages unless otherwise specified. On page 12 of this report, treated water results are displayed in tables that include the regulatory limit for the analysis where applicable. Water quality is monitored both at the treatment plants and at more than 130 locations in the distribution system for various parameters each week.

Total coliform bacteria are used as an indicator of water's safety. The percent of positive coliform samples each month is calculated and reported to the Colorado Department of Public Health and Environment (CDPHE), the primacy agency that enforces the Environmental Protection Agency

(EPA) regulations in Colorado. No more than five percent of the samples may be positive per month for total coliform. As evident from Table 2 on page 3, Denver Water is below the five percent level.

Where Does Denver Get Its Water?

Denver Water collects its water from two sources. The South Platte Collection System combines water from high mountain regions on the east slope of the Rocky Mountains, with water diverted from Summit County from Dillon Reservoir on the west slope of the Continental Divide. The Moffat Collection System spans both sides of the Continental Divide, with the majority of it located in Grand County on the West Slope. Raw water from the Moffat Collection System is sent through the Moffat Tunnel to facilities northwest of Denver for storage and treatment.

These sources provide high quality water, but their characteristics are quite different, and the source water mineral concentration varies seasonally with the amount of flow. In general, the water in the South Platte System has a higher mineral content than the water in the Moffat System.

How Is Water Treated To Make It Drinkable?

Denver Water has three treatment plants that process water for drinking, with a combined maximum treatment capacity of 715 million gallons per day. Two treatment plants, Foothills and Marston, process water from the South Platte Collection System. The third plant, Moffat, treats water from the Moffat Collection System. The treatment process begins with the addition of coagulants to raw water. These coagulants are commonly referred to as alum and polymer. Alum is aluminum sulfate, a chemical that

Graphic 1: Denver Water's Watershed Collection System

attaches to dirt and other particles in the water. Through a process of slow mixing, the particles collide and stick together; as this process continues, the particles grow, becoming large enough to see. The larger particles are called floc. Polymer enhances this process. These now larger and heavier particles settle to the bottom of the sedimentation basin.

The clarified water at the top of the basin is then sent through silica sand filters at Moffat Treatment Plant and sand and anthracite coal dual media filters at Marston and Foothills treatment plants. Filtration removes virtually all of the particles carried over from the sedimentation process. Each treatment plant produces clear water, evidenced by low turbidities (a measure of clarity). Less than 0.20 turbidity units represents clear, clean water. Potassium permanganate or powdered activated carbon may also be added to control excess manganese or odors, respectively. Most of Denver Water's supply has naturally occurring fluoride.

The CDPHE and the Centers for Disease Control and Prevention (CDC) set the recommended level of fluoride. After filtration, the water may be supplemented to bring the total concentration of fluoride up to 0.70 mg/L. The EPA has determined that 0.70 mg/L is

Table 2: Treatment Plant Treated Water and Distribution System Total Coliform Samples for 2014

Month	Number of Samples	Number of Positives	% Positive
January	419	0	0.00%
February	378	0	0.00%
March	407	1	0.25%
April	431	0	0.00%
May	321	0	0.00%
June	411	0	0.00%
July	460	0	0.00%
August	434	0	0.00%
September	431	2	0.46%
October	458	0	0.00%
November	422	0	0.00%
December	422	0	0.00%
Totals	**4,994**	**3**	**0.06%**

Graphic 2: Potable Water Treatment Process

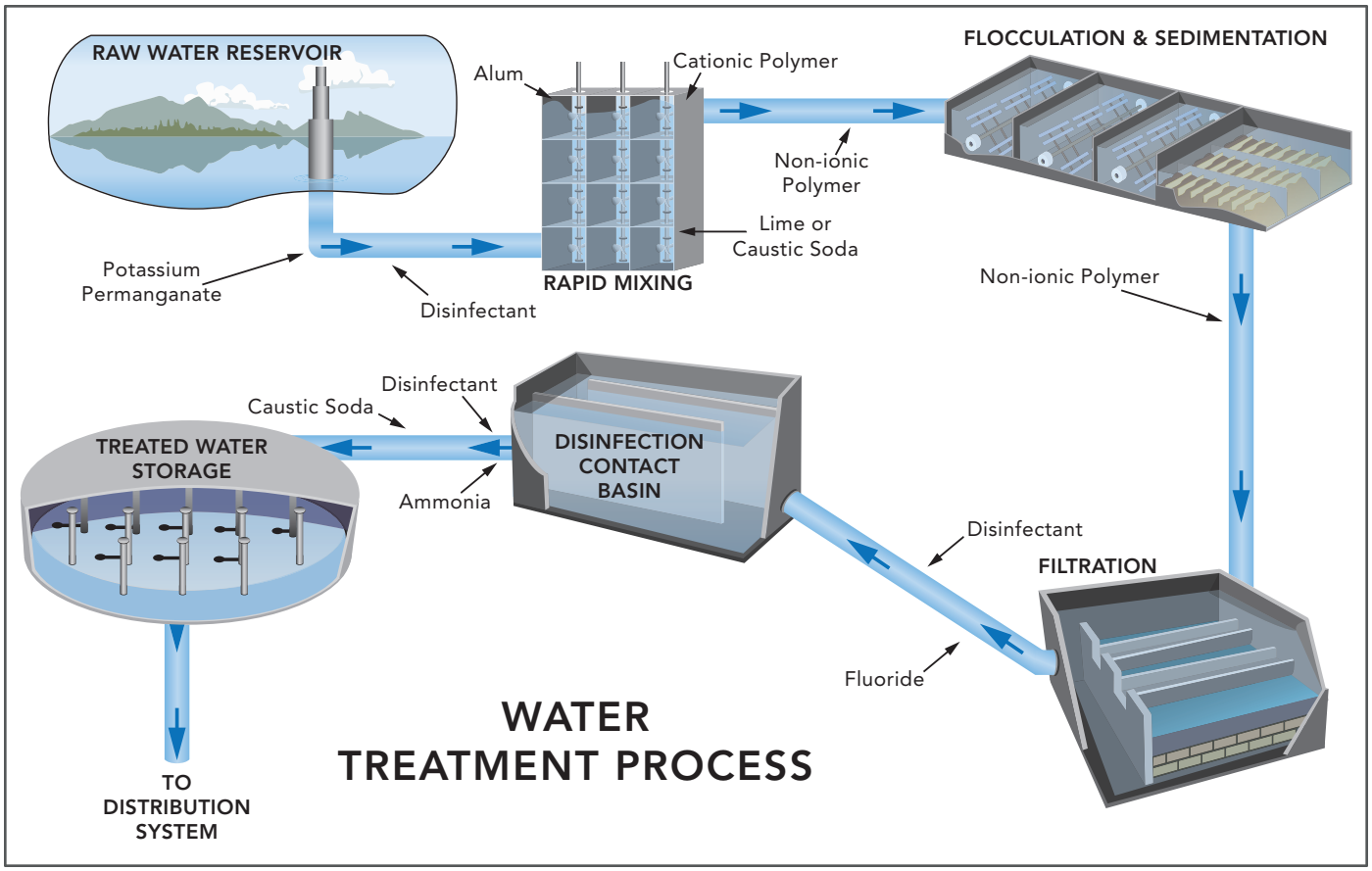


Table 3: Denver Water Average Values for 2014

CONTAMINANTS	TREATMENT PLANT	SOURCE WATER	TREATED WATER	EPA REGULATORY LIMIT
Lead (ppb)	Marston	None detected	None detected	15 ppb (action level)
	Foothills			
	Moffat			
Arsenic (ppb)	Marston			10 ppb
	Foothills			
	Moffat			
Mercury (ppb)	Marston			2 ppb
	Foothills			
	Moffat			
Giardia (Cysts/L)	Marston	None detected		Treatment Technique
	Foothills	2.5		
	Moffat	None detected		
Cryptosporidium (Oocysts/L)	Marston	None detected		Treatment Technique
	Foothills	None detected		
	Moffat	None detected		
E. Coli (MPN/100 ml)	Marston	6		Ø
	Foothills	6		
	Moffat	None detected		

the optimal level to prevent tooth decay. Caustic soda may be used to control the pH (acidity/alkalinity) of the water. It is added to adjust the pH of the water to greater than 7.5. Finally, the water is thoroughly disinfected to maintain its high quality as it travels to homes and businesses.

