



**Water Quality  
Report  
2023**



**SaskWater**



VESSEL 18  
PERMEATE

WTU  
PERMEA

6PPC<sup>®</sup>  
pH  
COND  
TDS  
TEMP





SaskWater is committed to ensuring a long-term, sustainable, quality water supply to our customers.

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## SaskWater's Potable Water Customers and Water Sources

SaskWater owns and operates nine water treatment plants serving municipalities and pipeline associations. Each treatment plant has a different source of water as described in the following table.

### OWNED WATER TREATMENT SYSTEMS

<b><i>Our water treatment plant located in...</i></b>	<b><i>Draws water from this source...</i></b>	<b><i>Delivers potable water to these major users...</i></b>	<b><i>And produced this volume in 2023 (in m<sup>3</sup>)</i></b>
Melfort	Codette Lake on the North Saskatchewan River	Village of Beatty Star City Farming Co. Ltd. Town of Kinistino City of Melfort Town of Star City Village of Weldon Melfort Rural Pipeline Association	924,052
Elbow	Lake Diefenbaker	Village of Elbow Line 19 Water Pipeline Utility (Loreburn, Strongfield) Lakeside R.V. Trailer Park Ltd.	108,126
Gravelbourg	Thomson Lake	Town of Gravelbourg Thomson Lake Regional Park Authority	103,728
Pierceland	Local Aquifer	Village of Pierceland	55,174
Wakaw	South Saskatchewan River	Village of Annaheim Town of Bruno Town of Cudworth City of Humboldt Village of Lake Lenore Jocelyn LeBlanc Village of Muenster Village of St. Louis RM of St. Louis (Hamlet of Domremy, Hamlet of Hoey, Hamlet of St. Isidore-de-Bellevue) Town of Wakaw SHL Rural Pipeline Association Inc. North Central Rural Pipeline Association Inc. One Arrow First Nation	1,200,935
White City	Zehner Aquifer	Town of White City	351,859
Cupar	Hatfield Aquifer	Town of Cupar	33,897
Melville	Hatfield Aquifer, Melville Aquifer	City of Melville (Yorkville Public Utility Board)	546,258
Meadow Lake	Constructed ponds fed from the Meadow River	City of Meadow Lake (Flying Dust First Nation)	552,351

## SaskWater's Potable Water Customers and Water Sources

SaskWater also owns and operates nine water transmission systems. Our transmission business buys water from the City of Saskatoon, the City of Regina, the City of Lloydminster and the Buffalo Pound Water Treatment Corporation and delivers it to customers.

### OWNED WATER TRANSMISSION SYSTEMS

<b><i>This transmission system...</i></b>	<b><i>Purchases water from this supplier...</i></b>	<b><i>And delivers potable water to these customers...</i></b>	<b><i>And produced this volume in 2023 (in m<sup>3</sup>)</i></b>
Buffalo Pound East	City of Regina	Windsor Salt Ltd., Eastview Water Users Co-operative, Town of Grand Coulee, Yara Belle Plaine Inc.	73,344
Buffalo Pound North	Buffalo Pound Water Treatment Corporation	Arm River Farming Co. Ltd., Village of Bethune, Buffalo Plains Cattle Co., Country Springs Water Users, Village of Disley, Dufferin Water Association, Peaceful Springs Water Users Inc., Qu'Appelle Valley Water Users Association, K+S Potash Canada General Partnership	121,786
Buffalo Pound West	Buffalo Pound Water Treatment Corporation	Eight Mile Pipeline Association Inc, Village of Marquis, Marquis Rural Water Users Inc., Parklane Waterline Inc., Parkview Water Users Inc., Village of Tuxford, Tuxford Rural Water Users Inc.	58,570
Prairie North	City of Lloydminster	Town of Lashburn, Town of Marshall	112,871
Saskatoon East	City of Saskatoon	3045 Range Road Water Corp., 3050 Range Road Water Corp., Agrium Canada Partnership, Allan South Rural Water Utility, Town of Allan, Aspen Grove Estates, Bar K Ranch House Ltd., RM of Blucher (Sunset Estates), Village of Bradwell, Canlan Ice Sports (Jemini), Village of Clavet, Closed Creek Resources Inc., RM of Corman Park (Casa Rio/Wood Meadows/Grasswood), Cory Park Mobile City, Dundurn Rural Water Utility, Eighth Street Waterline Group Inc., Elstow North Rural Water Utility, English River Enterprises, Southeast Corman Park Rural Water Corp., GNC Bioferm Inc., Green Meadow Estates, Hwy 394 Water Corp., Lakeside Water Utility Ltd., Lost River Water Co. Ltd., Meadow Lark Water System, Potash Corp. of Sask. Inc. – Allan Division, Potash Corp. of Sask. Inc. – Patience Lake Division, Prairie Spirit School Division #41, Schroh Arenas Ltd., South Yellowhead Water Corporation, University of Saskatchewan (Goodale Farms), South Floral Water Corp., SCS Water Group Inc., Teen Challenge Canada	1,000,721
Saskatoon North	City of Saskatoon	3051 Water Co-operative Ltd., Richardson Milling, Murrion Poultry Farms Ltd., RM of Corman Park (North Corman Industrial Park), Town of Dalmeny, Dalmeny West Water System Ltd., Town of Hague, Town of Hepburn, Hidden Valley Dairy Farm, Intervalley Water Inc., City of Martensville, Town of Osler, Ranch Ehrlo Society, Sask. Valley Rural Water Utility, Wanuskewin Heritage Park, City of Warman	2,590,560
Saskatoon West	City of Saskatoon	Burnco Rock Products Ltd., Chemtrade West Limited Partnership, O.P.Q. Holdings (Blairmore Esso), Potash Corp. of Sask. Inc. – Cory Division, Prairie Pride Chick Sales Ltd., Pratus Development Ltd.	95,639
Saskatoon Northeast	City of Saskatoon	Town of Aberdeen, Highway 41 Water Utility, Lost River Water Co. Ltd., Tower Hills/Settler's Ridge subdivisions, University of Saskatchewan (Kernen Farm)	182,584
Saskatoon Northwest	City of Saskatoon	BizHub Developments Ltd, Yellowhead Industrial Park Water Corp., Brandt Tractor Properties Ltd., RM of Corman Park (Battleford Trail)	42,315

