

**Drinking Water Quality and Compliance
Annual Notice to Consumers**

The Water Security Agency and the Ministry of Environment requires that at least once each year waterworks owners provide notification to consumers of the quality of water produced and supplied as well as information on the performance of the waterworks in submitting samples as required by a Minister's Order or Permit to Operate a Waterworks. The following is a summary of the Town of Big River's water quality and sample submission compliance record for the January 1, 2021 – December 31, 2021 time period. This report was completed on March 8, 2022. Readers should refer to Water Security Agency's Municipal Drinking Water Quality Monitoring Guidelines, June 2015, for more information on minimum sample submission requirements. Permit requirements for a specific waterworks may require more sampling than outlined in the department's monitoring guidelines. If consumers need more information on the nature and significance of specific water tests, for example, "what is the significance of selenium in a water supply", more detailed information is available from: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index_e.html.

Water Quality Standards BIG RIVER JANUARY 1ST – DECEMBER 31ST, 2021

Bacteriological Quality

Parameter/Location	Limit	Regular Samples Required	Regular Samples Submitted	# of Positive Regular Submitted
Total Coliform and E. coli	0 organisms/100 mg/L	52	52	0 samples tested positive for total coliforms = 100% compliance.
Background Bacteria	0 organisms/100 mg/L			
	Less than 200 organisms/100 mL			

The owner/operator is responsible to ensure that one hundred per cent of all bacteriological samples are submitted as required. All waterworks are required to submit samples for bacteriological water quality, the frequency of monitoring depends on the population served by the waterworks. On December 14, 2020, the weekly sample was sent to the lab, which due to postal delays, the sample did not arrive in time. A second sample was sent by courier on December 17, 2020, which also did not arrive to the lab in time for testing.

Water Disinfection

Chlorine Residual in Distribution System for Test Results Submitted with Bacteriological Samples

Parameter	Minimum Limit (mg/L)	Free Chlorine Residual Range	Total Chlorine Residual Range	# Tests Required	# Tests Submitted	# Adequate Chlorine (Percentage)
Chlorine Residual	0.1 mg/L free OR 0.5 mg/L total	max 1.44 min .82	max 1.57 min 1.39	52	52	(100%)

A minimum of 0.1 milligrams per litre (mg/L) free chlorine residual OR 0.5 mg/L total chlorine residual is required at all times throughout the distribution system unless otherwise approved. A proper chlorine submission is defined as a bacteriological sample submission form with both the free and total chlorine residual fields filled out. An adequate chlorine is a result that indicates that the chlorine level is above the regulated minimums. An adequate chlorine may be counted even if the chlorine results were submitted incorrectly. A waterworks is required to submit chlorine residual test results on every bacteriological sample they submit.



Water Disinfection

Free Chlorine Residual for Water Entering Distribution System from Waterworks Records-From Water Treatment Plant Records

Parameter	Limit (mg/L)	Test Level Range	# Tests Performed	# Tests Not Meeting Requirements
Free Chlorine Residual	at least 0.80	min 0.58 max 1.46	365	1

A minimum of 0.8 milligrams per litre (mg/L) free chlorine residual is required for water entering the distribution system. Tests are normally performed on a daily basis by the waterworks operator and are to be recorded in operation records. This data includes the number of free chlorine residual tests performed, the overall range of free chlorine residual (highest and lowest recorded values) and the number of tests and percentage of results not meeting the minimum requirement of 0.8 mg/L free chlorine residual.

Turbidity – From Water Treatment Plant Records

Parameter	Limit (NTU)	Test Level Range	# Tests Not Meeting Requirements	Maximum Turbidity (NTU)	# Tests Required	# Tests Performed
Turbidity	1.0	.08 - 0.31 Lowest & Highest	0	.31 Highest	365	365

Turbidity is a measure of water treatment efficiency. Turbidity measures the “clarity” of the drinking water and is generally reported in Nephelometric Turbidity Units (NTU). All waterworks are required to monitor turbidity at the water treatment plant. The frequency of measurement varies from daily for small systems to continuous for larger waterworks.

Chemical – Health Category

“<” means less than

Parameter	Limit MAC (mg/L)	Limit IMAC (mg/L)	Sample Results (mg/L)	Samples Exceeding MAC/IMAC	# Samples Required	# Samples Submitted
Arsenic	0.010		<0.0010	0	1	1
Barium	1.0		<.0014	0	1	1
Boron		5.0	0.9	0	1	1
Cadmium	0.005		<0.0015	0	1	1
Chromium	0.05		<0.0019	0	1	1
Fluoride (avg.*)	1.5					
Lead	0.01		<0.0007	0	1	1
Nitrate Dissolved	45.0		<2.3	0	1	1
Selenium	0.01		<.00113	0	1	1
Uranium	0.02		<0.00011	0	1	1

All waterworks serving less than 5000 persons are required to submit water samples for SE’s Chemical Health category once every 2 years. The Chemical Health category includes analysis for arsenic, barium, boron, cadmium, chromium, fluoride, lead, nitrate, selenium and uranium.

The last sample for Chemical Health analysis was submitted on February 22, 2021. Sample results indicated that the provincial drinking water quality standards were not exceeded.



Substances within the chemical health category may be naturally occurring in drinking water sources or may be the result of human activities. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) is exceeded. All drinking water supplies are required to monitor for substances in the Chemical-Health category, the frequency of monitoring depends on the population served by the waterworks. Some waterworks will add fluoride to drinking water as a means to aid in the prevention of dental decay.

