



Water Quality Report

2016

CITY OF LOVELAND, COLORADO

The City of Loveland is proud to report to customers that the water provided to the community meets or exceeds established state and federal water quality standards.

This is the annual report on the quality of drinking water provided by the City of Loveland between January 1 and December 31, 2016. The report is designed to inform you about the quality of drinking water and services delivered every day. It contains information on the source of Loveland's water, its constituents, and if detected, the usual sources of contaminants. If you have any questions, call the telephone numbers provided in this report. If you know customers that do not have a copy of this report and do not have access to the internet, please share this report with them. All Colorado public water systems have a Public Water System Identification Number (PWSID). Loveland's PWSID number is CO0135485. This report is also available at the City of Loveland website, www.cityofloveland.org/WaterQuality.

All citizens are encouraged to participate in decisions affecting Loveland's drinking water. Meetings that deal with decisions about drinking water are announced on the city website. The Loveland Utilities Commission (LUC), composed of citizens appointed by the City Council, meets the third Wednesday of each month at 4 p.m. in the Service Center located at 200 North Wilson. Meetings are open to the public. Find out more about the City of Loveland Department of Water and Power at www.cityofloveland.org/lwp. For further information about drinking water, see the United States Environmental

Protection Agency's (EPA) Ground and Drinking Water home page at www.epa.gov/safewater/. The Colorado Department of Public Health and Environment Primary Drinking Water Regulations may be obtained at www.colorado.gov/cdphe.

Water Source/Treatment Process

The City of Loveland's raw water is a blend, supplied by surface water from the Colorado River and Big Thompson River basins that include the Colorado-Big Thompson and Windy Gap projects. The intakes are located at the Big Thompson River and at the Charles Hansen Feeder Canal. Please see the map on the following page, illustrating the watersheds. Improvements made during 2016 have expanded and improved the treatment capacity of the Water Treatment Plant (WTP) to a maximum day production of 38 million gallons per day (MGD). The city is now better able to meet increased service demands and comply with EPA and state mandated water quality and treatment regulations. Please see Water Treatment Process illustration on page 3.

Raw water quality may vary during the year. It can be affected by spring runoff, rainstorms, accidental spills and drought. Taste and odor causing algae exists seasonally in Loveland's raw water supplies. As necessary, through the years, the City has applied a variety of algacides to the Green Ridge Glade Reservoir. These algacides are specifically designed for controlling algae and the taste and odor compounds they create. These algacides do not get through the treatment processes

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Map provided by the Big Thompson Watershed Forum

Location of Watersheds Legend

Colorado-Big Thompson Project

- Canal
- Pipeline/Conduit
- Tunnel
- Dam
- Pump Plant

City of Loveland

- Water Treatment Plant
- Green Ridge Glade Reservoir

Watersheds

- 3 Lakes Watershed
- Upper Big Thompson Watershed
- Lower Big Thompson Watershed

into the distribution system. The City is in the process of evaluating various ways to reduce algal growth in the future. Powdered activated carbon is used in the treatment process to absorb taste and odor causing compounds. Raw water algae treatment and a well maintained water treatment process can protect consumers against most unwanted taste and odor occurrences during periods of excessive algal growth. Although water quality is not compromised during periods of algae-related taste and odor events, eliminating such events is of the utmost importance. Monitoring and analysis is conducted on the reservoir, the Big Thompson River, and other water sources (up to and including the western most point in the Colorado/Big Thompson water system) to better monitor the city's source water.

