Annual Drinking Water Quality Report
Columbus, North Dakota
2017

We're very pleased to provide you with this year's ***Annual Drinking Water Quality Report***. We want to keep you informed about the excellent water and services we have delivered to you over the past year. Our goal is to provide you with a safe and dependable supply of drinking water. The City of Columbus's water source ground water from the Ray Aquifer, purchased from the R & T Water Supply Commerce Authority. The water is treated using the lime softening process. Chlorine is added for disinfection. Fluoride and phosphate for corrosion control are also added. R&T also receives, and blends treated water from the Williston Water Treatment Plan. The City of Williston's test results are included in this report.

The R&T Water Association, in cooperation with the North Dakota Department of Health, has completed the delineation and contaminant/land use inventory elements of the North Dakota Source Water Protection Program. Based on the information from these elements, the North Dakota Department of Health has determined that our source water is non-susceptible to potential contaminants.

R&T Water Association is involved in the Wellhead protection program. Copies of the Wellhead Protection Program plan and other relevant information regarding this program is available from the R&T facility.

If you have any questions about this report or concerning your water utility, please contact City Hall at 701-939-5243. 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 meetings held on the first Monday of every month at 7:00 pm central time at City Hall. If you are aware of non-English speaking individuals who need help with the appropriate language translation, please call our office at the number listed above.

The City of Columbus would appreciate it if large volume water customers would please post copies of the ***Annual Drinking Water Quality Report*** in conspicuous locations or distribute them to tenants, residents, patients, students, and/or employees, so individuals who consume the water, but do not receive a water bill, can learn about our water system.

The City of Columbus routinely monitors for contaminants in your drinking water according to Federal and State laws. The following table shows the results of our monitoring for the period of January 1st to December 31st, 2016**.** As authorized and approved by EPA, the state has reduced monitoring requirements for certain contaminants to less often than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of our data [e.g., for inorganic contaminants], though representative, is more than one year old.

The sources of drinking water (both tap 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 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:

Microbial contaminants**,** such as viruses and bacteria, which 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, industrial or domestic wastewater discharges, oil production, mining or farming.

Pesticides and herbicides**,** which come from a variety of sources such as agriculture, urban storm water runoff and residential uses.

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.

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, the Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems.

The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

In the following table you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Not applicable (NA), No Detect (ND)

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

Parts per billion (ppb) or Micrograms per liter (μg/l) - one part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

Picocuries per liter (pCi/l) –Pico curies per liter is a measure of the radioactivity in water.

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

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

Maximum Contaminant Level - The "Maximum Allowed" (MCL) 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 - The "Goal" (MCLG) 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.

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.

2017 TEST RESULTS FOR THE CITY OF Columbus, R&T WATER SUPPLY AND THE CITY OF WILLISTON

Contaminant	MCLG	MCL	Level Detected	Units	Range	Date (year)	Violation Yes/No Other Info	Likely Source of Contamination
Lead/Copper -Columbus								
Copper	1.3	AL=1.3	0.109 90th % Value	ppm	NA	2017	0 Sites Exceeded AL	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead**	0	AL=15	6.8 90th % Value	ppb	NA	2017	0 Sites Exceeded AL	Corrosion of household plumbing systems, erosion of natural deposits
Stage 2 Disinfection By-Products - Columbus								
HAA5	NA	60	4	ppb	NA	2017	No	By-product of drinking water chlorination
TTHM	NA	80	4	ppb	NA	2017	No	By-product of drinking water chlorination
Disinfectants -Columbus								
Chloramine	MRDLG =4	MRDL =4.0	2.2	ppm	0 to 2.1	2017	No	Water additive used to control microbes
Microbiological Contaminants -Williston								
Turbidity*	NA	TT	0.17	NTU	N/A	2017	100% of samples met turbidity limits	Soil runoff
Inorganic Contaminants-Williston								
BARIUM	2	2	0.0143	Ppm	NA	2016	No	Erosion of natural deposits, discharge of drilling wastes
CHROMIUM	100	100	1.17	Ppb	NA	2016	No	Discharge from steel and pulp mills: erosion of natural deposits
FLUORIDE	4	4	0.81	Ppm	NA	2016	No	Erosion of natural deposits, water additive which promotes strong teeth
Nitrate-Nitrite (as Nitrogen)	10	10	0.15	ppm	NA	2017	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
SELENIUM	50	50	1.44	ppb	NA	2016	No	Erosion of natural deposits, discharge from petroleum and metal refineries.