General Chemical

Parameter	Aesthetic Objectives* (mg/L)	“<” means less than Sample Results (average)	# Samples Required	# Samples Submitted
Alkalinity	500	57.6 mg/L CaCO ₃	1	1
Bicarbonate	No Objective	70 mg/L	1	1
Calcium	No Objective	<1 mg/L	1	1
Carbonate	No Objective	0	1	1
Chloride	250	1.6 mg/L	1	1
Conductivity	No Objective	117 uS/cm	1	1
Hardness	800	7 mg/L CaCO ₃	1	1
Magnesium	200	<1 mg/L	1	1
PH	7.0-10.5	7.1 pH Units	1	1
Sodium	300	27 mg/L	1	1
Sulphate Dissolved	500	1.2 mg/L	1	1
Total dissolved solids	1500	105 mg/L	1	1

All waterworks serving less than 5000 persons are required to submit water samples for SE's General Chemical category once every two years if a ground water source or once per three months every second year if a surface water or blended surface/groundwater source. The General Chemical category includes analysis for alkalinity, bicarbonate, calcium, carbonate, chloride, conductivity, hardness (as CaCO₃), magnesium, sodium, sulphate and total dissolved solids.

The last sample for General Chemical analysis was required in 2021 and submitted on March 2, 2021. Sample results indicated that there were no exceedences of the provincial aesthetic objectives for the General Chemical category.

*Objectives apply to certain characteristics of or substances found in water for human consumptive or hygienic use. The presence of these substances will affect the acceptance of water by consumers and/or interfere with the practice of supplying good quality water. Compliance with drinking water aesthetic objectives is not mandatory as these objectives are in the range where they do not constitute a health hazards. The aesthetic objectives for several parameters (including hardness as CaCO₃, magnesium, sodium and total dissolved solids) consider regional differences in drinking water sources and quality.

More information on water quality and sample submission performance may be obtained from:

Town of Big River
Box 220
Big River, SK
S0J 0E0
Phone: 306-469-2112 Fax: 306-469-4856 Email: bigriver@sasktel.net

(Note: This form may be used for communities or waterworks serving a population of less than 5000 persons.)
March2008 EPB 236C

Environmental Services Analysis Report - Final

Invoice Number: 1136401
Sample Location: WTP Header
Collected by: G. Anderson
Station #: SK06AE0002
Permit: 2046
Water Source: BIG RIVER DIST.SYSTEM

Collected Date: 22-Feb-2021 9:50 AM
Received: 23-Feb-2021 9:08 AM
Reported: 02-Mar-2021 7:23 AM
Water Source: Distributed

Submitted By:
 BIG RIVER TOWN OF
 BOX 220
 BIG RIVER, SK
 S0J 0E0

Invoice:
 BIG RIVER TOWN OF
 BOX 220
 BIG RIVER, SK
 S0J 0E0

Analysis	Result	Unit	Sask Guideline	Comment	Test	Fee
Health and Toxicity Panel						
Boron	0.9	mg/L	< 5.0			92.50
Iron	<0.1	mg/L	< 0.3			
Manganese	<0.01	mg/L	< 0.05			
Aluminum (ICPMS)	<6.96	µg/L	No Guideline			
Arsenic (ICPMS)	<0.10	µg/L	< 10			
Barium (ICPMS)	1.4	µg/L	< 1000			
Cadmium (ICPMS)	<0.15	µg/L	< 5			
Chromium (ICPMS)	<0.19	µg/L	0.50:			
Copper (ICPMS)	24.9	µg/L	< 1000			
Lead (ICPMS)	<0.07	µg/L	010			
Selenium (ICPMS)	<1.13	µg/L	010			
Uranium (ICPMS)	<0.11	µg/L	< 20			
Zinc (ICPMS)	7.3	µg/L	< 5000			
Antimony (ICPMS)	<0.16	µg/L	No Guideline			
Silver (ICPMS)	<0.20	µg/L	No Guideline			

Environmental Services Analysis Report - Final

Invoice Number: 1136670
Sample Location: WTP Header
Collected by: G. Anderson

Collected Date: 02-Mar-2021 10:00 AM
Received: 03-Mar-2021 8:55 AM
Reported: 08-Mar-2021 3:14 PM
Water Source: Distributed

Submitted By:
BIG RIVER TOWN OF
BOX 220
BIG RIVER, SK
S0J 0E0

Invoice:
BIG RIVER TOWN OF
BOX 220
BIG RIVER, SK
S0J 0E0

Analysis	Result	Unit	Sask Guideline	Test Comment	Fee
General Chemistry/Water Quality Panel					
Conductivity	117	µS/cm	< 2300		
pH	7.1	pH Units	7.0 - 10.5		
Total Alkalinity	57.6	mg/L CaCO3	< 500		
Phenol Alkalinity	0.00	mg/L CaCO3	No Guideline		
Bicarbonate	70	mg/L	No Guideline		
Carbonate	0	mg/L	No Guideline		
Hydroxide	0	mg/L	No Guideline		
Chloride Dissolved	1.6	mg/L	< 250		
Fluoride Dissolved	<0.05	mg/L	< 1.5		
Nitrate Dissolved	2.3	mg/L	< 45		
Sulfate Dissolved	1.2	mg/L	< 500		
Total Hardness (Calculated)	7	mg/L CaCO3	< 800		
Total Dissolved Solids	105	mg/L	< 1500		
Iron	<0.1	mg/L	< 0.3		
Manganese	<0.01	mg/L	< 0.05		
Calcium	<1	mg/L	No Guideline		
Magnesium	<1	mg/L	< 200		
Potassium	<1	mg/L	No Guideline		
Sodium	27	mg/L	< 300		
					104.00