Why The Water Is Treated This Way?

The treatment process is designed to remove dirt, particulate matter, naturally occurring organic matter, and microscopic organisms, such as bacteria, that are found in surface waters. Disinfection kills potentially harmful microorganisms. See Table 2 on page 3. Disinfection of drinking water has saved millions of lives over the past century by preventing waterborne diseases such as typhoid and cholera. Denver Water uses a very effective long-lasting chloramine disinfectant. This produces lower concentrations of disinfection byproducts (DBP), such as Total Trihalomethanes and Haloacetic Acids, than would chlorine by itself. Disinfection byproducts above their regulatory limits are potentially harmful; therefore minimization of them is very important.

These regulations are very strict and require that drinking water is made safe for consumption over a person's lifetime. At present, there are more than 90 contaminants and groups of contaminants that are regulated in drinking water. Some of these contaminants, such as lead, have been shown to be a health risk, while others are merely suspected of being health risks but are still considered serious enough to regulate.

The EPA has set regulatory limits for these compounds. Regulatory limits are levels of safety that must not be exceeded in order to maintain safe drinking water. Some contaminants are regulated based on the possibility of their occurrence in water. Regulatory limits were determined based on the best available data from health effects studies. The majority of the EPA's drinking water regulations apply to the treated water entering the distribution system before it reaches the first customer.

How Well Is Denver Water Doing?

Tables 3-5 illustrate the effectiveness of treatment for a few parameters of note. Turbidity is a measurement of the clarity of the water; thus, a low turbidity indicates very clear water.

Most microorganisms, including bacteria, are attached to particulate matter (fine dirt and debris). Particulate matter accounts for much of the

turbidity in water. Therefore, turbidity is an extremely important parameter and has been regulated by the EPA for many years. The turbidity regulation requires that turbidities in the treated water be less than or equal to 0.30 NTU (Nephalometric Turbidity Units) in 95 percent of the samples each month. In 2014, 100 percent of the samples were below 0.30 NTU. The water was clean and clear entering the distribution system (see graph on page 6).

The total coliform test is a measure of all types of coliform bacteria in the water. Coliform bacteria are ubiquitous. They are even found in soils and on vegetation. We test for coliform bacteria, which includes *E. coli* (found in the intestines of all mammals, including humans) to determine the cleanliness of the water. We test for total coliform in our treatment plant source and treated waters, as well as throughout our entire distribution system.

On the rare occasion when a sample has tested positive for total coliform, additional samples had to be taken at locations upstream and downstream of the original test site and again at the site itself. This re-sampling is mandated by the CDPHE to assure the safety of the water. Regardless, Denver Water's internal operating procedures would require this re-sampling. Samples are collected until results confirm that the water is safe.

Are There More Serious Contaminants in the Water?

Denver Water has tested for all of the EPA-regulated compounds for years, and in anticipation of upcoming regulations, has tested for newly identified contaminants as well. Contaminants that have been seen in news headlines include lead, arsenic, mercury, *Cryptosporidium*, *Giardia,* and *E. coli.* Denver Water has tested for these for more than 20 years and has not detected them in the treated water. *Giardia, E. coli and Cryptosporidium* have occasionally been detected in the source water, but the effective treatment

Table 4: Denver Water Average Values for 2014

PARAMETER	TREATMENT PLANT	SOURCE WATER	TREATED WATER	EPA REGULATORY
Aluminum (ppb)	Marston	71	31	50 - 200 (SMCL)
	Foothills	187	36	50 - 200 (SMCL)
	Moffat	601 (impact of September flood)	None detected	50 - 200 (SMCL)
Barium (ppb)	Marston	42	41	2,000
	Foothills	36	35	2,000
	Moffat	27	22	2,000
Calcium (ppm)	Marston	34	33	None
	Foothills	25	25	
	Moffat	12	17	
Magnesium (ppm)	Marston	8.4	8.3	
	Foothills	6.3	6.4	
	Moffat	3.1	3.0	
Potassium (ppm)	Marston	2.1	2.0	
	Foothills	1.8	1.7	
	Moffat	1.2	1	
Sodium (ppm)	Marston	18	18.3	
	Foothills	13	17.4	
	Moffat	4	5	

Table 5: Denver Water Average Values for 2014

PARAMETER	TREATMENT PLANT	SOURCE WATER	TREATED WATER	EPA REGULATORY LIMIT
Turbidity (NTU)	Marston	0.98	0.04	95% of samples less than 0.30 in any month
	Foothills	1.8	0.05	
	Moffat	11	0.06	
Total Coliform (MPN/100 ml)	Marston	240	None detected	No more than 5% positives / month
	Foothills	218		
	Moffat	25		

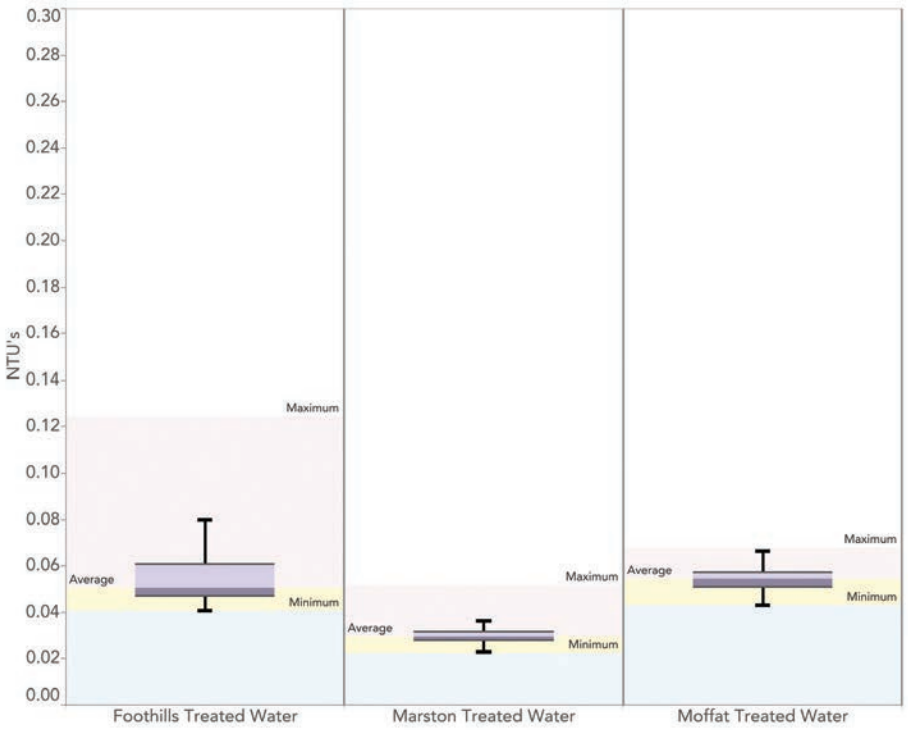
system in our treatment plants, as outlined on page 3, removes or inactivates these microorganisms.

