

2016 Annual Consumer Confidence Report

F. E. Warren AFB
PWS I.D. No: WY5680122

Is my water safe?

YES, our water meets all of Environmental Protection Agency's (EPA) health standards in accordance with Title 40, Code of Federal Regulation (CFR) Parts 141 and 142. In 2016, numerous tests were conducted for contaminants that may be found in drinking water. The 2016 Annual Consumer Confidence Report (CCR) for F. E. Warren AFB is supplemented by the attached 2016 City of Cheyenne Board of Public Utilities (BOPU) CCR. As shown in the City of Cheyenne BOPU CCR, Section 13, there were no violations of any standards in 2016. Included are details about where your water comes from, what it contains, and how it compares to standards set by federal regulatory agencies.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. These people should seek advice about drinking water from their health care providers. Immunocompromised 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 people, and infants, can be particularly at risk for infections. Guidelines from the EPA and Center for Disease Control (CDC) identifying the appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

Where does my water come from?

Your water comes from the Cheyenne BOPU water system and is a mixture of surface and ground water. We maintain the drinking water distribution system within the base boundaries but do not treat the water in any way. We have limited monitoring requirements to supplement the complete range of sampling already performed by the City of Cheyenne BOPU. The 2016 City of Cheyenne BOPU CCR is included with our report and provides information about the City of Cheyenne's monitoring, additional definitions and required educational information, and the source of our water.

Other Information

If you have questions, please contact Lt Col Michelle Ghee, 90th Missile Wing Bioenvironmental Engineering, at 773-3088 or Andy McKinley, 90th Missile Wing Water Quality Program Manager, at 773-4356.

Abbreviations and Terms Used in This Report

AL	Action Level
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mg/L	Number of milligrams of substance in one liter of water
µg/L	Number of micrograms of substance in one liter of water
ppm	Parts per million, or milligrams per liter (mg/L): One part per million corresponds to one minute in 2 years or one penny in \$10,000.
ppb	Parts per billion, or micrograms per liter (µg/L): One part per billion corresponds to one minute every 2,000 years or 1 penny in \$10,000,000.
ND	None detected
LRAA	Locational Running Annual Average
TTHM	Total Trihalomethanes
HAA5	Haloacetic Acids
TOC	Total Organic Carbon

Important Drinking Water Definitions

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements, which a water system must implement. An action level is different from a Maximum Contaminant Level (MCL), in that while an MCL is a legal limit of contaminant, an action level is a trigger for additional prevention or removal steps.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards for public water-supply systems.

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.

Water Quality Data

F. E. Warren AFB does not duplicate sampling conducted by BOPU. Table 1, *Inorganic Contaminants* and Table 2, *Other Sampled Contaminants* below list all of the drinking water contaminants that were collected and/or detected during the calendar year of this report. Regulatory contaminant sampling frequency is based on the likelihood of changes in concentration; therefore, not all contaminants are sampled for each year.

In July 2015, 20 lead and copper drinking water samples were collected at designated sites throughout the base. Compliance is measured for lead and copper by utilizing the 90th percentile. The 90th percentile means if you sampled 20 times and rank ordered the analysis results from the lowest to highest, the 90th percentile would be the 18th sample result. These results are required to be reported to the EPA and are listed below in Table 1. The 90th percentile was 0 (ppb) for lead and 0.56 (ppm) for copper. These values are significantly less than the action levels defined by the EPA for environmental levels of lead and copper in drinking water. Because our lead and copper sample results were in compliance, the EPA has placed F. E. Warren AFB on the Reduced Monitoring Program, which requires monitoring every three years. The next round of samples will occur in June 2018.

TABLE 1: Inorganic Contaminants

Contaminants	Violation Yes/No	MCLG	AL	90% Sample Result	Sample Date	# Samples Exceeding AL	90% Exceeds AL	Typical Sources
Lead-(ppb) Consumer Tap	No	0	15	0	July 2015	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Copper-(ppm) Consumer Tap	No	1.3	1.3	0.56	July 2015	0	No	Corrosion of household plumbing systems; erosion of natural deposits

Table 2 lists the results of the chlorine and bacteria sampling. The outcome for Total Coliform Bacteria resulted in a Non-Detect (ND), with chlorine ranging from 0.10 to 1.02 mg/L. All levels were under the MCL.

TABLE 2: Other Sampled Contaminants

Contaminants	Violation Yes/No	Levels Detected (mg/L)	MCLG	MCL	Sample Dates	Typical Sources/Comments
Chlorine (mg/L)	No	Min: 0.00 Max: 1.10 Avg: 0.48	4.0	4.0	Jan – Dec 2016	Water additive to control microbes.
Total Coliform Bacteria	No	Presence/Absence Testing ND	0	0	Jan – Dec 2016	Naturally Present in the Environment
TTHM (µg/L) Total Trihalomethanes (Sum of the 4 compounds: Chloroform, Bromoform, Bromodichloromethane, Dibromochloromethane)	No	<u>Bldg. 1152</u> Min: 30 Max: 54 Avg: 42 <u>Bldg. 665</u> Min: 30 Max: 56 Avg: 41.75	0	80	Jan – Dec 2016	By-product of drinking water chlorination.
HAA5 (µg/L) Haloacetic Acids (Sum of the 5 compounds: Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid, Monobromoacetic Acid, Dibromoacetic Acid)	No	<u>Bldg. 1152</u> Min: 25 Max: 41 Avg: 33 <u>Bldg. 665</u> Min: 3 Max: 27 Avg: 13.8	0	60	Jan – Dec 2016	By-product of drinking water chlorination.