Source Water Assessment Plan (SWAP)

The Colorado Department of Public Health and Environment (CDPHE) has provided the City with a Source Water Assessment report for our water supply. Potential sources of contamination in our source water come from: EPA hazardous waste generators, chemical inventory/storage sites, toxic release inventory sites, permitted wastewater discharge sites, aboveground, underground and leaking storage tank sites, solid waste sites, existing/abandoned mine sites, commercial and industrial transportation, low intensity residential and urban recreational grasses, assorted crops and forests, septic systems, oil/gas wells, and road miles. The Source Water Assessment Report provides a screening-level evaluation of potential contamination that

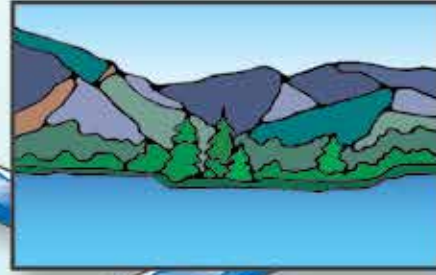
The Water Treatment Process

Loveland's water comes from the watersheds shown in the map on page 2. The water is drawn off the Big Thompson River and from Green Ridge Glade Reservoir.



Big Thompson River

Green Ridge Glade Reservoir



Rapid Mix

The treatment process begins as alum and a coagulant aid are added to the water to chemically combine with suspended particles. This forms tiny sticky particles called "floc" that attract soil, bacteria, algae, microorganisms and other unwanted particulates or compounds.



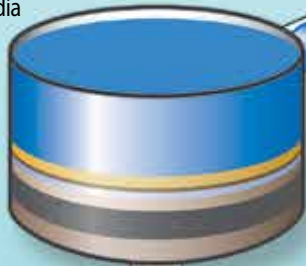
Flocculation

The suspended particles begin to form larger collections of solids. The combined weight of the unwanted particulates and floc cause the suspended particles to sink.



Filtration

Clarified water is filtered through a mixed media filter that consists of sand, gravel and anthracite coal. This filter removes even smaller particles with the help of a filter aid polymer.



Sedimentation

Tube settlers are used to speed the settling of floc to the bottom of the tank. The floc forms sludge that is removed to the sludge ponds.

Solids drawoff



Clearwell

State and Federal regulations require that a disinfectant be added to the water. Loveland uses chlorine. Fluoride is also added at this time. Soda ash is added to make the water less corrosive to home plumbing systems.

Distribution System

Water is stored in water tanks to maintain an adequate supply for peak demand. It is distributed through underground pipes to homes and businesses in the community.



Loveland takes a proactive approach to protecting and improving the Big Thompson Watershed by participating in the Big Thompson Watershed Forum.

could occur. This does not mean that the contamination has or will occur. None of these potential sources are considered a high susceptibility rating and over 85% of these potential sources have a low to moderately low susceptibility rating.

If you have any questions pertaining to the SWAP program you may contact the Source Water Assessment Program by calling (303) 692-3592 or you may obtain a copy of the report by visiting www.colorado.gov/pacific/cdpbe/swap-assessment-phase.

Big Thompson Watershed

Loveland takes a proactive approach to protecting and improving the Big Thompson Watershed by participating in the Big Thompson Watershed Forum (BTWF). A watershed is the land area where water from rain or snow drains to a particular stream, lake, or river. The quality of water within a watershed is affected by activities on the water and surrounding land. The BTWF is a voluntary association of water utilities, interested citizens, and government agencies that have gathered together with the common goal of achieving an effective and coordinated approach to watershed management. Water quality issues are addressed by the BTWF as integral and indispensable aspects of watershed management, especially during forest fire season.

The City of Loveland also participates in the Big Thompson River Biosurvey Project which assesses the general bio (life) health of the river using fish and benthic (bottom dweller) organisms. This project enables the City to evaluate and compare Big Thompson River data seasonally and yearly and to identify trends.

The data from these programs contains valuable information about the quality of the source water, and they help bring about improved protection of Loveland's raw drinking water sources. For more information about the BTWF, please call (970) 613-6160 or visit www.btwatershed.org/.