Minerals in Nature That Are Found In Water

All natural waters contain minerals found in the earth's crust. These mineral salts result from the natural erosion of soils, rocks and/or the decay of plants and aquatic life. The amounts of these minerals in water also determine the characteristics of the water, such as its hardness. Minerals in water give water its flavor.

Mineral-rich water often tastes chalky. Of the minerals shown in Table 4 on page 5, only barium and aluminum are regulated in the treated water. Barium has a maximum contaminant level of 2,000 ppb, while aluminum has a secondary maximum contaminant level, which is a non-enforceable drinking water regulation (does not pose a health risk)of 50-200 ppb. Most minerals are not removed by conventional treatment. Calcium, magnesium, iron and manganese levels may be reduced by water treatment, but not completely removed. Please note that these comparisons, though from the same treatment plants, are not always from samples collected on the same dates for the source and the treated waters, and therefore are general comparisons. Drinking water naturally contains several minerals that are beneficial to humans and other mammals. Some of the minerals in Table 4 are beneficial at prescribed levels. However, at levels above the regulatory limits (where applicable), some of these minerals may cause detrimental effects over a lifetime. If there is no regulatory limit, or maximum contaminant level, listed in the table, then the amount of the mineral that might cause a potential health concern is much higher than would ever be found in water.

Graph 1: 2014 Treated Water Turbidity Ranges



Comparison of Fluoride between the Source and Treated Water

Denver Water's source water has naturally occurring fluoride. When needed, Denver Water supplements the water with fluoride to bring the total fluoride content up to 0.70 mg/L, to comply with EPA and the recommendation of CDPHE and the CDC for the prevention of tooth decay.

Water from the Moffat Collection System has lower amounts of naturally occurring fluoride

and must be fortified to meet the recommended standard (Graph 2).

Naturally occurring fluoride levels from the South Platte Collection System generally meet or exceed the recommended level in the source water, but both the Foothills and Marston treatment plants can supplement when needed (Graphs 3 & 4, page 8). Note: source water fluoride is tested monthly and treated water fluoride is tested six times daily. Moffat Treatment Plant was out of service for brief periods during the winter months. Foothills Treatment Plant was out of service January through March of 2014, and Marston Treatment Plant was out of service after September 2014.

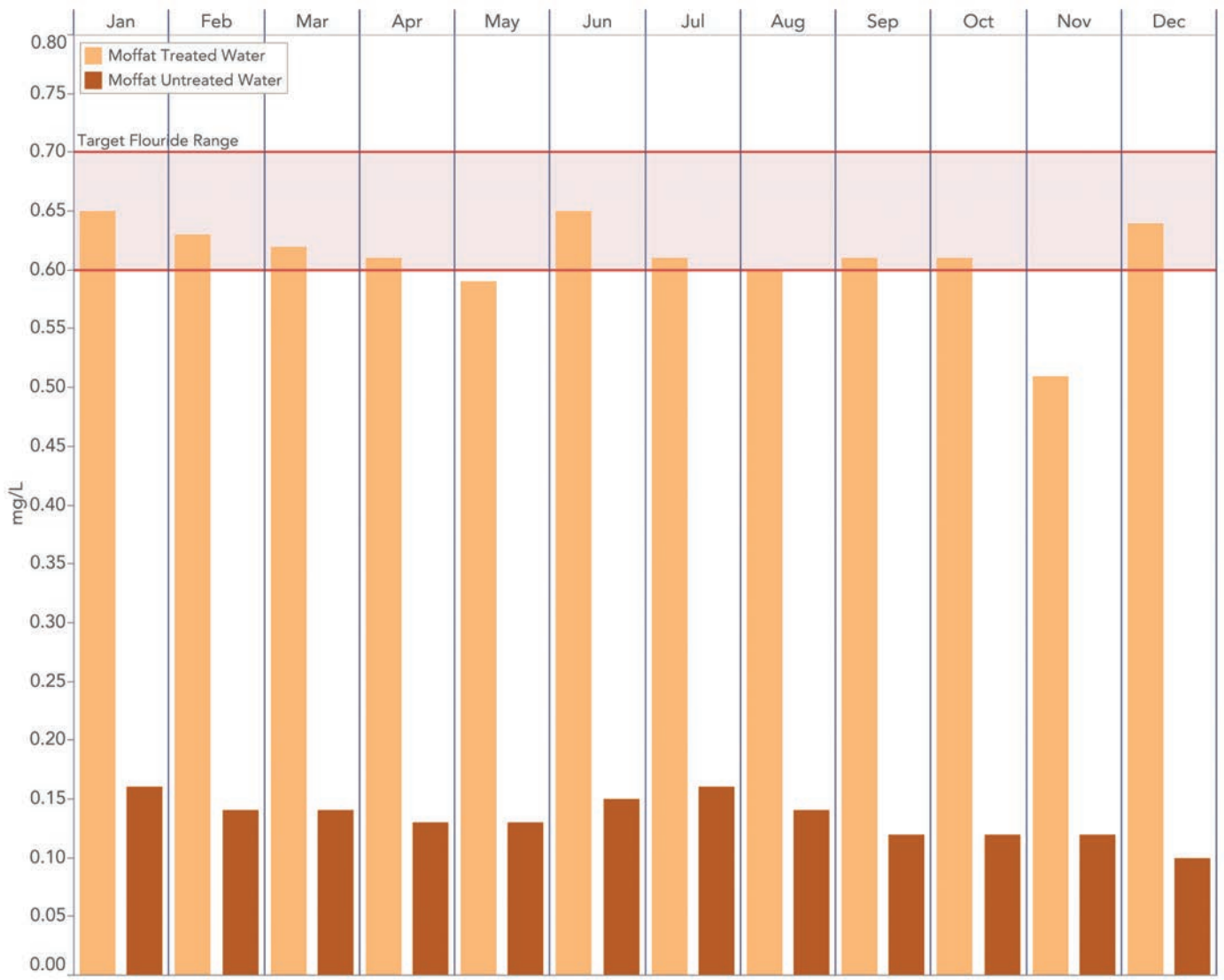
pH

We measure the pH range of water to prevent it from corroding residential and distribution system plumbing. The pH of water does not impact the safety of the water; it relates to the aggressiveness of it towards plumbing materials. Denver Water is required to maintain a pH greater than 7.5 to ensure that the water does not leach potentially harmful metals from plumbing, see Graph 5 on page 10.

