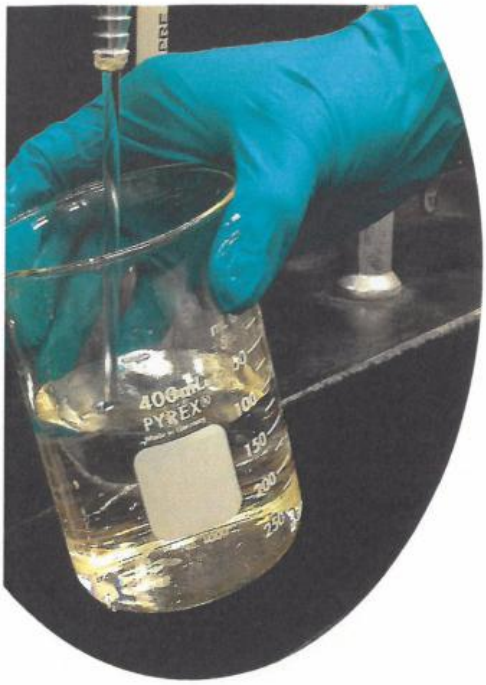
CASTLE ROCK water

Securing our future *drop by drop*

2017 Water Quality Report

We are pleased to present to you the water quality / consumer confidence report for the 2016 calendar year. Castle Rock Water is committed to providing you with a safe and reliable supply of high-quality drinking water.



Lead Testing in Castle Rock

Castle Rock Water meets all the regulatory standards set by the Colorado Department of Public Health and Environment and the U.S. Environmental Protection Agency. We are required to conduct frequent and routine water quality testing to ensure your water stays safe. Testing is conducted for the presence of lead as well as many other possible contaminants.

You may have heard of some cities in the United States having issues with lead in their water. Castle Rock does not have any such issues. Lead can enter the water through contact with plumbing pipes and fixtures containing lead within the home. It does this by leaching lead and copper from your private plumbing through the corrosion of pipes, solder, faucets and fittings. As part of our treatment process, Castle Rock Water treats the water to minimize, reduce and eliminate to the extent possible the potential for this corrosion to occur.

Lead and Copper Sampled in the Distribution System

Contaminant Name (unit of measure)	Time Period	90th Percentile	Sample Size	90th Percentile AL*	Sample Sites Above AL*	90th Percentile AL* Exceedance	Typical Sources
Copper (ppm)	8/1/2016 to 12/7/2016	0.18	60	1.3	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppm)	8/1/2016 to 12/7/2016	2.7	60	15	0	No	Corrosion of household plumbing systems; erosion of natural deposits

*AL - Action Level (see definition on page 5)

Castle Rock Water is required by State and Federal regulations to conduct periodic lead and copper testing. Samples are collected from indoor taps in designated single family homes built between 1982 - 1986. These homes have been identified because they were built during the timeframe when lead-based solder was more widely used. Since Castle Rock started this sampling in 1992, there have been no elevated levels of either lead or copper from the samples collected.

If you have any concerns, or would like your home to be considered for lead testing, contact our Water Quality staff at 720-733-6091 or visit CRgov.com/waterquality. This test is performed at no cost to the homeowner.

Lead in Drinking Water

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 (1-800-426-4791) or at http://www.ega.gov/safewater/lead.

Our Water Sources

Currently, approximately 87 percent of the Town's water is pumped from the Town's fifty-four deep groundwater wells. The remaining 13 percent comes from renewable water resources which include 13 shallow alluvial wells and a surface water diversion along East Plum Creek. Castle Rock overlies the Denver Basin, a geologic formation with four principal aquifers: the Dawson, Denver, Arapahoe, and the deepest of the four, the Laramie-Fox Hills. Castle Rock utilizes five treatment plants to purify and distribute potable water. Having five facilities provides redundancy to ensure reliable service. During the winter with low demand, several plants may not be in use.

Source Water Assessment and Protection (SWAP)

The Colorado Department of Public Health and Environment (CDPHE) has provided us with a Source Water Assessment Report for our water supply. For general information or to obtain a copy of the report, please visit https://www.colorado.gov/pacific/cdphe/source-water-assessment-and-protection-swap. The report is located under "Source Water Assessment Reports," and then "Assessment Report by County." Select Douglas County, and find 118010 - Castle Rock, Town Of. You may also receive a copy of the report by contacting Water Operations staff at 720-733-6000.