Cheyenne Board of Public Utilities
2416 Snyder Ave.
Cheyenne Wyoming 82001



The City of Cheyenne Board of Public Utilities (BOPU) is proud to release the Consumer Confidence Report for Annual Drinking Water Quality, for calendar year 2016. If you have any questions about this report, call Laboratory Supervisor, Ron Kailey at 307.635.7693.

Consumer Confidence Report for
Annual Drinking Water Quality

Section 1. Findings: We report that the BOPU drinking water is safe and meets or exceeds federal and local requirements.

Section 2. About Our Water Supply: The BOPU receives both surface water and groundwater. Surface water is collected from the Douglas Creek Drainage, located in the Snowy Range Mountains, about 75 miles west of Cheyenne. The water is stored in Rob Roy Reservoir and transported to Granite and Crystal Reservoirs via two water delivery pipelines. Surface water is also collected from the Crow Creek Drainage, located in the Pole Mountain/Vedauwoo area, about 30 miles west of Cheyenne. Crow Creek water is collected and stored in North Crow Reservoir (North Crow Creek Drainage), in Granite and Crystal Reservoirs (Middle Crow Creek Drainage) and South Crow Reservoir (South Crow Creek Drainage). Water is delivered from these reservoirs to the R.L. Sherard water treatment plant by pipelines. The City owns and operates about 35 groundwater wells located west and northwest of Cheyenne. The wells pump from the Ogallala and White River Aquifers.

Cheyenne also collects surface water in the Little Snake River Drainage (LSRD). The LSRD is located about 110 miles west of Cheyenne on the western slope of the Continental Divide. This water is transported through a tunnel and stored in Hog Park Reservoir located on the eastern slope of the Divide. Water released from Hog Park Reservoir is traded for surface water from the Douglas Creek Drainage. As water is released from Hog Park Reservoir, Cheyenne is allowed to collect water from the Douglas Creek Drainage and store the water in Rob Roy Reservoir for use in the drinking water system. A Source Water Assessment and Protection (SWAP) report was completed in 2004. To view a copy of this report, call 307.637.6460.

Section 3. Monitoring: The BOPU's Water Treatment Division routinely monitors for potential contaminants in the drinking water according to Federal laws. The table in Section 13 shows the most recent results of our monitoring (through 12/31/16), completed in accordance with US EPA Drinking Water Regulations.

Section 4. Definitions: In this table you will find many terms and abbreviations which might not be familiar. To help you better understand these terms, we've provided the following definitions:

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

Maximum Contaminant Level (MCL) - The "Maximum Allowed" is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

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

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

Parts per billion (ppb) or microgram per Liter ($\mu\text{g/L}$) - one part per billion corresponds to one minute in 2,000 years, or one penny in \$10,000,000.

Parts per million (ppm) or milligram per Liter (mg/L) - one part per million corresponds to one minute in two years, or one penny in \$10,000.

Picocurie per Liter (pCi/L) - picocurie per Liter is a measure of radioactivity.

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

Section 5. No Violations: A detect but no violation: As you can see by the table, our system had no violations. We're proud that the drinking water provided by the BOPU water system meets or exceeds all Federal requirements. We have learned through monitoring and testing that some constituents have been detected. The EPA has determined that Cheyenne's water IS SAFE at these levels.

Section 6. The sources of drinking water (both tap water & bottled water) include rivers, streams, lakes, reservoirs, ponds, 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, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include: (A) *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife. (B) *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. (C) *Pesticides and herbicides*, which may come from a variety of sources such as agricultural, urban storm water runoff, and residential uses. (D) *Organic chemical contaminants*, including synthetic and volatile organic chemicals which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems. (E) *Radioactive contaminants*, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

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 Safe Drinking Water Hotline at (800-426-4791).

40 CFR, Part 141, §141.153(h)(1)(i),(ii)(A),(B),(C),(D),(E),(iii) and (iv).

Section 7. Maximum Contaminant Level (MCL) values are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

(Section (10.) reprinted with permission from the National Rural Water Assoc)

Section 8. 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 from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Section 9. 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. The BOPU 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>.

Section 10. In our continuing effort to provide a safe and dependable water supply it is necessary to make improvements to Cheyenne's water system. System improvements are paid for through water rates charged to the users.