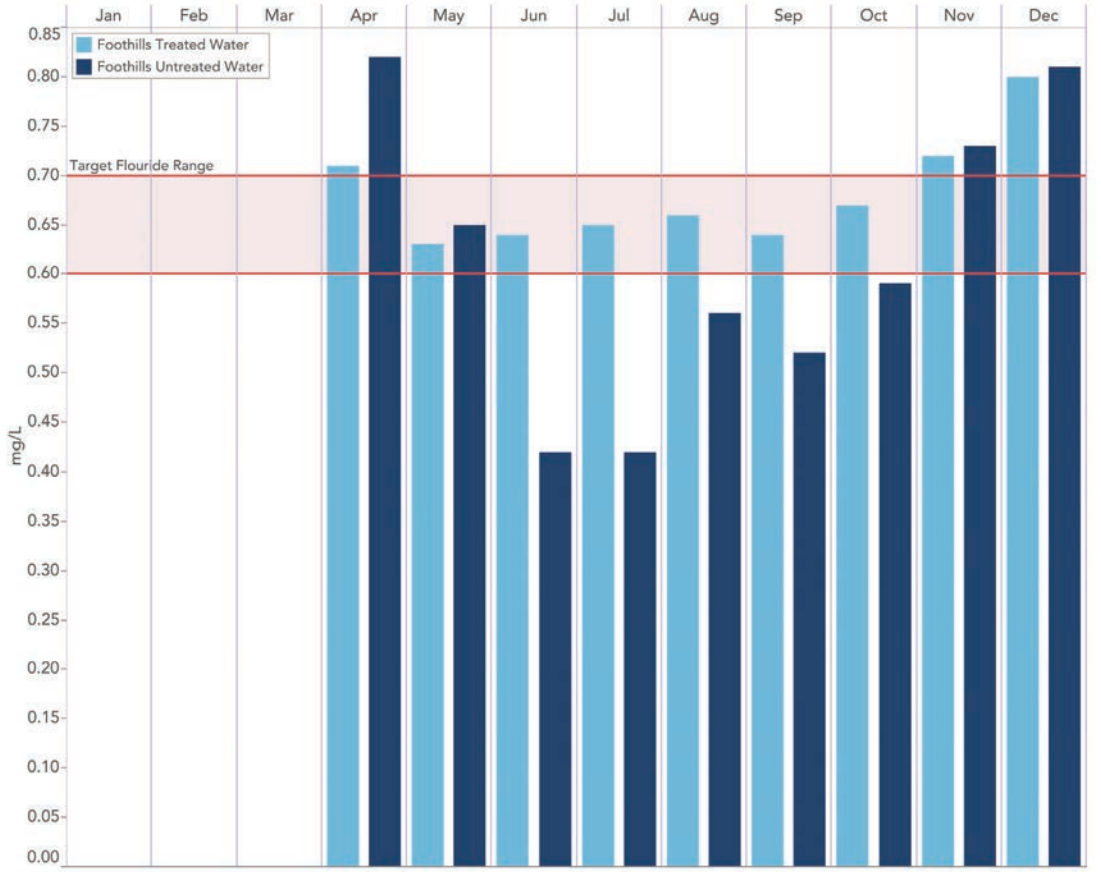
Water Hardness

The hardness of water is a result of calcium and magnesium salts dissolved in water. Other minerals such as potassium and iron can contribute to water hardness. In Denver's water, the iron levels are non-detectable, but iron can come from old cast-iron water mains and the plumbing in buildings or homes. The units of measure for

Graph 2: 2014 Flouride Levels for Moffat Treatment Plant



Graph 3: 2014 Flouride Levels for Foothills Treatment Plant



Graph 4: 2014 Flouride Levels for Marston Treatment Plant

water hardness are in mg/L, but most customers' appliances state water hardness in grains per gallon, gr/gal. In the laboratory, we measure hardness in mg/L (ppm). Graph 6 on page 11, lists hardness in both mg/L and gr/gal. Denver's water sources are considered soft to moderately hard. The South Platte source water from Antero Reservoir to Strontia Springs Reservoir in Waterton Canyon is moderately hard and varies between 60-120 mg/L or 3-7 gr/gal. The water that feeds our Moffat Treatment Plant is all snowmelt around the Winter Park area and is considered soft water, and varies seasonally between 30-60 mg/L or 2-4 gr/gal. Most customers calling about water hardness are inquiring for detergent usage amounts for dishwashers and clothes washers or water amounts for their iron or other appliances. Our water tends to form a mineral scale on the inside of plumbing; this is purely aesthetic and does not impact the safety or health of the water.

Many cities across the nation have much harder water than Denver's. Graph 6 on page 11, shows the seasonal fluctuations in hardness over the year.

Which Treatment Plant Serves My Area?

Denver Water's distribution system is completely integrated. This means that we can distribute water from any of our three potable treatment plants to anywhere in our system. Water is usually routed based on demand. Foothills Treatment Plant is our largest gravity fed potable water plant. It is often in service and serves much of the system. However, we can blend water from Foothills with Moffat or Marston or blend the water from any two potable treatment plants and send it anywhere in our system. This complete redundancy is rather unique compared to other distribution systems in the United States. When wondering which treatment plant serves you, it is best to assume that the water can come from any of the three treatment plants to your home or business at any given time.

Looking Down the Road

Water quality is of the utmost importance to Denver Water, and we make every effort to ensure our water is safe to drink. Sometimes customers ask about hexavalent chromium in treated water. We test for it every year. Additionally, hexavalent chromium was one of the 30 contaminants we tested as part of the UCMR3 testing. Though we found it in extremely low amounts – ranging from undetectable levels to 0.25 ppb. Scientists do not yet know what levels of hexavalent chromium may present a health concern, and studies are ongoing. We will continue to monitor and remain engaged in the EPA's effort to investigate hexavalent chromium further.

In 2014 the Marston Water Treatment Plant was offline September 2014 through January 2015 to allow for several major construction projects. These projects included construction of a multilevel outworks, replacement of aging flocculation and sedimentation equipment and upgrade of disinfection feed systems. Denver Water constructed a multilevel

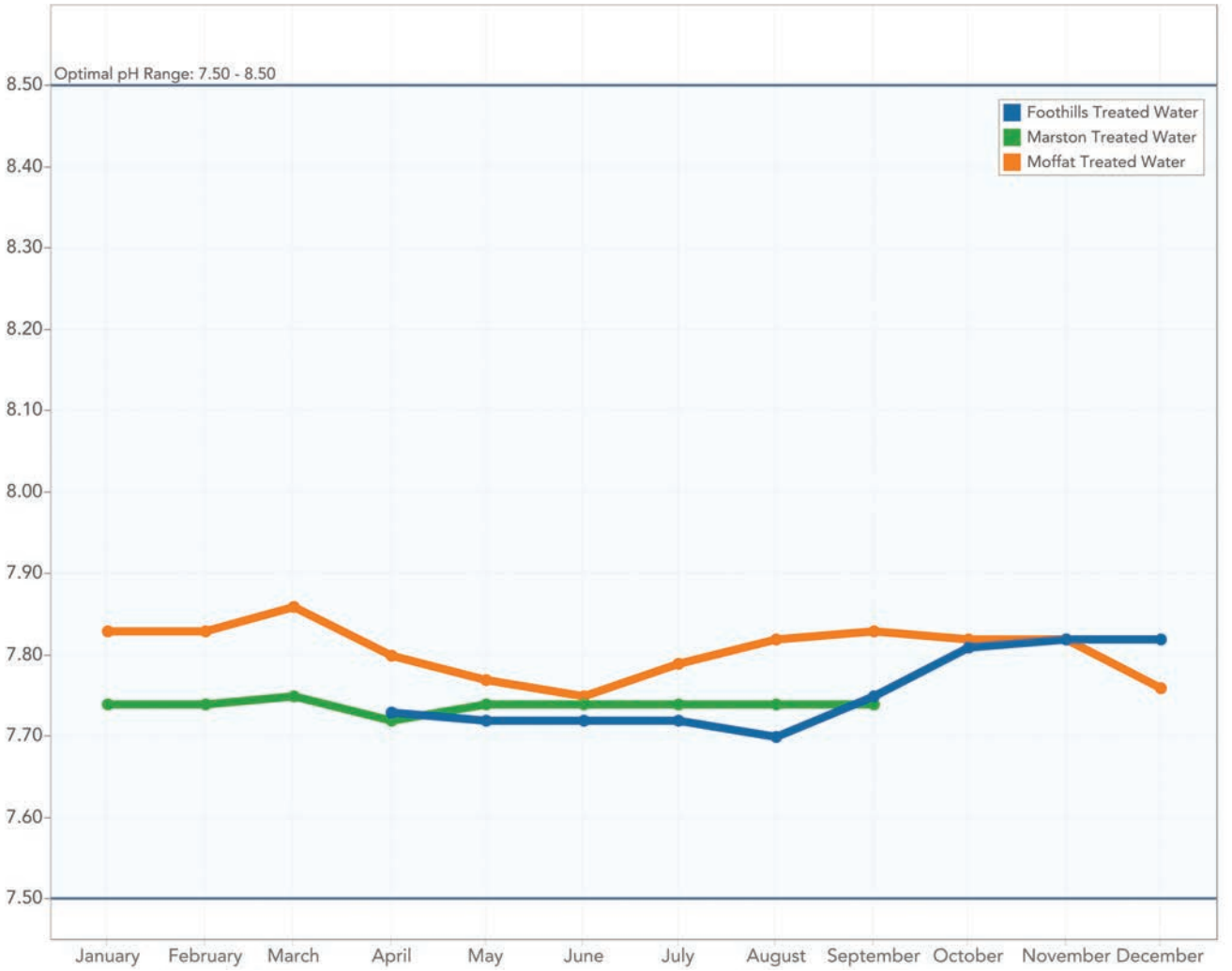
outworks tower and intake structure on the north side of Marston Forebay. This allows treatment plant operators to draw water from different elevations in the forebay, which will make the treatment process more efficient and ultimately improve water quality. It also allows use of the Marston Forebay at lower elevations in times of drought.

