

**Drinking Water Quality and Compliance  
Lac La Ronge Regional Water Corporation  
Regional Water Supply System and Treatment Plant  
2018 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 Minister's Order or Permit to Operate. The following is a summary of the Lac La Ronge Regional Water Corporation (LLRWC) Regional Water Supply System and Treatment Plant water quality and sample submission compliance record for the January 1, 2018 to December 31, 2018 time period. This report was completed on April 18, 2019. Readers should refer to MOE'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 department's monitoring guidelines. If consumers need to 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	Regular Samples Submitted	# Positive of Regular Submitted
Total Coliform	0 Organisms/100 mL	104	104	0
E. Coli	0 Organisms/100 mL	104	104	0
Background Bacteria	Less than 200/100 mL	104	104	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	0.1 mg/L	0.38 – 1.06	104	104	104
Total Chlorine	0.5 mg/L	0.64 – 1.39	104	104	

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 0.22	0.42 – 1.41	Continuous	Continuous	100

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

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**PRESSURE DECAY TESTING**

Testing done daily on each UF Bank recorded as log removal values

Parameter	Limit	Range	# Tests Required	# Tests Performed	# Inadequate LRV
LRV	LRV ≥ 3	4.00 - 5.56	1092	1092	0

In order to receive the log removal credits for both Giardia and Cryptosporidium, a removal efficiency equal to or greater than 3 has to be maintained through daily pressure decay testing on each UF bank in production.

**TURBIDITY**

**Turbidity for Water Leaving the UF System**

Parameter	Limit (NTU)	Range (NTU)	99 <sup>th</sup> Percentile (NTU)	# Tests Required	# Tests Performed	# months Exceeding Limit
Turbidity	< 0.10 – 99% of time each month and; not to be > 0.1 for > 15 minutes and; never > 0.3	0.04 – 0.10	0.09	Continuous	Continuous	0

**Turbidity for Water Entering the Distribution System**

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed
Turbidity	No standard	0.013 – 0.880	Continuous	Continuous

Turbidity values are monitored continuously with an on-line analyzer and tests normally performed on a daily basis by waterworks operators and are recorded in operation records.

**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	0.04 – 0.78	104	104	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.

**FLUORIDE**

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

Parameter	Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.5	0.53	0.98	365	361	0

Four of the 365 samples were missed. The EPO was notified of the missed testing. All of the tested fluoride results were under the regulatory limit 100% of the time.

**Fluoride – From Test Results Submitted with Bacteriological Samples (off-site testing)**

Parameter	Limit (mg/L)	Average (mg/L)	Maximum (mg/L)	# Samples Required	# Samples Submitted	# Exceeding Limit
Fluoride	1.5	0.45	0.51	52	50	0

Sampled and tested 50 of the 52 weeks. The EPO was notified of the missed testing. All of the fluoride results were under the regulatory limit 100% of the time.

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**CHEMICAL – 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	0.056	4	4

**CHEMICAL – 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	0.032	4	4

**CHEMICAL – HEALTH**

The LLRRWC 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			0.0008	1	1
Antimony	0.006			<0.0002	1	1
Arsenic	0.010			0.0004	1	1
Barium	1.0			0.040	1	1
Boron		5.0		0.01	1	1
Cadmium	0.005			<0.00001	1	1
Chromium	0.05			<0.0005	1	1
Copper			1.0	0.035	1	1
Iron			0.3	0.0099	1	1
Lead	0.01			<0.0001	1	1
Manganese			0.05	0.0560	1	1
Selenium	0.01			<0.0001	1	1
Silver	No Objective			<0.00005	1	1
Uranium	0.02			<0.0001	1	1
Zinc			5	0.0046	1	1

MAC – Maximum Acceptable Concentrations  
 IMAC – Interim Maximum Acceptable Concentrations

AO – Aesthetic Objective

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### CHEMICAL – GENERAL

The LLRRWC is required to submit water samples for the WSA's General Chemical category once per three months every year.

