



Drinking Water Quality and Compliance
SaskWater Wakaw-Humboldt
Potable Water Supply System and Treatment Plant
2017 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, 2017 to December 31, 2017 time period. This report was completed on April 6, 2018. Readers should refer to the WSA's Municipal Drinking Water Quality Monitoring Guidelines, October 2012, EPB 202 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	155	0
E. Coli	0 Organisms/100 mL	156	155	0
Background Bacteria	Less than 200/100 mL	156	155	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.

Sample was not tested due to a lab error on September 5, 2017. EPO was notified.

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	0.1 mg/L	0.30 – 1.80	156	156	156
Total Chlorine	0.5 mg/L	0.49 – 1.95	156	156	

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. 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	At least 1.3	1.26 – 1.88	365	Continuous	99.8

Minimum 1.3 milligrams per litre (mg/L) free chlorine residual is required for water entering the distribution system. Residuals are monitored continuously and multiple tests are performed on a daily basis by waterworks operators and are recorded in operation records.

TURBIDITY

Turbidity for Water Leaving the Filter

Parameter	Limit (NTU)	Range (NTU)	95th Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.20 – 95% of time each month and; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.030 – 0.277	0.067	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 – 0.29	156	156	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 analyzer.

FLUORIDE

From Treated Water at the Water Treatment Plant

Parameter	Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.5	0.59	0.99	365	732	0

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

Parameter	Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.5	0.43	0.60	52	52	0

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 quarterly samples.

Parameter	Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Haloacetic Acids	0.080	0.037	8	8

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	Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Trihalomethane	0.100	0.047	8	8

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. The last sample for General Chemical analysis was submitted on October 6, 2017. Additional testing was for informational purposes only. Sample results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	MAC	AO *	Sample Results	# of Samples Required	# of Samples Submitted
Total Alkalinity (mg/L)		500	146	4	5
Bicarbonate (mg/L)	No Objective		178	4	5
Calcium (mg/L)	No Objective		46	4	5
Carbonate (mg/L)	No Objective		<1	4	5
Chloride (mg/L)		250	15	4	5
Fluoride (mg/L)	1.5		0.46	4	5
Total Hardness (mg/L)		800	196	4	5
Hydroxide (mg/L)	No Objective		<1	4	5
Magnesium (mg/L)		200	20	4	5
Nitrate (mg/L)	45		1.1	4	5
pH (pH units)		6.5 - 9.0	7.65	4	5
Potassium (mg/L)	No Objective		3.4	4	5
Sodium (mg/L)		300	32	4	5
Specific Conductivity (µs/cm)	No Objective		539	4	5
Sulphate (mg/L)		500	112	4	5
Sum of Ions	No Objective		408	4	5
Total Dissolved Solids (mg/L)		1500	325	4	5

MAC – Maximum Acceptable Concentration

AO – Aesthetic Objective

*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. The last sample was submitted on July 26, 2017.

Parameter	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

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. The last sample for analysis was submitted on July 26, 2017. Sample results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	Limit (Bq/L)	Result (Bq/L)	# Samples Required	# Samples Submitted
Gross alpha	0.5	<0.23	1	1
Gross beta	1.0	0.28 +/- 0.05	1	1

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. Additional sampling was obtained for informational purposes only. The last sample for Chemical Health analysis was submitted on July 26, 2017. Sample results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Aluminum		No Objective		0.035	1	2
Antimony	0.006			<0.0002	1	2
Arsenic	0.010			0.0002	1	2
Barium	1.0			0.076	1	2
Boron		5.0		0.03	1	2
Cadmium	0.005			0.00001	1	2
Chromium	0.05			<0.0005	1	2
Copper			1.0	0.0024	1	2
Iron			0.3	0.0006	1	2
Lead	0.01			<0.0001	1	2
Manganese			0.05	<0.0005	1	2
Selenium	0.01			0.0004	1	2
Silver		No Objective		<0.00005	1	2
Uranium	0.02			0.0006	1	2
Zinc			5	0.0013	1	2

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

CHEMICAL – PESTICIDES

SaskWater Wakaw-Humboldt Potable Water Supply System is required to submit water samples for the WSA's Pesticide category once every year. The last sample for Pesticides analysis was submitted on July 26, 2017. Sample results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	MAC (mg/L)	IMAC (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Atrazine		0.005	<0.0002	1	1
Bromoxynil		0.005	<0.001	1	1
Carbofuran	0.09		<0.0002	1	1
Chlorpyrifos	0.09		<0.0002	1	1
Dicamba	0.12		<0.001	1	1
2, 4-D		0.10	<0.001	1	1
Diclofop-methyl	0.009		<0.001	1	1
Dimethoate		0.02	<0.002	1	1
Malathion	0.19		<0.0002	1	1
MCPA	No standard		<0.001	1	1
Pentachlorophenol	0.06		<0.002	1	1
Picloram		0.19	<0.001	1	1
Trifluralin		0.045	<0.0002	1	1

MAC – Maximum Acceptable Concentrations

IMAC – Interim Maximum Acceptable Concentrations

CHEMICAL – SYNTHETIC 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. 2017 is not a required sampling year. Additional testing was done for informational purposes only. The last sample for analysis was submitted on July 26, 2017. Sample results indicated that the provincial drinking water quality standards were not exceeded.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Benzene	0.005			<0.0002	0	1
Benzo(a)pyrene	0.00001			<0.00001	0	1
Carbon tetrachloride	0.005			<0.002	0	1
Dichlorobenzene 1,2	10.2			<0.0005	0	1
Dichlorobenzene 1,4	0.005			<0.0005	0	1
Dichloroethane 1,2		0.005		<0.0005	0	1
Dichloroethylene 1,1	0.014			<0.0005	0	1
Dichloromethane	0.05			<0.0005	0	1
Dichlorophenol 2,4	0.9			<0.002	0	1
Ethylbenzene			0.0024	<0.0002	0	1
Monochlorobenzene	0.080			<0.0005	0	1
Tetrachlorophenol 2,3,4,6	0.10			<0.002	0	1
Toluene	0.05			<0.0002	0	1
Trichloroethylene			0.024	<0.0005	0	1
Trichlorophenol 2,4,6	0.005			<0.002	0	1
Vinyl Chloride	0.002			<0.0005	0	1
Xylene			0.3	<0.0002	0	1

MAC – Maximum Acceptable Concentrations
 IMAC – Interim Maximum Acceptable Concentrations
 AO – Aesthetic Objective

GIARDIA AND CRYPTOSPORIDIUM – 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. The last sample was submitted on October 5, 2017.

Parameter	Limit	Average (cysts or oocysts / 100 L)	# Samples Required	# Samples Submitted
Giardia	No Standard	2.4 (cysts)	2	2
Cryptosporidium	No Standard	0.0 (oocysts)	2	2

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 (June-October of each year). The last sample was submitted on October 2, 2017.

Parameter	Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Microcystin	No Standard	<0.0001	5	5

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