The project included constructing an underwater channel ending at the base of the new outlet works. The design has a new, 20-foot-wide platform about 80 feet into the forebay and connected to the dam by a 14-foot-wide access bridge. Work also included removal of aging pipes that originally passed through the dam on the north side of Marston. The Marston upgrade also included a new 60-inch conduit to drain the forebay to bring the dam up to state engineering standards.

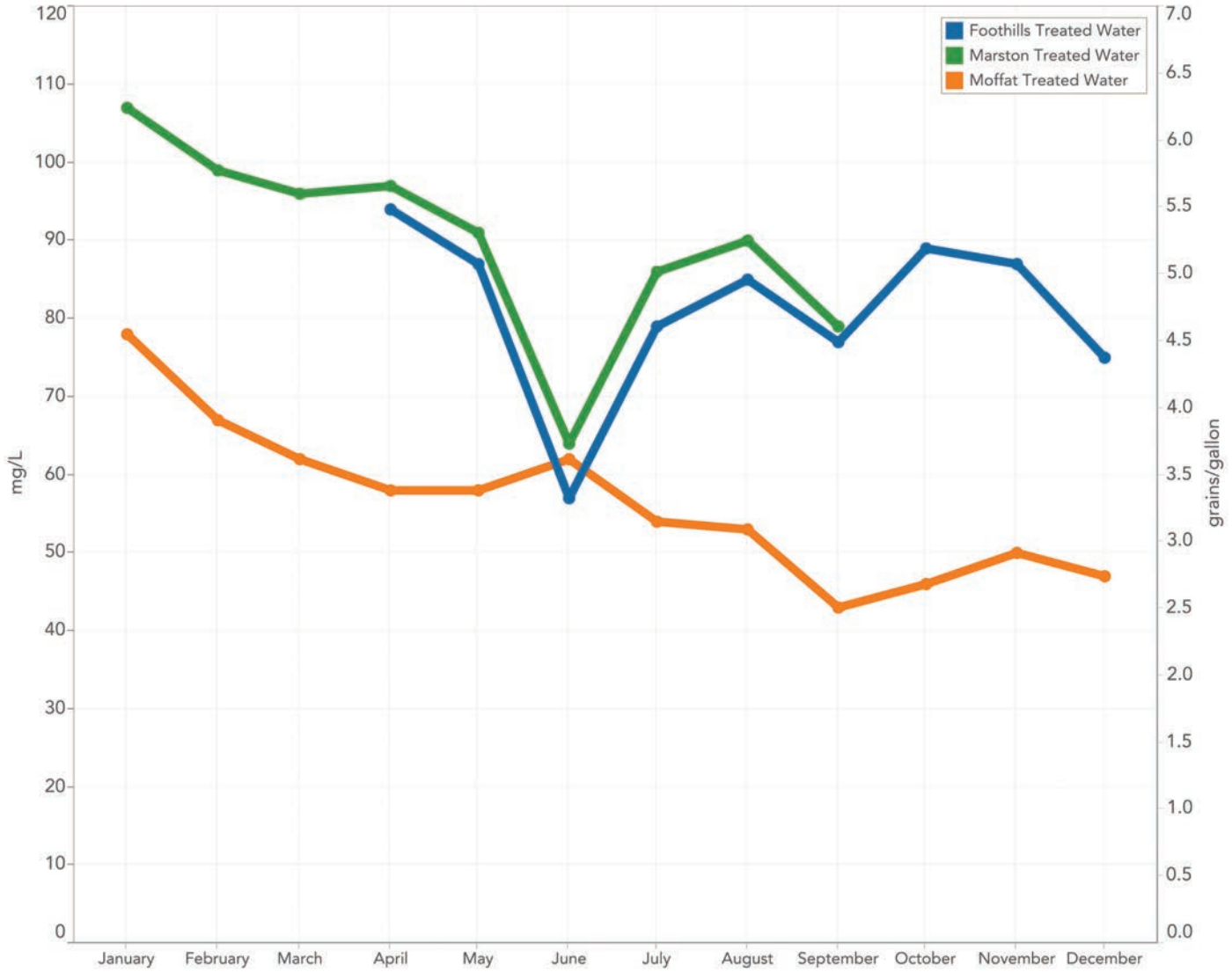
We have an obligation in making sure the water is safe for all of us; we drink the water too. We are environmental scientists, and we care about preserving our watershed and the natural beauty that surrounds it. Though we have caretakers who live at and monitor our mountain reservoirs, customers help too – an effort we sincerely appreciate. If you have any concerns, questions or comments regarding water quality, call Denver Water at 303-893-2444.

Graphic 3: Marston Forebay's new intake tower

Graph 5: 2014 pH Results for Treated Water



Graph 6: 2014 Hardness Results for Treated Water



Regulatory Terminology

Pages 12 through 15 are tables of data for compounds found in the treated water. The tables contain the name of the compound, the maximum contaminant level (see below) where applicable, the average result, the range of detections for the year, and the number of times for which it was tested in 2014. Most of the compounds found are not regulated and do not pose a health or safety risk. Regulatory abbreviations are explained below.

AL: Action levels are enforceable triggers for compliance that force public notification and treatment optimization.

MCL: Maximum contaminant level, which are the U.S. Environmental Protection Agency's drinking water regulatory limits. Based on health and toxicology studies, results at or below these levels in drinking water are considered safe. These are usually numeric values; sometimes they are designated as DS or TT. (see below)

SMCL: Secondary maximum contaminant level, the U.S. Environmental Protection Agency's nonenforceable, but recommended guideline level of a contaminant or compound. When the fluoride secondary maximum contaminant level exceeds 2 mg/L, we must notify the public.