Parameter	MAC	AO *	Sample Results	# Of Samples Required	# Of Samples Submitted
Total Alkalinity (mg/L)		500	109	4	4
Bicarbonate (mg/L)	No Objective		133	4	4
Calcium (mg/L)	No Objective		30	4	4
Carbonate (mg/L)	No Objective		<1	4	4
Chloride (mg/L)		250	15.0	4	4
Fluoride (mg/L)	1.5		0.49	4	4
Total Hardness (mg/L)		800	114	4	4
Hydroxide (mg/L)	No Objective		<1	4	4
Magnesium (mg/L)		200	9.7	4	4
Nitrate (mg/L)	45		0.26	4	4
pH (pH units)		6.5 - 9.0	7.87	4	4
Potassium (mg/L)	No Objective		1.9	4	4
Sodium (mg/L)		300	4.3	4	4
Specific Conductivity (µs/cm)	No Objective		243	4	4
Sulphate (mg/L)		500	0.5	4	4
Sum of Ions	No Objective		194	4	4
Total Dissolved Solids (mg/L)		1500	148	4	4

MAC – Maximum Acceptable Concentration

AO – Aesthetic Objective

\*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 CaCO<sub>3</sub>, magnesium, sodium and total dissolved solids) consider regional differences in drinking water sources and quality.

### CHEMICAL – PESTICIDES

The LLRRWC is required to submit water samples for the WSA's Pesticide category once every second year. 2018 is a required sampling year.

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		<0.0005	1	1
Picloram		0.19	<0.001	1	1
Trifluralin		0.045	<0.0002	1	1

MAC – Maximum Acceptable Concentrations

IMAC – Interim Maximum Acceptable

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**CHEMICAL – ORGANICS**

The LLRRWC is required to submit water samples for the WSA’s Synthetic Organic category once every 2 years. 2018 is a required sampling year.

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	1	1
Benzo(a)pyrene	0.00001			<0.00001	1	1
Carbon tetrachloride	0.005			<0.002	1	1
Dichlorobenzene 1,2	10.2			<0.0005	1	1
Dichlorobenzene 1,4	0.005			<0.0005	1	1
Dichloroethane 1,2		0.005		<0.0005	1	1
Dichloroethylene 1,1	0.014			<0.0005	1	1
Dichloromethane	0.05			<0.0005	1	1
Dichlorophenol 2,4	0.9			<0.0002	1	1
Ethylbenzene			0.0024	<0.0002	1	1
Monochlorobenzene	0.080			<0.0005	1	1
Tetrachlorophenol 2,3,4,6	0.10			<0.001	1	1
Toluene	0.05			<0.0002	1	1
Trichloroethylene			0.024	<0.0005	1	1
Trichlorophenol 2,4,6	0.005			<0.002	1	1
Vinyl Chloride	0.002			<0.0005	1	1
Xylene			0.3	<0.0002	1	1

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

**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 17, 2018.

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

**MICROCYSTIN LR and/or TOTAL MICROCYSTIN TOXINS**

The LLRRWC is required to sample for microcystin once every month from the treated water at the water treatment plant during the algal bloom period. The last sample was submitted on September 16, 2018.

Parameter	Limit (mg/L)	Average (mg/L)	# Samples Required	# Samples Submitted
Microcystin	No Standard	0.0001	4	4

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**GIARDIA AND CRYPTOSPORIDIUM (Raw Water)**

The LLRRWC is required to sample for giardia & cryptosporidium semi-annually (early spring and fall) and following upsets or significant events that may affect raw water quality from the raw water entering the water treatment plant. The last sample was submitted on October 9, 2018.

<b>Parameter</b>	<b>Limit</b>	<b>Average (cysts or oocysts / 100 L)</b>	<b># Samples Required</b>	<b># Samples Submitted</b>
Giardia	No Standard	1.2	2	2
Cryptosporidium	No Standard	0.0	2	2

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

Lac La Ronge Regional Water Corporation  
Box 100  
Air Ronge SK S0J 3G0  
Phone: 306-420-7749; Email: [llrrwc@gmail.com](mailto:llrrwc@gmail.com)