The Source Water Assessment provides a screening-level evaluation of potential contamination that could occur. It does not mean that the contamination has or will occur. Castle Rock Water 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 home. In addition, the source water assessment results provide a starting point for developing a source water protection plan. This plan is currently being developed with the help of a broad coalition of local and State stakeholders. A draft plan will likely be available for public comment by the end of 2017. If you are interested in learning more about this process contact Tim Friday at 720-733-6030. Potential sources of contamination in our source water area are listed on pages 6 and 7.

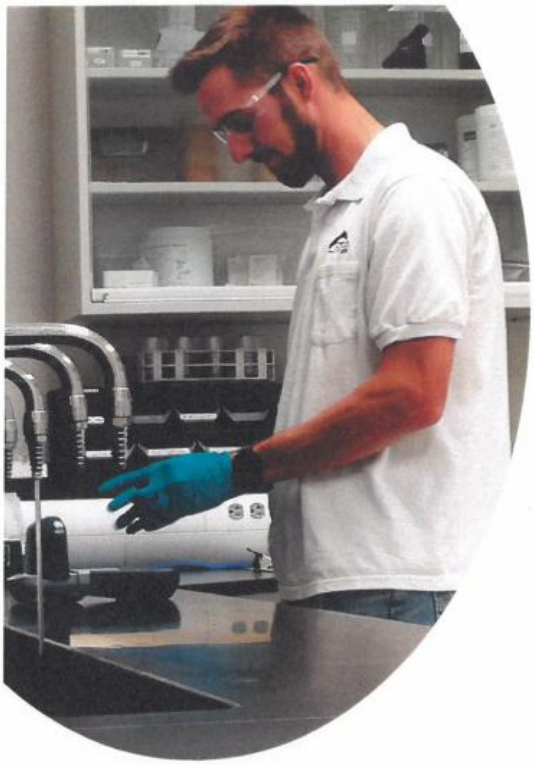
Please contact us to learn more about what you can do to help protect your drinking water sources, any questions about the Drinking Water Consumer Confidence Report, to learn more about our water system, or to attend scheduled public meetings. We want you, our valued customers, to be informed about the services we provide and the quality water we deliver to you every day.

Questions or Comments

Please contact us at 720-733-6000 with any questions about the Drinking Water Confidence Rule or for public participation opportunities affecting water quality.

Report a water emergency: 720-733-6000 from 8 a.m. to 5 p.m. or 303-663-6100 all other times
All issues concerning water quality: waterquality @crgov.com or visit our website at CRgov.com/waterquality

Castle Rock Water Commission
4th Wednesday of each month at 6 p.m.
These meetings are held at Castle Rock Water, Operations & Maintenance Building #183
175 Kellogg Ct., Castle Rock, CO 80109



General Information About Drinking Water

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. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Water Hotline (1-800-426-4791) or by visiting http://water.epa.gov/drink/contaminants.

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 from their health care providers about drinking water.

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 other microbiological contaminants call the EPA Safe Drinking Water Hotline at 1-800-426-4791.

EPA Hotline: More information concerning contaminants and potential health effects can be obtained by visiting http://water.epa.gov/drink/contaminant or by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases radioactive materials, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial contaminants: viruses and bacteria that may come from sewage treatment plants, septic systems, agriculture livestock operations, and wildlife.

Inorganic contaminants: salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides: may come from a variety of sources, such as agriculture, urban stormwater runoff and residential uses.

Radioactive contaminants: can be naturally occuring or be the result of oil and gas production and mining activities.

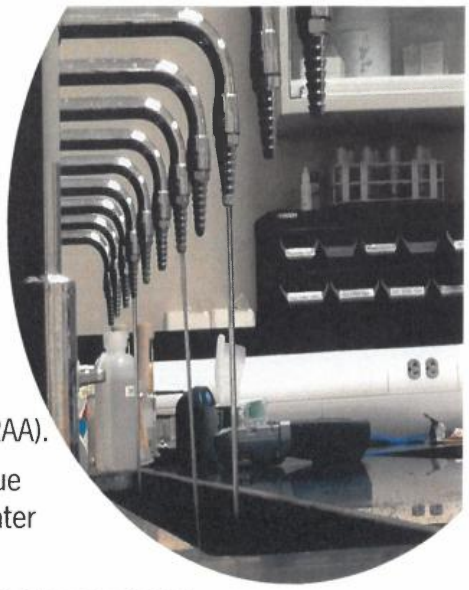
Organic chemical contaminants: including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also may come from gas stations, urban stormwater runoff, and septic systems.