DS: Distribution system is how the total coliform regulation is decreed. This means that the total coliform regulation (less than 5 percent total coliform positive samples per month) applies to the water in the distribution system (service area) not just the treatment plant effluents.

TT: Treatment Technique refers to the water treatment process used in the plants, which must be optimized to control the levels of contaminants, such as the corrosion control process (maintaining a pH greater than 7.5 and alkalinity greater then 15) used to control lead and copper. To date, we have not detected lead in the raw, treated or distribution system water, and only small amounts of copper (less than a tenth of the regulatory limit 1.3 mg/L) have been found.

Compounds that were below reporting levels in Denver's water are listed on pages 16-18. We test for all of these compounds and contaminants at least annually. Contaminants that have been in the news recently, such as arsenic, lead, and TCE, are on the not found list.

Data Tables For Treated Water

Marston Treated Water

Analysis	MCL	Average	Range	No.
General (mg/L)				
Total Alkalinity as $CaCO_3$	>15	72	65 - 77	11
Total Chlorine		1.60	1.47 - 1.77	4,178
Hardness as $CaCO_3$		116	95 - 127	11
pH (SU)	>7.5 daily average	7.74	7.68 - 7.74	4,175
Specific Conductance (µS)		352	300 - 410	51
Temperature (°C)		13	6 - 21	42
Total Dissolved Solids		199	178 - 211	11
Turbidity (NTU)	Treatment Technique	0.040	0.03 - 0.07	4,177
Metals (µg/L)				
Aluminum		31	22 - 46	11
Barium	2,000	41	37 - 46	11
Boron		18	14 - 22	11
Calcium (mg/L)		33	27 - 36	11
Copper		5	<5 - 10	11
Magnesium (mg/L)		8.3	6.8 - 9.2	11
Manganese		<2	<2 - 3	11
Molybdenum		7	6 - 8	11
Potassium (mg/L)		2.0	1.8 - 2.1	11
Sodium (mg/L)		18.3	n/a	1
Strontium (mg/L)		0.22	0.19 - 0.24	3

Data Tables For Treated Water

Marston Treated Water

Analysis	MCL	Average	Range	No.
Ions (mg/L)				
Chloride		28.5	25.3 - 30.2	10
Fluoride	4.0	0.65	0.59 - 0.77	1,395
Nitrate as N	10	0.10	<0.02 - 0.17	4
Silicon		1.2	<0.5 - 2.2	11
Sulfate		57	52 - 61	10
Disinfection By Products (µg/L)				
Bromochloroacetic acid		3.1	1.9 - 4.0	8
Bromodichloromethane		6.9	4.3 - 10.3	23
Chloroform		8.1	4.5 - 13.3	23
Cyanogen Chloride		5	<0.5 - 10	2
Dibromochloromethane		3.2	1.6 - 6.0	23
Dichloroacetic acid		5.0	2.6 - 7.4	8
Haloacetic Acids (5)	60(DS)	9	<5 - 12	8
Total Trihalomethanes	80(DS)	18	11 - 29	23
Trichloroacetic acid		3.9	1.8 - 5.4	8
Non Specific Organics				
Total Organic Carbon (mg/L)		1.8	1.4 - 2.1	51
Total Organic Halogen (µg/L)		118	90 - 145	4

Denver skyline

Data Table For Treated Water

Foothills Treated Water

Analysis	MCL	Average	Range	No.
General (mg/L)				
Total Alkalinity as $CaCO_3$	>15	51	31 - 76	10
Total Chlorine		1.68	1.52 - 1.87	3,673
Hardness as $CaCO_3$		88	64 - 121	10
pH (SU)	>7.5 daily average	7.73	7.66 - 7.83	3,670
Specific Conductance (µS)		279	190 - 400	44
Temperature (°C)		12	5 - 19	40
Total Dissolved Solids		158	132 - 206	10
Turbidity (NTU)	Treatment Technique	0.05	0.02 - 0.08	3,675
Metals (µg/L)				
Aluminum		36	24 - 68	10
Barium	2,000	35	27 - 44	10
Boron		12	8 - 14	10
Calcium (mg/L)		25	18 - 33	10
Copper		<5	<5 - 8	10
Magnesium (mg/L)		6.4	4.3 - 9.3	10
Manganese		11	<2 - 25	10
Molybdenum		8	2 - 17	10
Potassium (mg/L)		1.7	1.3 - 2.0	10
Sodium (mg/L)		17.4	n/a	1
Strontium (mg/L)		0.19	0.06 - 0.22	4
Ions (mg/L)				
Chloride		20.4	12.2 - 30.1	9
Fluoride	4.0	0.65	0.52 - 0.76	1,833
Nitrate as N	10	0.16	0.06 - 0.25	4
Silicon		3.0	2.2 - 3.9	10
Sulfate		49	37 - 57	9
Disinfection By Products (µg/L)				
Bromochloroacetic acid		2.2	1.3 - 3.0	8
Bromodichloromethane		3.8	2.2 - 6.5	22
Chloroform		7.4	2.0 - 23.9	22
Cyanogen Chloride		6	<0.5 - 12	2
Dibromochloromethane		1.2	0.6 - 2.3	22
Dichloroacetic acid		7.0	2.1 - 15.7	8
Haloacetic Acids (5)	60(DS)	12	<5 - 25	8
Total Trihalomethanes	80(DS)	12	5 - 30	22
Trichloroacetic acid		5.3	1.3 - 9.1	8
Non Specific Organics				
Total Organic Carbon (mg/L)		1.6	1.1 - 2.6	44
Total Organic Halogen (µg/L)		102	43 - 131	4

Data Table For Treated Water

Moffat Treated Water

Analysis	MCL	Average	Range	No.
General (mg/L)				
Total Alkalinity as $CaCO_3$	>15	30	24 - 45	9
Total Chlorine		1.59	0.93 - 1.80	2,621
Hardness as $CaCO_3$		54	37 - 103	9
pH (SU)	>7.5 daily average	7.82	7.57 - 8.25	1,317
Specific Conductance (µS)		148	100 - 290	32
Temperature (°C)		14	7 - 20	30
Total Dissolved Solids		96	65 - 174	9
Turbidity (NTU)	Treatment Technique	0.060	0.04 - 0.11	2,619
Metals (µg/L)				
Aluminum		<20	<20 - 37	9
Barium	2,000	22	15 - 36	9
Boron		8	4 - 17	9
Calcium (mg/L)		17	11 - 32	9
Magnesium (mg/L)		3.0	1.7 - 5.6	9
Manganese		<2	<2 - 6	9
Molybdenum		1	<1 - 4	9
Potassium (mg/L)		1.0	0.6 - 2.2	9
Sodium (mg/L)		5	n/a	1
Strontium (mg/L)		0.08	0.04 - 0.12	4
Strontium (mg/L)		0.08	0.04 - 0.12	4
Ions (mg/L)				
Chloride		6.2	3.4 - 14.6	8
Fluoride	4.0	0.65	0.15 - 0.80	1,308
Nitrate-Nitrogen	10	0.15	0.05 - 0.29	5
Silicon		3.3	2.6 - 4.7	9
Sulfate		28	17 - 64	8
Disinfection By Products (µg/L)				
Bromochloroacetic acid		1.1	<1.0 - 2.7	5
Bromodichloromethane		3.1	1.2 - 7.6	14
Chloroform		14.6	4.9 - 29.0	14
Chloropicrin		0.5	<0.5 -0.8	2
Cyanogen Chloride		4.9	1.7 - 8.1	2
Dibromochloromethane		<0.5	<0.5 - 1	14
Dichloroacetic acid		9.3	3.5 - 15.0	5
Haloacetic Acids (5)	60(DS)	17	7 - 29	5
Total Trihalomethanes	80(DS)	18	6 - 38	14
Trichloroacetic acid		8.2	3.4 - 14.2	5
Non Specific Organics				
Total Organic Carbon (mg/L)		2.2	0.9 - 4.9	33
Total Organic Halogen (µg/L)		137	82 - 200	4

Contaminants Not Found In Denver's Drinking Water

The following analyses were performed, and each of these constituents was either below the reporting limit or the average result was less than the reporting limit. VOCs are volatile organic chemicals (easily airborne), and SOCs are synthetic organic chemicals, (typically man made). The maximum contaminant level (MCL) is listed after the contaminant in parentheses, if regulated in drinking water. The unit of measure is also listed if different than that listed for the subsection.

