2018

ANNUAL DRINKING WATER QUALITY REPORT

CASS RURAL WATER USERS DISTRICT

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Cass Rural Water Users District (CRWD) is a political subdivision of the State of North Dakota pursuant to Chapter 61-35 of the North Dakota Century Code, operating a water system serving all of Cass County as well as parts of Traill, Barnes, Ransom, and Richland counties. CRWD currently serves over 5,807 users through a distribution system of approximately 2,355 miles of PVC (plastic) pipe. CRWD was formed in 1973 and was constructed over the next seven years in three separate phases. Each phase was constructed with its own well field, treatment plant, and pumping stations. CRWD has its annual membership meeting in March.

CRWD, as required by the Federal Safe Drinking Water Act (SDWA), has prepared and is distributing to our customers our 20th annual drinking water quality report. This is our opportunity to share information on the quality of water we provide to your home, apartment, or business. In addition, this report is an educational tool that allows us to inform you of the source of our water, our treatment facilities, and processes. It is our daily goal to provide you with a safe and dependable supply of drinking water.

If you own or manage an apartment complex or have renters, we encourage you to share this report with them. If you have any questions regarding this report, please call Chief Systems Operator Brent Brinkman at 701-428-3139. If you are aware of non-English speaking individuals who need help with a language translation, please call Brent at the number listed above.

CASS RURAL WATER DISTRICT'S WATER SOURCES:

1. Source water for CRWD on all three phases is well water. CRWD does not use lakes, rivers, or streams. Phase I source water (West Fargo Aquifer) comes from four wells. Well water enters the treatment facility at the same location, which can produce 880 gallons per minute (gpm) of finished water. In a typical 24-hour period, 500,000 gallons of water are treated and pumped.

2. Source Water for CRWD Phase II (Sheyenne Delta Aquifer) comes from 11 wells. Well water enters the treatment facility at the same location, which can produce 1,600 gpm of finished water. In a typical 24-hour period, 500,000 gallons of water are treated and pumped.

3. Source water for CRWD Phase III (Page Aquifer) comes from three wells. Well water enters the treatment facility at the same location, which can produce 600 gpm of finished water. In a typical 24-hour period, 400,000 gallons of water are treated and pumped. CRWD system-wide daily output is 1,200,000 to 1,500,000 gallons per day (mgd).

4. Source water for the following Townships 139-49 section 32 N ½ and 138-49 sections 1, 2, 5, 6, 11, 12, 13, 14, 23, 24, 25, 26, 35 and 138-48 section 7, 18, 19, 30, 31 and 140-49 sections 1, 2 SE, 12 and 13 are provided by the City of Fargo via 11 metered vaults.

SOURCE WATER ASSESSMENT:

CRWD is involved in the Wellhead Protection program. For any questions referring to Wellhead Protection, please call CRWD at 701-428-3139. Our public water system, 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

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

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

Non-Applicable (N/A) - does not apply.

Parts per million (ppm) or Milligrams per liter (mgL) - 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 (µgL) - One part per billion corresponds to one minute in 2,000 years or a single penny in $10 million.

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

MCLs are set at very stringent levels. To understand the health effects described for many regulated contaminants, a person would have to drink two 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.

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

TABLE OF DETECTED REGULATED CONTAMINANTS

The data presented is for 2018 or the most recent in accordance with the state and federal regulations.

2018 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS
090-1060 Phase I

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Copper/Lead								
8/11/2018	Copper*	No	0.892 90th%	ppm	N/A	AL=1.3	N/A	Corrosion of household plumbing, erosion of natural deposits
8/11/2018	Lead*	No	2.31 90th%	ppb	N/A	AL=15	N/A	Corrosion of household plumbing, erosion of natural deposits
*No sites exceeded action level for copper and lead.								
Disinfectants								
1/31/2018	Chlorine	No	2.3	ppm	MRDL =4	MRDL =4	1.38 to 2.22	Water additive used to control microbes
1/31/2018	Chloramine	No	2.3	ppm	MRDL =4	MRDL =4	1.21 to 2.22	Water additive used to control microbes
Stage 2 Disinfection By-products (HAA5/TTHM)								
12/31/2018	HAA5	No	7	ppb	N/A	60	N/A	By-product of drinking water chlorination
12/31/2018	TTHM	No	8	ppb	N/A	80	N/A	By-product of drinking water chlorination
Radioactive Contaminants								
4/18/2017	Gross Alpha, including RA excluding RN & U	No	1.48	pCi/L	15	15	N/A	Erosion of natural deposits
4/18/2017	Radium, combined (226,228)	No	0.42	pCi/L		5	N/A	Erosion of natural deposits

2018 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS *(cont.)*
Results provided by City of Fargo for the area of Cass Rural Water District Fargo
Please see your specific table below for your lead, copper, TTHM and HAA5 results.

