



Drinking Water Quality and Compliance
SaskWater Wakaw-Humboldt
Potable Water Supply System and Treatment Plant
2021 Notification to Consumers

The Water Security Agency (WSA) 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 Permit to Operate a waterworks. The following is a summary of the SaskWater Wakaw-Humboldt Regional Water Supply System (RWSS) and Treatment Plant water quality and sample submission compliance record for the January 1, 2021 to December 31, 2021 time period. This report was completed on January 31, 2022. Readers should refer to the WSA's Municipal Drinking Water Quality Monitoring Guidelines for more information on minimum sample submission requirements and types of samples. Permit requirements for a specific waterworks may require more sampling than outlined in the Agency's monitoring guidelines. If consumers need to know more about drinking water in Saskatchewan, more detailed information is available from: <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index-eng.php>.

BACTERIOLOGICAL QUALITY

Parameter	Limit	Regular Samples Required	Required Samples Submitted	# of Positive Regular Submitted
Total Coliform	0 Organisms/100 mL	156	156	0
E. Coli	0 Organisms/100 mL	156	156	0
Background Bacteria	Less than 200/100 mL	156	156	0

Analysis is performed on a single sample for all parameters mentioned above. All waterworks are required to submit samples for bacteriological water quality; the frequency of monitoring depends on the population served by the waterworks.

WATER DISINFECTION

Chlorine Residual in Distribution System – From Test Results Submitted with Bacteriological Samples

Parameter	Minimum Limit (either/or)	Range (mg/L)	# Tests Required	# Tests Submitted	# Adequate Chlorine
Free Chlorine	0.10 mg/L	0.46 – 1.72	156	156	156
Total Chlorine	0.50 mg/L	0.62 – 2.00	156	156	

A minimum of 0.10 milligrams per litre (mg/L) free chlorine residual OR 0.50 mg/L total chlorine residual is required at all times throughout the distribution system. An adequate chlorine is a result that indicates that the chlorine level is above the regulated minimums. A waterworks is required to submit chlorine residual test results on every bacteriological sample they submit.

Free Chlorine Residual for Water Entering Distribution System

Parameter	Limit (mg/L)	Range (mg/L)	# Tests Required	# Tests Performed	% Adequate Chlorine
Free Chlorine	1.30	1.33 – 2.22	Continuous	Continuous	100

Residuals are monitored continuously and multiple tests are performed on a daily basis by waterworks operators and are recorded in operation records.

Wakaw-Humboldt Water Supply System

TURBIDITY

Turbidity for Water Leaving the Filters

Filter #1

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.30 – 95% of time each month and; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.050 – 0.370	0.078	Continuous	Continuous	0

Filter #2

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.30 – 95% of time each month and; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.030 – 0.370	0.049	Continuous	Continuous	0

Filter #3

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.30 – 95% of time each month and; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.040 – 0.310	0.071	Continuous	Continuous	0

Filter #4

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.30 – 95% of time each month and; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.040 – 0.330	0.063	Continuous	Continuous	0

Turbidity in the Distribution System – From Test Results Submitted with Bacteriological Samples

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.03 – 0.22	156	156	0

Turbidity in Water Entering the Distribution System

Parameter	Limit (NTU)	Range (NTU)	Average (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.02 – 0.39	0.049	Continuous	Continuous	0

Turbidity is a measure of water treatment efficiency. Turbidity measures the "clarity" of the drinking water and is reported in Nephelometric Turbidity Units (NTU). All waterworks are required to monitor turbidity at the water treatment plant. The turbidity is done daily with bench testing instrument, as well as continuously with an on-line analyser.

Wakaw-Humboldt Water Supply System

Turbidity in Raw Water Entering the Water Treatment Plant

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.10 – 77.2	50	728	0

Additional testing done for information purposes.

FLUORIDE

From Treated Water at the Water Treatment Plant (on-site testing)

Parameter	Maximum Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.50	0.58	0.88	365	730	0

Additional testing was done for informational purposes.