# SaskWater's Certified Operation and Maintenance Customers and Water Sources

In addition to operating our own potable water systems, SaskWater also provides certified operation and maintenance (COM) services to communities and user groups across Saskatchewan.

## COM WATER TREATMENT SYSTEMS

<b><i>This water treatment plant located in...</i></b>	<b><i>Is owned by...</i></b>	<b><i>Draws water from this source...</i></b>	<b><i>And delivers potable water to these major users...</i></b>
Cochin	Interlake Regional Water Board	Local Aquifer	Village of Cochin, Hamlet of Days Beach, Hamlet of Trevesa Beach, Hamlet of West Chatfield, Hamlet of Summerfields Beach
Kindersley	Town of Kindersley	Infiltration wells adjacent to the South Saskatchewan River	Town of Kindersley
La Ronge	Lac La Ronge Regional Water Corp.	Lac La Ronge	Village of Air Ronge, Town of La Ronge, Lac La Ronge Indian Band
Meota	Jackfish Lake West Water Utility Corp.	Infiltration wells adjacent to the North Saskatchewan River	Village of Meota, Village of Metinota, RM of Meota, Hamlet of Lakeview, Hamlet of Suttons Beach
RM of Sherwood	Rural Municipality of Sherwood	Local Aquifer	Regina North Industrial Subdivision
Vanscoy	Village of Vanscoy	South Saskatchewan River	Village of Vanscoy

## COM WATER TRANSMISSION SYSTEMS

<b><i>This distribution system...</i></b>	<b><i>Purchases water from this supplier...</i></b>	<b><i>And delivers potable water to these major customers...</i></b>
Caron/Mortlach Regional Public Utility Board	City of Moose Jaw	Village of Caronport, Hamlet of Caron, Village of Mortlach
City of Meadow Lake	SaskWater	City of Meadow Lake
Global Transportation Hub Authority	City of Regina	CP Rail, Loblaws, SaskPower, Cargill
North Central Rural Pipeline Association	SaskWater	Various connections to the north and south of the Wakaw-Humboldt regional water treatment plant
Town of Star City	SaskWater	Town of Star City
Town of White City	SaskWater	Town of White City
Village of Air Ronge	Lac La Ronge Regional Water Corporation	Village of Air Ronge
Village of Edenwold	Town of Balgonie	Village of Edenwold
Village of Elbow	SaskWater	Village of Elbow
Village of Meota	Jackfish Lake West Water Utility Corp.	Village of Meota

# Treatment

## Water Treatment Processes

Water treatment removes natural and man-made contaminants from the source water so that it is safe and aesthetically pleasing. The treatment process for a surface water source (like a river or lake) differs from treatment for groundwater (drawn from an aquifer).

### Surface Water

Generally, surface water treatment involves either conventional treatment, which consists of screening to remove debris, coagulation-flocculation, clarification or sedimentation, filtration, and disinfection; or membrane treatment, which consists of screening to remove debris, membrane filtration, and disinfection to remove physical, chemical, microbial and other contaminants from the water.