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Inorganic Contaminants								
4/17/2018	Barium	No	0.0376	ppm	2	2	N/A	Runoff from orchards, glass and electronic factory runoff, erosion of natural deposits
4/17/2018	Fluoride	No	0.625	ppm	4	4	N/A	Runoff of fertilizer use, erosion of natural deposits
5/14/2018	Nitrate-Nitrite	No	0.09	ppm	10	10	N/A	Runoff of fertilizer use, erosion of natural deposits
Unregulated Contaminants								
10/10/2018	Alkalinity, Total	No	117	ppm	N/A	N/A	49 to 117	N/A
4/17/2018	Bicarbonate as HCO_3	No	125	ppm	N/A	N/A	N/A	N/A
12/10/2018	Bromide	No	0.062	ppb	0	10	0.029 to 0.062	By-product of drinking water disinfection
4/17/2018	Calcium	No	40.3	ppm	N/A	N/A	N/A	N/A
4/17/2018	Chloride	No	27.4	ppm	N/A	N/A	N/A	N/A
4/17/2018	Conductivity@25C UMHOS/CM	No	616	umho/cm	N/A	N/A	N/A	N/A
4/17/2018	Hardness, Total (as $CaCO_3$)	No	146	ppm	N/A	N/A	N/A	N/A
4/17/2018	Magnesium	No	10.9	ppm	N/A	N/A	N/A	N/A
4/17/2018	Nickel	No	0.00399	ppm	N/A	N/A	N/A	N/A
10/10/2018	pH	No	9.6	pH	N/A	N/A	8.29 to 9.6	N/A
4/17/2018	Potassium	No	8.9	ppm	N/A	N/A	N/A	N/A
4/17/2018	Sodium	No	63.5	ppm	N/A	N/A	N/A	N/A
4/17/2018	Sodium Adsorption Ratio	No	2.29	obsvns	N/A	N/A	N/A	N/A
4/17/2018	Sulfate	No	155	ppm	N/A	N/A	132 to 155	N/A
4/17/2018	TDS	No	370	ppm	N/A	N/A	N/A	N/A
4/17/2018	Zinc	No	0.00569	ppm	N/A	N/A	N/A	N/A
Disinfectants								
12/31/2018	Chloramine	No	3.3	ppm	MRDL =4.0	MRDL =4	2.99 to 3.49	Water additive used to control microbes
Total Organic Carbon Removal								
2/28/2018	Alkalinity Source	No	286	mg/L	N/A	N/A	200 to 286	Naturally present in the environment
4/30/2018	Carbon, Total Organic (TOC) - finished	No	8.11	mg/L	N/A	N/A	2.02 to 8.11	Naturally present in the environment
2/28/2018	Carbon, Total Organic (TOC) - source	No	10.9	mg/L	N/A	N/A	6.32 to 10.90	Naturally present in the environment

2018 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS
090-1131 Phase III

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Copper/Lead								
8/10/2018	Copper*	No	1.16 90th%	ppm	N/A	AL=1.3 ppm	N/A	Corrosion of household plumbing, erosion of natural deposits
8/10/2018	Lead*	No	2.6 90th%	ppb	N/A	AL=15 ppb	N/A	Corrosion of household plumbing, erosion of natural deposits

*No sites exceeded action level for copper and lead.