Volatile and Synthetic Organic Compounds

Many contaminants are tested or analyzed according to Compliance Cycles set by the CDPHE. The City of Loveland is required to test for VOCs annually. The most recent tests for VOCs occurred in 2016 and no compounds were detected at or above reporting limits for regulated organic chemicals. These chemicals are reported in parts per billion (ppb). The entire list may be found at www.epa.gov/safewater/mcl.html#organic.

Lead and Copper Regulation

The City of Loveland samples for lead and copper levels in homes that meet certain sampling criteria. These criteria have been specified by the EPA for this regulation. The results of this testing are used for regulatory compliance and to maintain proper corrosion control within the distribution system. Starting in 2017, Water Quality Lab staff will be required to collect samples every year to comply with the Lead and Copper regulation. These samples are taken by the customers from water taps within their homes. The most recent required sampling period occurred in 2014. Compliance is based on the amounts detected at the 90th percentile level. During the last sampling period in 2014, the results for lead and copper at the 90th percentile level were as follows: 2.6 parts per billion (ppb) for lead and 0.15 parts per million (ppm) for copper (please see the table on page 7). The action levels are 15 ppb for lead and 1.3 ppm for copper. Of the 31 sample sites, no sampling sites exceeded the action levels for lead or copper. The sampling method takes into account any lead or copper leaching that could occur from the piping and plumbing fixtures in the home. The City of Loveland will perform the next round of lead and copper sampling in 2017 during the months of June through September.

Unregulated Contaminants

Unregulated contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and to decide whether future regulation is warranted. The Unregulated Contaminant Monitoring Rule (UCMR) list is available at www.epa.gov/dwucmr. If you have an interest in the results of this testing as it applies to the City of Loveland, please contact those listed in this report under the “More Information” section.

Cryptosporidium and Giardia

Customers often express concern about *Giardia* and *Cryptosporidium* (crypto) in their drinking water. Crypto and *Giardia* are microscopic organisms that, when ingested, can result in diarrhea, cramps, fever, and other gastrointestinal symptoms. Most people easily recover from these symptoms, but they can cause more serious illness in people with compromised immune systems. The organisms are usually present in all of Colorado’s raw surface water and come from animal wastes in the watershed. The Water Quality Laboratory conducts an annual test for these organisms as part of the required annual microscopic particulate analysis (MPA). The removal efficiencies, expressed as a logarithmic function (through the water treatment plant), provide the basis for this analysis. The microorganism removal efficiency found during the 2016 MPA was 99.99% with a Log reduction of 4.8. Monitoring of crypto and *Giardia* in raw water has been required as part of the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). The purpose of the rule is to require additional treatment based on levels of crypto detected in the raw water. The City of Loveland’s raw water is ranked in the highest water quality criterion for lowest levels of crypto, indicating no additional treatment barriers are required. As part of the LT2ESWTR, raw water monitoring for crypto was expanded, starting in 2015, to ensure levels remain low. The City of Loveland’s raw water supplies were tested for both *Giardia* and crypto in 2016. According to the MPA,


conducted in 2016, neither *Giardia* nor *Cryptosporidium* were detected in the raw water or the treated finished water.

Additional Health Information

All drinking water, including bottled water, may reasonably be expected to contain 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 public in general. 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 from contaminants. 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 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.

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

- *Microbial contaminants* such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants* such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides* that may come from a variety of sources, such as



All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants.

agriculture, urban storm water runoff, and residential uses.

- *Organic chemical contaminants* including synthetic and volatile organic compounds, which are by-products of industrial processes and petroleum production. These contaminants may also come from gas stations, urban storm water runoff, and septic systems.
- *Radioactive contaminants* that can be naturally occurring or be the result of oil and gas production and mining activities.

Bottled Water

In order to ensure that tap water meets water quality standards, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Water from your tap in Loveland meets or exceeds all state and federal water quality standards. In some instances, bottled water comes from a public water system similar to Loveland's and in some cases bottled water comes from sources that are not nearly as high in quality as the City of Loveland's tap water. Additionally, Loveland's water is much less expensive, costing a base rate of \$12.40 per month plus only \$2.53 per 1,000 gallons for a single family residence (2016 rates). This means that you can fill your water bottle with some of the highest quality water available, your tap water, for less than 1 cent per bottle.