Our treatment plants in Melfort, Wakaw, Gravelbourg, Meadow Lake and Elbow use these types of processes.

### Groundwater

For groundwater, the treatment process generally consists of oxidation of iron, manganese and other minerals with aeration and/or other processes followed by detention, filtration and disinfection.

Our treatment plants in Pierceland, White City, Melville and Cupar use groundwater sources with this kind of treatment process.

## Monitoring Requirements

SaskWater undertakes water quality testing as required by *The Waterworks and Sewage Works Regulations* and by operating permits issued by the Water Security Agency (WSA) for our water treatment plants and distribution systems.

SaskWater monitors water quality to:

- assess and ensure the safety of the water for our customers
- assess the need for any process adjustments
- determine quality trends and identify potential concerns

We employ more than 60 provincially certified operators who monitor and maintain the quality of water from the initial source to the final point of delivery.

Our highly trained, dedicated operators, technicians, technologists and professional engineers keep abreast of technological changes, water quality, and any upgrading needs of our waterworks systems to meet ever-changing water quality standards and monitoring requirements.

SaskWater also monitors most of our facilities and customer facilities remotely. We have remote monitoring equipment installed in 64 locations, which we either own or operate, allowing continuous facility surveillance. We monitor key water quality parameters, equipment operation and water levels, pressures and flows.



## Transmission

In addition to water treatment facilities, SaskWater also owns and provides certified operation and maintenance for potable water transmission systems. There are no treatment facilities on any of these transmission systems.

## Information

Further water quality information on potable water that we purchase is available from our suppliers:

- Buffalo Pound Water Treatment Corporation  
<https://www.buffalopoundwtp.ca/publications/annual-report>
- City of Regina  
<https://www.regina.ca/home-property/water/water/quality-protection/>
- City of Saskatoon  
<https://www.saskatoon.ca/services-residents/power-water/water-wastewater/drinking-water>  
and select from the available reports under Related Documents.

### Key Drinking Water Parameters and Effects

As the regulator for water quality, the Water Security Agency (WSA) determines standards which are legally enforceable requirements for drinking water quality as per *The Waterworks and Sewage Works Regulations*. In general, standards are mandatory health parameters for systems that supply water for human consumptive use. The WSA also determines water quality aesthetic objectives, which apply to certain characteristics of, or substances found in, water for human consumptive or hygienic use.

SaskWater's governing standards for potable water quality direct us to meet or exceed the water quality

parameters set by the province of Saskatchewan.

Additional information on water quality, standards and aesthetic objectives can be found here:

- Health Canada – Canadian Drinking Water Quality Guidelines  
<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water/canadian-drinking-water-guidelines.html>
- Government of Saskatchewan – Water and Wastewater Management  
<https://www.saskatchewan.ca/residents/environment-public-health-and-safety/environmental-health/water-and-wastewater-management>

## Explanation of Terms

### Abbreviations

<b>mg/L:</b>	Miligrams per litre (equivalent to parts per million)
<b>NTU:</b>	Nephelometric Turbidity Unit
<b>WTP:</b>	Water Treatment Plant
<b>RWSS:</b>	Regional Water Supply System
<b>⋄:</b>	Below detection limits
<b>95th Percentile:</b>	Turbidity levels from each filter must not exceed this limit in at least 95% of the discrete measurements made during the period defined in the permit to operate.



## **Aesthetic Objectives (AO)**

These 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 hazard. 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.

## **Bacteriological Quality**

Analysis is performed on a single sample for Total Coliforms, E. Coli and Background Bacteria. All waterworks are required to submit samples for bacteriological water quality; the frequency of monitoring depends on the population served by the waterworks.

## **Giardia and Cryptosporidium – Source Water**

Sampling for this parameter is required from the source water entering the water treatment plant semi-annually (early spring and fall) and following upsets or significant events that may affect source water quality.

## **Haloacetic Acids (HAA5)**

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 HAA5 is a long-term objective based on an annual average of quarterly samples.

## **Microcystin LR and/or Total Microcystin Toxins**

Sampling for this parameter is required once every month from the treated water at the water treatment plant during the algal bloom period.

## **Non-potable Water**

Water that is *not* suitable for human consumption in accordance with applicable regulations.

## **Potable Water**

Treated water that is suitable for human consumption in accordance with applicable regulations.