General Parameters	*Giardia* (TT1) (cysts/L)	4-Nitrophenol	Chlorotuloron
Alkalinity, Phenolphthalein as CaCO3	*Legionella* (TT1)	4,6-Dinitro-2-methylphenol	Cyclohexanone
Chlorine, Free	Plankton	Acenaphthene	Desethylatrazine
Asbestos (7 MFL)	*Salomnella*	Acenaphthylene	Desisopropylatrazine
Metals - plumbing, mining, natural errosion (µg/L)	Total Coliform (DS)	Acetochlor	Diethyl phthalate
	Algal Toxins	Ametryn	Dimetyl phthalate
Antimony (6)	Anatoxin a	Anthracene	Di-n-butyl phthalate
Arsenic (10)	Cylindrospermopsin	Benzo(a)anthracene	Di-n-octyl phthalate
Beryllium (4)	Microcystin-LA	Benzo(a)pyrene (0.2)	Epichlorohydrin
Cadmium (5)	Microcystin-LF	Benzo(b)fluoranthene	Ethyl methacrylate
Chromium (100)	Microcystin-LR	Benzo(g,h,i)perylene	Ethylparaben
Cobalt	Microcystin-LY	Benzo(k)fluoranthene	Galaxolide
Copper (TT1)	Microcystin-RR	Chloroprene	Isobutylparaben
Iron	Microcystin-YR	Chloropropylate	Isopropyl ether
Lead (TT1)	Nodularin	Chrysene	Methyl paraben
Lithium	Saxitoxin (STX)	Cyclohexanone	Methacrylonitrile
Mercury (2)	**Disinfection By-Products - reaction between the disinfectant and natural organic matter (µg/L)**	Dibenzo(a,h)anthracene	Polychlorinated Biphenyls (PCB)
Selenium (50)		Diethanolmine (DEA)	PCB 1016 Aroclor
Silver		Ethyl acrylate	PCB 1221 Aroclor
Thallium (2)	Bromochloromethane	Ethyl tert-butyl ether	PCB 1232 Aroclor
Titanium	Bromoform	Fluoranthene	PCB 1242 Aroclor
Vanadium	Carbon Tetrachloride	Fluorene	PCB 1248 Aroclor
Zinc	Chlorate	Hexachlorobenzene	PCB 1254 Aroclor
Ions - from farming, and industry, (mg/L, µg/L)	Chloroacetonitrile	Hexachlorocyclopentadiene	PCB 1260 Aroclor
	Dibromoacetonitrile	Indeno(1,2,3-cd)pyrene	Perfluoro octanesulfonic acid (PFOS)
Bromide	Monochloroacetic Acid	Isophorone	Perfluoro-1-butanesulfonic acid (PFBS)
Carbonate	N-nitrosodiethylamine (Nitrosamine)	Methacrylonitrile	Perfluoro-1-hexanesulfonic acid (PFHxS)
Cyanide, Total	N-nitrosodimethylamine (NDMA)	Methyl acrylate	Perfluoroheptanoic acid (PFHpA)
Hydroxide	N-nitrosodi-n-butylamine	Naphthalene	Perfluoro-nonanoic acid (PFNA)
Nitrite-Nitrogen (1)	N-nitrosodi-n-propylamine	n-Butyl Acrylate	Perfluorooctanoic acid (PFOA)
Ortho Phosphorus, Dissolved	N-nitrosomethylethylamine	N-nitrosopyrollidine	PFC's (PFBS, PFDA, PFHpA, PFHxA, PFOA, PFOS,PFPeA)
Radiological errosion of natural deposits/mining (pCi/L)	N-nitrososdiphenylamine	Nitrobenzene	
	Tribromoacetic Acid	Nonylphenol, isomer mix	Phenylphenol
Alpha	Trichloroacetonitrile	Pyrene	Phenol
Beta	**Synthetic Organic Compounds (SOC) - from Feedstock/ combustion by-products, Flame retardants (µg/L)**	Quinoline	Propylparaben
Cesium-134,137		**SOC - Plastizers, Surfactants, Personal Care Products µg/L, ng/L**	TCEP
Iodine-129, 131			TCPP
Radium 226/228 (5)	1,2,4,5 -Tetrachlorobenzene	2,3-Dichlorobiphenyl	TDCPP
Strontium-90	2-Chlorobiphenyl	2,4,5-Trichlorobiphenyl	Tetrabromobisphenol A
Thorium-227,234	2-Chlorophenol	4-Chloro-3-methylphenol	Toxaphene
Thallium=208	2-Nitrophenol	4-nonylphenol - semi quantitative	Triclocarban
Uranium-235	2,4-Dichlorophenol	Benzyl chloride	Triclosan
Zinc-65	2,4-Dimethylphenol	Bis(2-ethylhexyl)adipate	**Pesticides µg/L**
Microbiological - animal and human activity	2,4-Dinitrophenol	Bis(2-ethylhexyl)phthalate	1,2-Dibromo-3-chloropropane (0.2)
	2,4-Dinitrotoluene	Bisphenol A	2,4,5-T
2-Methylisoborneol (MIB)	2,6-Dinitrotoluene	Butyl benzyl phthalate	2,4,5-Trichlorobiphenyl
Cryptosporidium (oocysts/L)	3,5-Dichlorobenzoic acid	Butylparaben	2,4,6-Trichlorophenol
E. coli (count/100 ml)	4-tert-Octylphenol	Chloroprene	2,4-D (70)