Inorganic Contaminants								
3/14/2016	Arsenic	No	5.14	ppb	0	10		Runoff from orchards, glass and electronic factory runoff, erosion of natural deposits
4/9/2018	Barium	No	0.0377	ppm	2	2	N/A	Runoff of fertilizer use, erosion of natural deposits
4/9/2018	Chromium	No	3.33	ppm	100	100	N/A	Runoff of fertilizer use, erosion of natural deposits
4/9/2018	Fluoride	No	0.846	ppm	4	4	N/A	Runoff of fertilizer use, erosion of natural deposits
Disinfectants								
6/30/2018	Chlorine	No	1.3	ppm	MRDL =4	MRDL =4	1.02 to 1.48	Water additive used to control microbes
Stage 2 Disinfection By-products (HAA5/TTHM)								
12/31/2018	HAA5	No	4	ppb	N/A	60	N/A	By-product of drinking water chlorination
12/31/2018	TTHM	No	11	ppb	N/A	80	N/A	By-product of drinking water chlorination
Radioactive Contaminants								
4/18/2017	Gross Alpha, including RA excluding RN & U	No	1.68	pCi/L	15	15	N/A	Erosion of natural deposits
4/18/2017	Radium, combined (226, 228)	No	0.11	pCi/L		5	N/A	Erosion of natural deposits
4/18/2017	Uranium, combined	No	1.96	ppb		30	N/A	Erosion of natural deposits
Unregulated Contaminants								
4/9/2018	Alkalinity, Total	No	265	ppm	N/A	N/A	N/A	N/A
4/9/2018	Bicarbonate as HCO_3	No	323	ppm	N/A	N/A	N/A	N/A
4/9/2018	Calcium	No	73.3	ppm	N/A	N/A	N/A	N/A
4/9/2018	Chloride	No	10.1	ppm	N/A	N/A	N/A	N/A
4/9/2018	Conductivity@25C UMHOS/CM	No	653	umho/cm	N/A	N/A	N/A	N/A
4/9/2018	Hardness, Total (as $CaCO_3$)	No	247	ppm	N/A	N/A	N/A	N/A

2018 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS *(cont.)*
Results provided by City of Fargo for the area of Cass Rural Water District Fargo
Please see your specific table below for your lead, copper, TTHM and HAA5 results.

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Disinfection By-products								
2/28/2018	Bromate	No	*12	ppm	N/A	10	ND to 3.9	N/A

*Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.

Stage 2 Disinfection By-products (HAA5/TTHM)								
6/30/2018	HAA5	No	25	ppb	N/A	60	2.41 to 26.16	By-product of drinking water chlorination
6/30/2018	TTHM	No	19	ppb	N/A	80	0.74 to 14.98	By-product of drinking water chlorination
Radioactive Contaminants								
7/17/2018	Gross Alpha, including RA	No	2.44	pCi/L	15	15	N/A	Erosion of natural deposits
7/17/2018	Radium, Combined	No	0.166	pCi/L	–	5	N/A	Erosion of natural deposits

2018 Results for Round Four of the UNREGULATED CONTAMINANT MONITORING RULE

The City of Fargo was selected by the EPA to sample for 22 unregulated contaminants during 2018. Samples were taken three times from the Red River and Sheyenne River intake stations, the Treatment Plant finished water, and the Maximum Residence Time sampling points in our distribution system.

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 whether future regulation is warranted. Should you have any questions, please contact our office at 701-241-1469.

The following unregulated contaminants were the only contaminants detected during this sampling. Results are from the Red River and Sheyenne River intake stations and within our distribution system.

Unregulated Contaminants Detected	Average Value at Red River Intake Header (µg/1)
Bromide	46.0 (Range: 40.3 to 55.8)
Total Organic Carbon (TOC)	9230 (Range: 7440 to 12,200)

Unregulated Contaminants Detected	Average Value at Sheyenne River Intake Header (µg/1)
Bromide	239 (Range: 127 to 343)
Total Organic Carbon (TOC)	8700 (Range: 8100 to 9060)

Average Value at Maximum Residence Sampling Point (µg/1)				
Unregualted Contaminants Detected	Stage 2, Site #1	Stage 2, Site #2	Stage 2, Site #3	Stage 2, Site #4
HAA5	13.08 (Range: 10.85 to 17.34)	15.17 (Range: 11.17 to 18.51)	16.45 (Range: 14.13 to 20.56)	19.31 (Range: 13.48 to 23.83)
HAA6Br	1.37 (Range: 0.54 to 2.29)	1.55 (Range 0.61 to 2.5)	1.62 (Range: 0.65 to 2.71)	1.44 (Range: 0.80 to 1.94)
HAA9	14.23 (Range 11.39 to 18.63)	16.51 (Range: 11.78 to 20.04)	17.82 (Range: 15.29 to 22.05)	20.75 (Range: 14.28 to 25.77)
	Stage 2, Site #5	Stage 2, Site #6	Stage 2, Site #7	Stage 2, Site #8
HAA5	19.56 (Range: 13.06 to 26.32)	12.90 (Range: 9.82 to 17.38)	18.41 (Range: 13.53 to 21.51)	17.75 (Range: 11.73 to 22.02)
HAA6Br	1.51 (Range: 1.26 to 1.72)	1.10 (Range 0.58 to 1.38)	1.75 (Range: 0.79 to 2.75)	1.52 (Range: 0.98 to 1.91)
HAA9	21.07 (Range 14.32 to 27.87)	14.00 (Range: 10.4 to 18.76)	20.00 (Range: 14.32 to 23.23)	19.27 (Range: 12.71 to 23.93)