Violations, Significant Deficiencies, Backflows/Cross Connection and Formal Enforcement Action

THERE WERE NO SIGNIFICANT VIOLATIONS, DEFICIENCES OR FORMAL ENFORCEMENT ACTION FOR 2016.

Note: If any violation relates to failing to install adequate filtration or disinfection equiment or processes, or have had a failure of such equipment or processes, then the water may be inadequately treated. Inadequately treated water may contain disease-causing organisms. These organisms included bacteria, viruses, and parasites, which can cause symptoms, such as nausea, cramps, diarrhea, and associated headaches.

Terms and Abbreviations



The following definitions will help you understand the terms and abbreviations used in this report.

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

Average (x-bar): Typical value.

Compliance Value (no abbreviation): Single or calculated value used to determine if regulatory contaminant level (e.g. MCL) is met. Examples of calculated values are the 90th Percentile, Running Annual Average (RAA) and Locational Running Annual Average (LRAA).

Formal Enforcement Action (no abbreviation): Escalated action taken by the State (due to the risk to public health, or number or severity of violations) to bring a non-compliant water system back into compliance.

Gross Alpha (no abbreviation): A measure of radioactivity is the gross alpha particle activity compliance value. It includes a measure of radium-226, but excludes radon 222 and uranium.

Health-Based: A violation of either a MCL or TT.

Level 1 Assessment: A study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in a water system.

Level 2 Assessment: A very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in a water system on multiple occasions.

Maximum Contaminant Level (MCL): The highest level of a contaminant allowed in drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

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.

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.

Nephelometric Turbidity Unit (NTU): Measure of the clarity or cloudiness of water. Turbidity in excess of 5 NTU is just noticeable to the typical person.

Non-Health-Based: A violation that is not a MCL or TT.

Not Applicable (N/A): Does not apply or not available.

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

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

Picocuries per liter (pCi/L): Measure of the radioactivity in water.

Range (R): Lowest value to the highest value.

Sample Size (n): Number or count of values (i.e. number of water samples collected).

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

Variance and Exemptions (V/E): Department permission not to meet a MCL or a treatment technique under certain conditions.

Violation (no abbreviation): Failure to meet a Colorado Primary Drinking Water Regulation.

Detected Contaminants in Treated Water

Castle Rock Water routinely monitors for contaminants in your drinking water according to Federal and State laws. The following table(s) show all detections found in the period of January 1 to December 31, 2016, unless otherwise noted. The State of Colorado requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. Therefore, some of our data, though representative, may be more than one year old. NOTE: Only detected contaminants sampled within the last five years appear in this report.

There were no violations, significant defienciescies or formal enforcement actions. See page 4 of this report.

Disinfectants Sampled in the Distribution System

TT Requirement: At least 95% of samples per period (month or quarter) must be at least 0.2 ppm OR if sample size is less than 40 no more than 1 sample is below 0.2 ppm

Disinfectant Name (unit of measure)	Time Period	Results	Number of Samples Below Level	Sample Size	TT Violation	MRDL
Chloramine	December 2016	Lowest period percentage of samples meeting TT requirement: 100%	0	70	No	4.0 ppm

Disinfectants Sampled at the Entry Point to the Distribution System

Disintectant Name (unit of measure)	Year	Number of Samples Above or Below Level	Sample Size	TT / MRDL Requirement	TT / MRDL Violation	Typical Sources
Chlorine / Chloramine	2016	0	2,168	TT = No more than 4 hours with a sample below 0.28 MG/L	No	Water additive used to control microbes

Disinfection Byproducts Sampled in the Distribution System

Contaminant Name (unit of measure)	Year	Average	Range Low - High	Sample Size	MCL	MCLG	MCL Violation	Typical Source
Total Trihalomethanes (TTHM) (ppb)	2016	2.36	0 to 12.9	32	80	N/A	No	Byproduct of drinking water disinfection
Total Haloacetic Acids (HAA5) (ppb)	2016	0.31	0 to 5	32	60	N/A	No	Byproduct of drinking water disinfection

Summary of Turbidity Sampled at the Entry Point to the Distribution System

Contaminant Name	Sample Date	Level Found	TT Requirement	TT Violation	Typical Sources
Turbidity	December 2016	Highest single measurement: 0.01NTU	Maximum 0.5 NTU for any single measurement	No	Soil runoff
Turbidity	December 2016	Lowest monthly percentage of samples meeting TT requirement for our technology: 100%	In any month, at least 95% of samples must be less than 0.1 NTU	No	Soil runoff

Secondary Contaminants

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.