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Pesticides µg/L (cont.)	Demeton O	Fluridone	Pebulate
2,4-DB	Demeton S	Fonofos	Pendimethalin
3-Hydroxycarbofuran	Desethylatrazine	gamma-Chlordane	Pentachlorophenol (1)
4,4'-DDD	Desisopropylatrazine (DIA)	Glyphosate	Permathrin Isomers
4,4'-DDE	delta- BHC	Halofenozide	Permathrin, cis & trans
4,4'-DDT	Diazinon	Halosulfuron methyl	Phorate
alpha-BHC	Dicamba	Heptachlor (0.4)	Phosmet
alpha-Chlordane	Dichlobenil	Heptachlor Epoxide (0.2)	Picloram
Acifluourfen	Dichlofenthion	Hexachlorobenzene	Profluralin
Alachlor (2)	Dichloran	Hexazinone	Prometon
Aldicarb	Dichloprop	Imidacloprid	Prometryn
Aldicarb sulfone	Dichlorvos	Iodomethane	Pronamide
Aldicarb sulfoxide	Dicrotophos	Iprodione	Propachlor
Aldrin	Dieldrin	Isofenphos	Propanil
Anilazine	Diflubenzuron	Isoproturon	Propargite
Aspon	Dimethoate	Leptophos	Propazine
Atraton	Dinoseb	Lindane	Propiconazole isomer a
Atrazine (3)	Dioxathion	Linuron	Propiconazole isomer b
Azoxystrobin	Dioxin	Malathion	Propoxur
Baygon	Diphenamid	Metalaxyl	Prothiofos
Bendiocarb	Diquat	Metazachlor	Siduron, Total
Benfluralin	Disulfoton	Methiocarb	Silvex (50)
Bensulide	Disulfoton sulfone	Methomyl	Simazine (4)
Bentazon	Disulfoton sulfoxide	Methoxychlor	Simetryn
β-BHC (beta-BHC)	Diuron	Methyl paraoxon	Stirofos
Bolstar	Dursban	Methyl parathion	Sulfotep
Bromacil	Endosulfan sulfate	Metolachlor	Tebuthiuron
Butachlor	Endosulfan –A	Metribuzin	Terbacil
Butylate	Endosulfan –B	Metsulfuron-methyl	Terbufos
Carbaryl	Endothall	Mevinphos	Terbuthylazine
Carbofuran	Endrin (2)	MGK 264 isomer a	Terbutryn
Carbophenothion	Endrin Aldehyde	MGK 264 isomer b	TEPP
Chlordane	EPN	MGK 326	Thidiazuron
Chlorfenvinphos	EPTC	Mirex	Thiobencarb
Chloridazon	Esfenvalerate	Molinate	Thionazin
Chlorneb	Ethalfluralin	Monocrotophos	trans-Nonachlor
Chlorobenzilate	Ethion	Monuron	trans-Permethrin
Chlorothalonil	Ethofumesate	Naled	Triademefon
Chlorotoluron	Ethoprop	Napropamide	Triadimenol
Chlorpropham	Ethylene dibromide	Neburon	Tribufos
Chlorpyrifos methyl	Etridiazole	N-nitrosomorpholine	Trichloronate
cis-Nonachlor	Famphur	N-nitrosopiperidine	Tricyclazole
cis-Permethrin	Fenamiphos	Norflurazon	Trifluralin
Clomazone	Fenarimol	Oryzalin	Vernolate
Clopyralid	Fenitrothion	Oxadiazon	Vinclozolin
Coumaphos	Fenoxaprop-ethyl	Oxamyl (200)	Z-Phosphamidon
Crotoxyphos	Fensulfothion	Oxychlordane	**Volatile Organic Compounds (VOC) - from solvents, feedstock/ fuels, Flame retardants (µg/L, ng/L)**
Cyanazine	Fenthion	Oxyfluorfen	
Cycloate	Fenuron	Paclobutrazol	
Dacthal	Fluazifop-butyl	Paraquat	1,1,1,2-Tetrachloroethane
Dalapon (200)	Fluchloralin	Parathion	1,1,1-Trichloroethane (200)
DCPA acid metabolites	Fluometuron	PCNB	1,1,2,2-Tetrachloroethane

Contaminants Not Found In Denver's Drinking Water

Volatile Organic Compounds (VOC) - from solvents, feedstock/ fuels, Flame retardants (µg/L, ng/L) (cont.)
1,1,2-Trichloroethane (5)
1,1-Dichloroethane
1,1-Dichloroethene (7)
1,1-Dichloropropene
1,2,3-Trichlorobenzene
1,2,3-Trichloropropane
1,2,3-Trimethylbenzene
1,2,4-Trichlorobenzene (70)
1,2,4-Trimethylbenzene
1,2,4,5-Tetrochlorobenzene
1,2-Dichloroethane (5)
1,2-Dichloropropane (5)
1,3,5-Trimethylbenzene
1,3-Dichloropropane
1,3-Dichloropropene
1,4-Dioxane
1-Chlorobutane
2,2-Dichloropropane
2-Butanone
2-Hexanone
2-Nitropropane
4-Methyl-2-Pentanone (MIBK)
Acrylonitrile
Allyl chloride
Benzene (5)
Bromobenzene
Bromoethane
Bromomethane
Carbon disulfide
Chlorobenzene (100)
Chlorodifluoromethane (CFC 22)
Chloroethane
Chloromethane
cis-1,2-Dichloroethene (70)
cis-1,3-Dichloropropene
DCEE
Dibromomethane
Dichlorodifluoromethane (CFC-12)
Dichloromethane (5)
Diethyl ether
Diisopropyl ether
Epichlorohydrin
Ether
Ethyl Benzene (700)
Ethyl tert-butyl ether
Ethylbenzene
Freon 113
Hexachloroethane
Hexachlorobutadiene
Isopropylbenzene (Cumene)
m-Dichlorobenzene
Methyl tert-butyl ether (MTBE)
n-Butylbenzene
n-Propylbenzene
o-Chlorotoluene
o-Dichlorobenzene (600)
p-Chlorotoluene
p-Dichlorobenzene (78.5)
Pentachlorobenzene
Pentachloroethane
p-Isopropyltoluene (Cymene)
Propionitrile
sec-Butylbenzene
Styrene (100)
tert-Amyl Methyl ether (TAME)
tert-Butyl alcohol
tert-Butylbenzene
Tetrachloroethene (5)
Tetrahydrofuran
Toluene (1000)
trans-1,2-Dichloroethene (100)
trans-1,3-Dichloropropene
trans-1,4-Dichloro-2-butene
Trichloroethylene (5) (TCE)
Trichlorofluoromethane
Vinyl acetate
Vinyl Chloride (2)
Xylenes (10000)
Pharmaceuticals/Hormones (µg/L, ng/L)
17 alpha-Ethynyl estradiol
17-beta-Estradiol
4-androstene-3,17-dione
Acetaminophen (Tylenol)
Albuterol
Amoxicillin (semi-quantitative)
Andorostenedione
Atenolol
Azithromycin
Bendroflumethiazide
Bezafibrate
Butalbital
Caffeine
Carbadox
Carbamazepine
Carboxin
Carisoprodol (Soma)
Chloramphenicol
Chlorotetracycline
Ciprofloxacin
Clofibric acid
Cimetidine
cis-Testosterone
Cotinine
Dehydronifedipine
Dexamethasone
Diazepam (Valium)
Diclofenac
Diethylstilbestrol (DES)
Dilantin
Diltiazem
Doxycycline
Equilin
Erythromycin
Estradiol
Estriol
Estrone
Fluoxetine (Prozac)
Gemfibrozil
Ibuprofen
Iohexol
Iopromide
Ketoprofen
Ketorolac
Lasalocid
Lidocaine
Lincomycin
Lopressor
Meclofenamic Acid
Meprobamate
Methyl methacrylate
Monensin
Naproxen (Aleve)
Narasin
Nifedipine
Norethisterone
Norfloxacin
Oxolinic acid
Oxytetracycline
Paraxanthine
Penicillin G
Penicillin V
Pentoxifylline (Aventis)
Phenanthrene
Phenazone
Prednisone
Primidone
Progesterone
Roxithromycin
Salicylic acid
Salinomycin
Sulfachloropyridazine
Sulfadiazine
Sulfadimethoxine
Sulfamerazine
Sulfamethazine
Sulfamethizole
Sulfamethoxazole
Sulfasalazine
Sulfathiazole
Testosterone
Tetracycline
Theobromine
Theophylline
Thiabendazole
trans-Testosterone
Trimethoprim
Tylosin
Virginiamycin M1
Warfarin

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