Section 11. Questions: Questions about this report or concerning your water utility should be directed to *Brad Brooks, Director @ 307.637.6460 or Ron Kailey, Laboratory Supervisor @ 307.635.7693*. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled Board meetings held at 2416 Snyder Avenue, at 3:00 p.m., on the third Monday of each month.

Section 12. Goal: Our goal is to provide the community of Cheyenne with safe, quality drinking water that meets federal and local requirements and provides the utmost benefit for the community's investment.

We encourage all of our water customers to learn about Cheyenne's water system and the Safe Drinking Water Act requirements and to help us protect our valuable water sources, which are the heart of our community, our way of life and vital to our future.

Attention Property Owners and Managers:

Please share this report with your tenants. Thank you.

Section 13. Table Referencing Contaminant Detects and/or Violations

R - Round Top Storage Tank G.W.		TEST RESULTS				S - Sherard Plant
Contaminant	Violation Yes/No	Level Detected	Unit Measurement	MCLG	MCL	Likely Source of Contamination/Comments
Total Coliform Bacteria Positive sample on 1/14/16	No	Presence/Absence Testing All follow up tests were negative		0	Presence of coliform bacteria in >5% of monthly samples	Naturally present in the environment. 720 samples were required for Regulatory Compliance. Of that number, only 1 sample resulted in a Total Coliform positive result. Upon retesting, that positive indicated a negative result.
Turbidity	No	0.11 NTU 100%		N/A	TT 95% <0.3	Soil runoff. Maximum allowable filtered water turbidity is 0.3 NTU in 95% of all samples. Turbidity values are recorded every 4 hours from all filters in operation and values reported monthly to the EPA.
Lead – 90th percentile, based on 30 samples collected (27th highest value) 8/2014	No	6.2	ppb	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits. This sample was taken from a private residence on the system.
Copper – 90th Percentile, based on 30 samples collected (27th highest value) 8/2014	No	0.4	ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives. This sample was taken from a private residence on the system.
Fluoride	No	R: 0.7 S: 0.7	ppm	4	4	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories.
Nitrate (as Nitrogen)	No	R: 0.6 S: 0.5	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
TTHM Total Trihalomethanes (Sum of the 4 compounds: Chloroform, Bromoform, Bromodichloromethane, Dibromochloromethane)	No	R Min: 23.8 Max 42.2 Avg: 33.0 S Min: 25.6 Max: 61.5 Avg: 43.5	ppb	0	80	By-product of drinking water chlorination
HAA5 Haloacetic Acids (Sum of the 5 compounds: Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid, Monobromoacetic Acid, Dibromoacetic Acid)	No	R Min: 25 Max: 31 Avg: 28 S Min: 19.2 Max: 41 Avg: 30.1	ppb	0	60	By-product of drinking water chlorination

Contaminant	Violation Yes/No	Level Detected	Unit Measurement	MCLG	MCL	Likely Source of Contamination/Comments
Radionuclides						
Gross Alpha	No	R:4.3±1.4 S:3.6±1.3	pCi/L	None	15	Gross Alpha – Erosion of natural deposits
Radium 226	No	R:0.23±0.19 S: 0.07±0.8	pCi/L	None	15	Radium 226 and 228– Erosion of natural deposits
Radium 228	No	R: 2.2±0.5 S: 1.2±0.4	pCi/L	None	15	
Uranium	No	R: <1.0 S: <1.0	ppb	None	30	Uranium – Naturally present in the environment.
TOC	No	TOC Raw Max: 6.3 TOC Finished Min: 2.7	ppm	N/A	TT	Total Organic Carbon is the measure of organic matter associated with the water source.
Barium	No	R: 0.04 S: 0.04	ppm	2	2	Discharge of drilling wastes; erosion of natural deposits.
Sulfate	No	R: 20 S: 20	ppm	None	250	Used as a coagulation compound in the treatment of drinking-water. Water additive – Ferric Sulfate.

Additionally, the BOPU tested the drinking water for the following contaminants, and found no detects:

INORGANIC CONTAMINANTS

Arsenic, Antimony, Beryllium, Bromate, Cadmium, Chromium, Cyanide, Mercury, Nickel, Nitrite, Selenium, Thallium

SYNTHETIC ORGANIC CONTAMINANTS INCLUDING PESTICIDES AND HERBICIDES

2,4-D, 2,3,5-TP (Silvex), Alachlor, Atrazine, Benzo(a)pyrene, Carbofuran, Chlordane, Dalapon, Di(2-ethylhexyl)adipate, Endrin, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Oxamyl (Vydate), Pentachlorophenol, Simazine, Toxaphene

VOLATILE ORGANIC CONTAMINANTS

Benzene, Carbon Tetrachloride, Chlorobenzene, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Ethylbenzene, Styrene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, Toluene, Vinyl Chloride, Xylene, MTBE, Trichloroethylene

UNREGULATED CONTAMINANTS

Acetochlor, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 4,4-DDE, DCP Acid Metabolites, EPTC, Molinate, Nitrobenzene, Terbacil, Perchlorate