Nitrate

Nitrate in drinking water at levels above the limit of 10 ppm is a health risk for infants less than six months of age. High nitrate levels in drinking water can result in decreased oxygen carrying capacity in the hemoglobin of babies (blue baby syndrome). Nitrate levels may rise quickly for

Water Quality Table

In order to ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems.

The table on the next page shows the results of the 2016 water quality analyses. The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the amount detected, the usual sources of such contamination, footnotes explaining the findings, and a key to units of measurement. Definitions of MCL and MCLG are important. The table contains many terms and abbreviations that may be unfamiliar. To help you better understand these terms, the definitions are included with the 2016 Water Quality Table.

short periods of time because of rainfall or agricultural activity. If you are caring for an infant and detected nitrate levels are above 5 ppm, you should ask advice from your health care provider. The level of nitrate, in the City of Loveland's treated water in 2016 was 0.2 ppm.

Lead

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels in a particular home may be higher than in other homes in the community as a result of plumbing materials used. If you are concerned about elevated lead levels in the water from your tap, allow the water to run for 30 seconds to 2 minutes to clear the water that was standing in the water pipes in your home. The water from the distribution system typically does not contain detectable levels of lead. Additional information is available from the EPA Safe Drinking Water Hotline at 1-800-426-4791.

Water from your tap in Loveland meets or exceeds all state and federal water quality standards.

2016 Water Quality Table

The state requires the City 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. Some of Loveland's data, though representative, may be more than one year old.

Contaminant	Date	Unit Tested	MCL	MCLG	Detected	Range Level	Major Sources	Violation
Lead	2014 Triennial	ppb	15(AL)	0	2.6 ^[7]	<2.00 - 3.50 ^[6]	Corrosion of household plumbing Triennial systems, erosion of natural deposits	No
Copper	2014 Triennial	ppm	1.3(AL)	1.3	0.15 ^[7]	0.0096 - 0.2295 ^[6]	Corrosion of household plumbing systems, erosion of natural deposits, leaching from wood preservatives	No
Barium	8/8/16	ppm	2.00	2.00	0.011	NA	Discharge of drilling wastes, discharge from metal refineries, erosion of natural deposits	No
Fluoride	8/4/16	ppm	4.00	4.00	0.61 ^[1]	NA	Erosion of natural deposits, water additive that promotes strong teeth, discharge from fertilizer, and aluminum factories	No

The following inorganic contaminants were tested for but not detected in 2016: arsenic, beryllium, cadmium, chromium, mercury, nickel, thallium, antimony and selenium.

Total Coliform ^[2]	Weekly	Presence/Absence	<5% ^[2]	0	1.20	0 - 1.20% ^[6]	Naturally present in the environment	No
Total Organic Carbon [TOC]	RAA	Percent Removal	TT	NA	1.42 ^[5]	1.26 - 1.63 ^[6]	Naturally present in the environment	No
Turbidity	Continuous	NTU	TT	NA	Five readings over 0.3 ^[3]	<0.30 ^[3]	Soil runoff; human activities	No
Total Trihalo-methanes (TTHM)	RAA ^[4]	ppb	80	0	34.05 ^[4]	23.1 - 53.2 ^[6]	Disinfection by-product	No
Haloacetic Acids (HAA)	RAA ^[4]	ppb	60	NA	25.87 ^[4]	19.20 - 32.26 ^[6]	Disinfection by-product	No
Chlorine	In distribution system	ppm	MRDL=4	MRDLG=4	1.39 ^[6]	0.26 - 1.39	Water additive used to control microbes	No
Chlorine Dioxide (ClO ₂)	Daily when ClO ₂ on	ppb	MRDL=800	MRDLG=800	0.012 ^[8]	ND - 0.15	Pre-oxidant used to reduce organic material	No
Chlorite	3 samples per month	ppb	1000	800	0.31 ^[8]	0.20 - 0.45	Disinfection by-product	No