From Water in the Distribution System (off-site testing)

Parameter	Maximum Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.50	0.53	0.67	52	51	0

The fluoride sample collected on September 27, 2021 was not analysed due to lab error. The EPO was notified.

HALOACETIC ACIDS (HAAs)

Haloacetic acids are formed when chlorine reacts with organic matter in water. The five regulated haloacetic acids are: monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid. The sum of the concentrations of these five components is referred to as HAA5. The limit for HAAs is a long term objective based on an annual average of seasonal samples.

Parameter	Maximum Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Haloacetic Acids	0.080	0.050	2	2

TRIHALOMETHANES (THM)

Trihalomethanes are formed when chlorine reacts with organic matter in water. The four THM compounds are: chloroform, dibromochloromethane, bromodichloromethane (BDCM) and bromoform. The sum of the concentrations of these four components is referred to as Total Trihalomethanes. The limit for THM is a long term objective based on an annual average of seasonal samples.

Parameter	Maximum Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Trihalomethane	0.100	0.060	2	2

Wakaw-Humboldt Water Supply System

CHEMICAL – GENERAL

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA's General Chemical category once per three months every year.

Parameter	MAC (mg/L)	AO * (mg/L)	Sample Results	# of Samples Required	# of Samples Submitted
Total Alkalinity (mg/L)		500	134	4	4
Bicarbonate (mg/L)	No Objective		163	4	4
Calcium (mg/L)	No Objective		45	4	4
Carbonate (mg/L)	No Objective		<1	4	4
Chloride (mg/L)		250	17	4	4
Fluoride (mg/L)	1.5		0.51	4	4
Total Hardness (mg/L)		800	184	4	4
Hydroxide (mg/L)	No Objective		<1	4	4
Magnesium (mg/L)		200	17	4	4
Nitrate (mg/L)	45		1.4	4	4
pH (pH units)		7.0 – 10.5	7.84	4	4
Potassium (mg/L)	No Objective		3.4	4	4
Sodium (mg/L)		300	26	4	4
Specific Conductivity (µs/cm)	No Objective		480	4	4
Sulphate (mg/L)		500	88	4	4
Sum of Ions	No Objective		361	4	4
Total Dissolved Solids (mg/L)		1500	291	4	4

MAC – Maximum Acceptable Concentration

AO – Aesthetic Objective

CHEMICAL – HEALTH

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA's Chemical Health category once every year.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO * (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Aluminum		No Objective		0.037	1	1
Antimony	0.006			<0.0002	1	1
Arsenic	0.010			0.0001	1	1
Barium	1.0			0.078	1	1
Boron		5.0		0.03	1	1
Cadmium	0.005			0.00002	1	1
Chromium	0.05			<0.0005	1	1
Copper			1.0	0.0056	1	1
Iron			0.3	0.0014	1	1
Lead	0.01			0.0003	1	1
Manganese			0.05	0.0010	1	1
Selenium	0.01			0.0004	1	1
Silver		No Objective		<0.00005	1	1
Uranium	0.02			0.0004	1	1
Zinc			5	0.0013	1	1

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

Wakaw-Humboldt Water Supply System

CHEMICAL – ORGANICS

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA's Synthetic Organic category once every 2 years. 2021 not is a required sampling year. The 2020 results are included for informational purposes.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO* (mg/L)	2020 Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Benzene	0.005			<0.0005	0	0
Benzo(a)pyrene	0.00001			<0.00001	0	0
Carbon tetrachloride	0.005			<0.002	0	0
Dichlorobenzene 1,2	0.2			<0.0005	0	0
Dichlorobenzene 1,4	0.005			<0.0005	0	0
Dichloroethane 1,2		0.005		<0.0005	0	0
Dichloroethylene 1,1	0.014			<0.0005	0	0
Dichloromethane	0.05			<0.0005	0	0
Dichlorophenol 2,4	0.9			<0.0002	0	0
Ethylbenzene			0.0016	<0.0005	0	0
Monochlorobenzene	0.080			<0.0005	0	0
Tetrachlorophenol 2,3,4,6	0.10			<0.001	0	0
Toluene			0.024	<0.0005	0	0
Trichloroethylene	0.05			<0.0005	0	0
Trichlorophenol 2,4,6	0.005			<0.002	0	0
Vinyl Chloride	0.002			<0.0005	0	0
Xylene			0.02	<0.0005	0	0

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

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

CYANIDE AND MERCURY

Mercury enters water supplies naturally and as a result of human activities. Cyanide can enter source waters as a result of industrial effluent or spill events. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) is exceeded.