Contaminant Name (unit of measure)	Year	Average	Range Low - High	Sample Size	Secondary Standard
Sodium (ppm)	2016	29.5	24 to 35	2	N/A

Radionuclides Sampled at the Entry Point to the Distribution System

Contaminant Name (unit of measure)	Year	Average	Range Low - High	Sample Size	MCL	MCLG	MCL Violation	Typical Source
Gross Alpha (pCi/L)	2016	3	3 to 3	1	15	0	No	Erosion of natural deposits
Combined Radium (pCi/L)	2016	1.4	1.4 to 1.4	1	5	0	No	Erosion of natural deposits

Inorganic Contaminants Sampled at the Entry Point to the Distribution System

Contaminant Name (unit of measure)	Year	Average	Range Low - High	Sample Size	MCL	MCLG	MCL Violation	Typical Source
Barium (ppm)	2016	0.16	0.13 to 0.18	2	2	2	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Fluoride* (ppm)	2016	0.84	0.81 to 0.86	2	4	4	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (ppm)	2016	0.09	0 to 0.26	5	10	10	No	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Nitrate-Nitrite (ppm)	2016	0.26	0.26 to 0.26	1	10	10	No	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits

*Note: Unlike some water providers, Castle Rock Water does not add flouride to our water.

Unregulated Contaminants***

EPA has implemented the Unregulated Contaminant Monitoring Rule (UCMR) to collect data for contaminants that are suspected to be present in drinking water and do not have health-based standards set under the Safe Drinking Water Act. EPA uses the results of UCMR monitoring to learn about the occurrence of unregulated contaminants in drinking water and to decide whether or not these contaminants will be regulated in the future. We performed monitoring and reported the analytical results of the monitoring to EPA in accordance with its Third Unregulated Contaminant Monitoring Rule (UCMR3). Once EPA reviews the submitted results, the results are made available in the EPA's National Contaminant Occurrence Database (NCOD) (http://www.epa.gov/dwucmr/national-contaminant-occurrence-database-ncod) Consumers can review UCMR results by accessing the NCOD.

The Unregulated Contaminant Monitoring Rule 3 (UCMR-3) sampling was completed in 2015, and no official sampling was required in 2016. However, once the UCMR-3 study was complete, Castle Rock Water decided to further investigate the findings of the Hexavalent Chromium results. The table below shows sampling events conducted from finished drinking water at the Plum Creek Water Purification Facility from late 2016 to early 2017 along with an explanation of each event. This sampling will continue quarterly to monitor these levels over time.

Additional Hexavalent Chromium Testing Results

Sample Point	Date Sampled	Hexavalent Chromium (ppb)	Notes
PCWPF Finished	11/21/2016	0.96	This sampling was conducted after the UCMR-3 study was completed as a means of better understanding where the Hexavalent Chromium levels from the UCMR-3 tests were coming from.
PCWPF Finished	2/2/2017	0.13	Adjustments were made to our treatment process, and the treatment plant finished drinking water was again tested.
PCWPF Finished	5/9/2017	0.11	

***More information about the contaminants that were included in UCMR3 monitoring can be found at:
http://www.drinktap.org/water-info/whats-in-my-water/unregulated-contaminant-monitoring-rule.aspx.
Learn more about the EPA UCMR at:
http://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule
Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/drink/contact.cfm

Detected Contaminants in Raw Source Water

Raw water is any water found in the environment that has not been treated. This means that any minerals, ions, particles or living organisms have not yet been removed. Raw water includes rainwater, snow melt, ground water, and water from bodies like lakes and rivers. Evaluation of contaminants in this water helps Castle Rock Water to ensure the proper types of treatment are put in place for our drinking water.

Cryptosporidium and Raw Source Water E. coli

Contaminant Name	Year	Number of Positives	Sample Size	Typical Sources
E. coli	2016	5	12	Surface water