



**Drinking Water Quality and Compliance
SaskWater Melville Water Supply System
2020 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 Melville Water Supply System water quality and sample submission compliance record for the January 1, 2020 to December 31, 2020 time period. This report was completed on January 28, 2021. 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>.

Saskwater constructed a new water treatment plant that began providing water to its users on March 10, 2020. Many of the regulations below changed as of that date. The water quality results from the old water treatment plant January 1, 2020 to March 9, 2020 and the new water treatment plant March 10, 2020 to December 31, 2020 are indicated.

BACTERIOLOGICAL QUALITY

(Old WTP)

Parameter	Limit	Regular Samples Required	Required Samples Submitted	# of Positive Regular Submitted
Total Coliform	0 Organisms/100 mL	10	10	0
E. Coli	0 Organisms/100 mL	10	10	0
Background Bacteria	Less than 200/100 mL	10	10	0

(New WTP)

Parameter	Limit	Regular Samples Required	Required Samples Submitted	# of Positive Regular Submitted
Total Coliform	0 Organisms/100 mL	42	42	0
E. Coli	0 Organisms/100 mL	42	42	0
Background Bacteria	Less than 200/100 mL	42	42	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

(Old WTP)

Parameter	Minimum Limit (either/or)	Range (mg/L)	# Tests Required	# Tests Submitted	# Adequate Chlorine
Free Chlorine	0.10 mg/L	1.90 – 2.76	10	10	10
Total Chlorine	0.50 mg/L	2.21 – 3.04	10	10	

Melville Water Supply System

(New WTP)

Parameter	Minimum Limit (either/or)	Range (mg/L)	# Tests Required	# Tests Submitted	# Adequate Chlorine
Free Chlorine	0.10 mg/L	1.05 – 2.52	42	42	42
Total Chlorine	0.50 mg/L	1.13 – 2.76	42	42	

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

(Old WTP)

Parameter	Minimum Limit (mg/L)	Range (mg/L)	# Tests Required	# Tests Performed	% Adequate Chlorine
Free Chlorine	1.28	1.36 – 4.29	Continuous	Continuous	100

(New WTP)

Parameter	Minimum Limit (mg/L)	Range (mg/L)	# Tests Required	# Tests Performed	% Adequate Chlorine
Free Chlorine	0.10	1.00 – 3.17	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.

TURBIDITY

Turbidity for Water Leaving the Filter (required Jan 1, 2020 to March 9, 2020)

(Old WTP)

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed
Turbidity	< 0.30 – 95% of time and; not to be > 0.3 for > 12 consecutive hours; never >1.0	0.03 – 0.26	0.24	Continuous	Continuous

Turbidity is monitored continuously and multiple tests are done daily by waterworks operators and are recorded in daily records.

Melville Water Supply System

**Turbidity for Water entering the Distribution System – From Test Results Submitted with Bacteriological Samples
(Old WTP)**

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.09 – 0.26	10	10	0

(New WTP)

Parameter	Limit (NTU)	Range (NTU)	# Tests Required	# Tests Performed	# Exceeding Limit
Turbidity	No standard	0.08 – 0.19	42	42	0

Turbidity for Water Entering the Distribution System

(Old WTP)

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed
Turbidity	< 1.0 in 95% of measurements	0.07 – 0.75	0.36	Continuous	Continuous

(New WTP)

Parameter	Limit (NTU)	Range (NTU)	95 th Percentile (NTU)	# Tests Required	# Tests Performed	# Months Exceeding Limit
Turbidity	< 1.0 in 95% of measurements each month	0.013 – 0.842	0.044	891	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). The turbidity is monitored continuously and multiple tests are done daily by waterworks operators and are recorded in daily records.

pH

For Water Entering the Distribution System

Parameter	Objective	Range	# Tests Required	# Tests Submitted	# Outside of Objective
pH	6.5 – 9.0	7.2 – 8.8	297	1107	0

Additional testing done for informational purposes.

CONDUCTIVITY

For Water Entering the Distribution System

Parameter	Limit	Range	Average	# Tests Required	# Tests Submitted
Conductivity (µg/L)	No Standard	311 - 783	418	297	1105

Additional testing done for informational purposes.

Melville Water Supply System

CHEMICAL – GENERAL

The SaskWater Melville Water Supply System is required to submit water samples for the WSA's General Chemical category once per six months every year. Additional testing was done for informational purposes.

Parameter	MAC	AO *	Sample Results	# of Samples Required	# of Samples Submitted
Total Alkalinity (mg/L)		500	110	2	3
Bicarbonate (mg/L)	No Objective		134	2	3
Calcium (mg/L)	No Objective		19	2	3
Carbonate (mg/L)	No Objective		<1	2	3
Chloride (mg/L)		250	19	2	3
Fluoride (mg/L)	1.5		0.03	2	3
Total Hardness (mg/L)		800	85	2	3
Magnesium (mg/L)		200	9	2	3
Nitrate (mg/L)	45		0.25	2	3
pH (pH units)		6.5 - 9.0	7.84	2	3
Sodium (mg/L)		300	60	2	3
Specific Conductivity (µs/cm)	No Objective		450	2	3
Sulphate (mg/L)		500	85	2	3
Total Dissolved Solids (mg/L)		1500	289	2	3

MAC – Maximum Acceptable Concentration

AO – Aesthetic Objective

CHEMICAL – HEALTH

The SaskWater Melville Water Supply System is required to submit water samples for the WSA's Chemical Health category once every year. Additional testing was done for informational purposes.

Parameter	MAC (mg/L)	IMAC (mg/L)	AO* (mg/L)	Sample Results (mg/L)	# of Samples Required	# of Samples Submitted
Aluminum	No Objective			0.0055	1	2
Antimony	0.006			<0.0002	1	2
Arsenic	0.010			0.0002	1	2
Barium	1.0			0.0015	1	2
Boron		5.0		0.21	1	2
Cadmium	0.005			<0.00001	1	2
Chromium	0.05			<0.0005	1	2
Copper			1.0	0.0009	1	2
Iron			0.3	0.0043	1	2
Lead	0.01			<0.0001	1	2
Manganese			0.05	0.0009	1	2
Selenium	0.01			0.0003	1	2
Silver	No Objective			<0.00005	1	2
Uranium	0.02			0.0002	1	2
Zinc			5	0.0019	1	2

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.

Melville Water Supply System

CHEMICAL – PESTICIDES

The SaskWater Melville Water Supply System is required to submit water samples for the WSA’s Pesticide category once every 3 years. 2020 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	<0.002	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	<0.005	1	1
Malathion	0.19		<0.0002	1	1
MCPA	0.10		<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 Concentrations

CHEMICAL – ORGANICS

The SaskWater Melville Water Supply System is required to submit water samples for the WSA’s Synthetic Organic category once every 3 years. 2020 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			<0.0005	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	<0.0005	1	1
Monochlorobenzene	0.080			<0.0005	1	1
Tetrachloroethylene	0.010			<0.0005	1	1
Tetrachlorophenol 2,3,4,6	0.10			<0.001	1	1
Toluene	0.05			<0.0005	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	0.09			<0.0005	1	1

MAC – Maximum Acceptable Concentrations

AO – Aesthetic Objective

IMAC – Interim Maximum Acceptable Concentrations

Melville Water Supply System

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

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	<0.10	1	1
Gross beta	1.0	0.08 +/- 0.02	1	1

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

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