Water Quality Table Footnotes

- [1] The average fluoride level from daily in-house tests for 2016 was 0.69 ppm. The average fluoride level from monthly analysis performed by the CDPHE Laboratory Services was 0.69 ppm.
- [2] Coliform bacteria cannot be present in more than 5% of monthly samples. The range level percentages are based on 80 samples per month. The number of Coliform samples is proportionate to the population served.
- [3] Five of the readings, of the turbidity samples, performed each month in 2016, were over the 0.3 NTU reporting limit for continuous turbidity measurements. The highest turbidity reading of 0.924 NTU did not exceed the reporting limit of 1.0 NTU for any single measurement.
- [4] Running Annual Average.
- [5] Running Annual Average of the removal ratio between raw water Total Organic Carbon (TOC) and the finished water TOC.
- [6] Range of in-house test results
- [7] 90th percentile
- [8] Annual Average

Key to Table

- AL = Action Level
- IDSE = Initial Distribution System Evaluation
- MCL = Maximum Contaminant Level sets the highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- MCLG = Maximum Contaminant Level Goal establishes 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.
- MRDL = Maximum Residual Disinfection Level is 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.
- MRDLG = Maximum Residual Disinfection Level Goal is 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.
- NTU = Nephelometric Turbidity Unit is a measure of particles in the water. At 5 NTU, particles are barely visible in a glass of water.
- ND = Non Detects occur when a laboratory analysis indicates that the constituent is not present.
- ppm = parts per million, or milligrams per liter (mg/l)
- ppb = parts per billion, or micrograms per liter (µg/l)
- RAA = Running Annual Average
- TT = Treatment Technique

More Information

For more information, please contact Ruth Hecker at (970) 962-2575. The Water Quality Lab staff welcomes your questions about Loveland's water quality. The City of Loveland purchases water from, and sells water to, other entities. The water utilities that Loveland purchased water from in 2016 include: Little Thompson Water District (LTWD) and Ft. Collins/Loveland Water District. The water purchased from these two utilities made

up approximately 2.5% of the total water produced and used by the City of Loveland. If you have any questions about water quality data from LTWD please call (970) 532-2096 or go to www.ltwd.org. Ft. Collins/Loveland Water District can be contacted at (970) 226-3104 or visit www.fclwd.com. Water quality data for communities throughout the US is available at <http://water.epa.gov/drink/local/> and go to Drinking Water Data and Reports.

The City of Loveland is committed to providing an equal opportunity for services, programs and activities and does not discriminate on the basis of disability, race, age, color, national origin, religion, sexual orientation or gender. For more information on non-discrimination or for translation assistance, please contact the City's Title VI Coordinator at TitleSix@cityofloveland.org or 970-962-2372. The City will make reasonable accommodations for citizens in accordance with the Americans with Disabilities Act (ADA). For more information on ADA or accommodations, please contact the City's ADA Coordinator at ADACoordinator@cityofloveland.org or 970-962-3319.

“La Ciudad de Loveland está comprometida a proporcionar igualdad de oportunidades para los servicios, programas y actividades y no discriminar en base a discapacidad, raza, edad, color, origen nacional, religión, orientación sexual o género. Para más información sobre la no discriminación o para asistencia en traducción, favor contacte al Coordinador Título VI de la Ciudad al TitleSix@cityofloveland.org o al 970-962-2372. La Ciudad realizará las acomodaciones razonables para los ciudadanos de acuerdo con la Ley de Discapacidades para americanos (ADA). Para más información sobre ADA o acomodaciones, favor contacte al Coordinador de ADA de la Ciudad en ADACoordinator@cityofloveland.org o al 970-962-3319”.