Parameter	Maximum Limit (mg/L)	Sample Results (mg/L)	# Samples Required	# Samples Submitted
Cyanide	0.2	0.002	1	1
Mercury	0.001	<0.000001	1	1

Wakaw-Humboldt Water Supply System

CHEMICAL – PESTICIDES

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA's Pesticide category once every 2 years. 2021 is not a required sampling year. The 2020 results are included for informational purposes.

Parameter	MAC (mg/L)	IMAC (mg/L)	2020 Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Atrazine		0.005	<0.0002	0	0
Bromoxynil		0.005	<0.002	0	0
Carbofuran	0.09		<0.0002	0	0
Chlorpyrifos	0.09		<0.0002	0	0
Dicamba	0.12		<0.001	0	0
2, 4-D		0.10	<0.001	0	0
Diclofop-methyl	0.009		<0.001	0	0
Dimethoate		0.02	<0.005	0	0
Malathion	0.19		<0.0002	0	0
MCPA	0.10		<0.001	0	0
Pentachlorophenol	0.06		<0.0005	0	0
Picloram		0.19	<0.001	0	0
Trifluralin		0.045	<0.0002	0	0

MAC – Maximum Acceptable Concentrations

IMAC – Interim Maximum Acceptable Concentrations

MICROCYSTIN LR and/or TOTAL MICROCYSTIN TOXINS

SaskWater Wakaw-Humboldt Potable Water Supply System is required to sample for microcystin once every month from the treated water at the water treatment plant during the algal bloom period.

Parameter	Maximum Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Microcystin	0.0015	<0.0001	4	4

RADIOLOGICAL

Gross alpha and beta activity is a measure of radioactivity within water. The activity is the frequency of release of alpha and beta particles after the nuclear decay of radionuclides. Should gross alpha or beta activity exceed a particular standard, further testing is required to identify the specific radionuclides present in water. Radionuclides can enter water from both natural sources and human activities.

Parameter	Maximum Limit (Bq/L)	Result (Bq/L)	# Samples Required	# Samples Submitted
Gross alpha	0.5	<0.20	1	1
Gross beta	1.0	0.23 +/- 0.04	1	1

Wakaw-Humboldt Water Supply System

GIARDIA AND CRYPTOSPORIDIUM (in the raw water)

SaskWater Wakaw-Humboldt Potable Water Supply System is required to sample from the raw water entering the water treatment plant for giardia & cryptosporidium semi-annually (early spring and fall) and following upsets or significant events that may affect raw water quality.

Parameter	Limit	Average (cysts or oocysts / 100 L)	# Samples Required	# Samples Submitted
Giardia	No Standard	0.0 (cysts)	2	2
Cryptosporidium	No Standard	0.0 (oocysts)	2	2

LEAD AND COPPER (in the distribution system)

Parameter	Limit	# Tests Required	# Tests Performed	Maximum Result (mg/L)
Lead	No Limit	12	12	0.0003
Copper		12	12	<0.00829

The Water Security Agency required one round of initial sampling to be completed between July 1st and August 31st, 2021 to determine if there are concerns related to effects on human health (EPB 202). These samples were taken at various points in the distribution system. At this time there are no limits applied to these sample results.

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

SaskWater
200-111 Fairford Street East
Moose Jaw SK S6H 1C8
Toll Free: 1-888-230-1111
Fax: 306-694-3207
Email: customerservice@saskwater.com