TOTAL ORGANIC CARBON REMOVAL (WILLISTON)								
Alkalinity, Source- Williston	NA	NA	178	mg/l	100.0 to 178.0	2017	No	Natural erosion, certain plant activities, certain industrial wastewater discharges
Carbon, Total Organic (TOC) – Finished- Williston	NA	TT	4	MG/L	1.90 to 4	2017	No	Naturally present in the environment
Carbon, Total Organic (TOC)- Source- Williston	NA	TT	7.9	MG/L	3.10 to 7.90	2017	No	Naturally present in the environment
Inorganic Contaminants-R & T Water System								
ARSENIC	0	10	1.31	Ppb	NA	2016	No	Erosion of natural deposits
BARIUM	2	2	0.00374	Ppm	NA	2016	No	Erosion of natural deposits, discharge of drilling wastes
FLUORIDE	4	4	0.71	Ppm	NA	2016	No	Erosion of natural deposits, water additive which promotes strong teeth
Nitrate-Nitrite (as Nitrogen)	10	10	0.06	ppm	NA	2017	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Radioactive Contaminants- Williston								
Gross Alpha, Including RA, Excluding RN and U	15	15	3.9	ppb	NA	2017	No	Erosion of natural deposits
Radium, Combined (226, 228)	NA	5	0.78	pCi/1	NA	2017	No	Erosion of natural deposits
Uranium, Combined	NA	30	ND	ppb	-0.44 to 0	2017	No	Erosion of natural deposits
Radioactive Contaminants- R & T								
Gross Alpha, Including RA, Excluding RN and U	15	15	ND	ppb	NA	2017	No	Erosion of natural deposits
Radium, Combined (226, 228)	NA	5	1.21	pCi/1	NA	2017	No	Erosion of natural deposits
Uranium, Combined	NA	30	0.47	ppb	NA	2017	No	Erosion of natural deposits
Synthetic Organic Contaminants including Pesticides and Herbicides								
Pentachlorophenol	0	1	0.03	ppb	NA	2017	No	Discharge from wood preserving factories

Surface Water Treatment Rule Monitoring Data:

Lowest Monthly Percentage of Samples Meeting Turbidity Limits= 100

Highest Single Measurement = 0.17

*Turbidity is a measure of the cloudiness of the water. The city of Williston monitors it because it is a good indicator of the effectiveness of their filtration system. Turbidity is measured every four hours during treatment plant operations. 100% of samples met turbidity limits.

Additional Monitoring:

The City of Williston conducted source water monitoring for Cryptosporidium, Giardia, Ecoli, and turbidity as part of the Long Term 2 Enhanced Surface Water Treatment Rule. The purpose of the LT2ESWTR is to protect public health from illnesses due to Cryptosporidium and other microbial pathogens. Cryptosporidium is a microbial pathogen found in surface water though out the U.S. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100% safe removal. In accordance with this rule Cryptosporidium, Giardia, E-coli, and turbidity samples were taken monthly between November of 2014 and October 2016 from the raw water line and analyzed by certified laboratories. Results were used to determine "bin" classification, which determines whether further treatment for Cryptosporidium is needed. Our monitoring placed us in Bin 1 (< 0.075 oocycts/L), which requires no additional treatment.

Source Water Monitoring			
Microbial Contaminant	**Total**	**Average**	**Range**
Cryptosporidium, oocysts/L	.6	0.025	0-.2
Giardia, cysts	59	2.46	0-19
Ecoli, per 100ml	916.4	38.18	0->200.5
Turbidity, ntu	n/a	140	7.2 – 696.4

Violation: ***Disinfectants and Disinfection Byproducts Rule (DBP) – Failure to Routine Monitor Chloramine (Major), 3rd quarter of 2017.*** We failed to take the required number of samples for Chlorine during the 2nd quarter of 2016. Some people who use water containing chloramines well more than the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well more than the MRDL could experience stomach discomfort. The city of Columbus is taking steps to correct this violation of the Disinfectants and Disinfection Byproduct Rule by returning to a normal testing routine.

Violation: ***Revised Total Coliform Rule (RTCR) – Failure to Routine Monitor***

November 2017. Our water system is required to sample for Total Coliform bacteria monthly. We failed to collect the required number of total coliform samples during the month of May 2016 and are therefore unsure of the quality of the water at that time. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. The city of

Columbus is taking steps to correct this violation of the Revised Total Coliform Rule by returning to a routine testing schedule. Subsequent total Coliform samples have been satisfactory.

Violation: *Consumer Confidence Reports (CCR) Rule – CCR Adequacy/Availability/Content (Failure to Submit CCR Certification Form), October 2017*. We failed to submit the required 2016 CCR Certification Form to the North Dakota Department of Health by the October 1st, 2017 deadline. The CCR Certification Form confirms that the report has been distributed to customers (or appropriate notices of availability have been given). Further, the system certifies that the information contained in the report is correct and consistent with the compliance monitoring data. Columbus will submit the Certification Form in the years to come.

Bacteriological Monitoring Data: Total Coli Form Data: December had the highest number of Total Coli Form Samples. **Total Coli Form Positives for that month: (1)** Coli forms are bacteria that are naturally present in the environment and are used as an indicator that other potentially-harmful, bacteria may be present.

EPA requires monitoring of over 80 drinking water contaminants. Those contaminants listed in the tables above are the only contaminants detected in your drinking water.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Columbus is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. **Use water from the cold tap for drinking and cooking. 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 drinking 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.**

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

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 (1-800-426-4791).

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated contaminants, 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.

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 (1-800-426-4791).

Please call our office at 701-939-5243 if you have questions concerning your water system. The City of Columbus works diligently to provide top quality water to every tap. We ask that all our customers help us protect our water sources, which is the heart of our system, our way of life and our children's future.