## **Precautionary Drinking Water Advisory**

An advisory issued under the authority of Subsection 36(1) of *The Environmental Management and Protection Act, 2010* by Water Security Agency Field Offices (WSAFO) when the WSAFO and Health Region determine that drinking water quality concerns exist but immediate public health threats have not been identified. As an example, it is standard protocol to issue a PDWA when a water main is depressurized to undertake repairs.

## **Trihalomethanes (THM)**

Trihalomethanes are formed when chlorine reacts with organic matter in water. The four THM compounds are: chloroform, dibromochloromethane, bromoform and bromodichloromethane. 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.

## **Water Disinfection**

Regulations require a minimum of 0.5 mg/L total chlorine residual in the water entering the distribution system **OR** 0.1 mg/L free chlorine residual is always required throughout the distribution system. Individual Permits to Operate may specify a higher minimum required residual. An adequate chlorine is a result that indicates that the chlorine level is above the required minimums.

## Summary of Situations Where Permit to Operate Requirements Were Not Met

The full details of the water quality for the facilities that SaskWater owns and operates are available in the Notification to Consumers posted to [www.saskwater.com](http://www.saskwater.com). This section provides an overview of the instances where facilities did not meet requirements as laid out in their permit to operate. Other than these few instances, SaskWater owned and operated facilities meet or exceed water quality and sampling guidelines.

### SaskWater Owned Water Treatment Systems

#### Meadow Lake Water Supply System

**Requirement** – Sample and test for one bacteriological sample per week.

**Comment** – One sample collected for the week of October 22, 2023, was not able to be tested because of a delay by the delivery service. The Environment Officer (EO) was notified. All bacteriological samples tested in 2023 were negative.

**Requirement** – Maintain a free chlorine residual of not less than 0.51 mg/L in the water entering the distribution system.

**Comment** – The free chlorine residual dropped below the required minimum on April 11, 2023, because of an equipment breakdown, and on April 17, 2023, because of a new process being implemented. Measures were taken to avoid either incident happening again. The residual dropped as low as 0.06 mg/L. The chlorine was adequate 99.9% of the time and there is ultraviolet (UV) disinfection as a secondary disinfection process. The EO was notified.

**Requirement** – Maintain a filter effluent turbidity that never exceeds 1.0 NTU.

**Comment** – There was one instance where each filter exceeded the maximum limit of 1.0 NTU. Filter 1 on May 13, 2023, and filters 2, 3, 6 and 7 on April 10, 2023. The EO was notified.

### SaskWater Owned Water Transmission Systems

#### Prairie North Potable Water Supply System

**Requirement** – Sample and test continuously for free chlorine residual in the water within the distribution system. Maintain a free chlorine residual of not less than 0.10 mg/L in the water within the distribution system.

**Comment** – The free chlorine residual dropped below the required minimum on July 7, 2023, because of an abnormal low chlorine residual from the City of Lloydminster. The residual dropped as low as 0.08 mg/L but was adequate 99.96% of the time. Since this time, SaskWater has set up the capability to boost the residual if the low supply happens in the future. The EO was notified.

### Certified Operation and Maintenance Water Treatment Systems

#### Kindersley WTP

**Requirement** – Test and record daily readings for ultraviolet transmission, ultraviolet dosage and ultraviolet flow rate.

**Comment** – Ultraviolet transmittance, ultraviolet dosage and ultraviolet flow rate were mistakenly not recorded on February 26, 2023. Ultraviolet dosage and ultraviolet flow rate were mistakenly not recorded on October 13, 2023. The EO was notified of both instances.

### *Rural Municipality of Sherwood*

**Requirement** – Aesthetic objective for Sulphate is 500 mg/L

**Comment** – The aesthetic objective was exceeded, but all health regulatory requirements were met. The sulphate level was 756 mg/L.

**Requirement** – Aesthetic objective for Total Hardness is 800 mg/L.

**Comment** – The aesthetic objective was exceeded, but all health regulatory requirements were met. The Total Hardness level was 1161 mg/L.

**Requirement** – Aesthetic objective for Total Dissolved Solids is 1500 mg/L.

**Comment** – The aesthetic objective was exceeded, but all health regulatory requirements were met. The Total Dissolved Solids level was 1661 mg/L.

### *Certified Operation and Maintenance Water Transmission Systems*

#### *City of Meadow Lake*

**Requirement** – Sample and have tested three bacteriological samples per week.

**Comment** – Three samples collected for the week of October 22, 2023, were not able to be tested because of a delivery delay. The EO was notified. All bacteriological samples tested in 2023 were negative.

#### *Global Transportation Hub Authority*

**Requirement** – Sample and test continuously for free chlorine residual in the water within the distribution system. Maintain a free chlorine residual of not less than 0.10 mg/L in the water within the distribution system.

**Comment** – The continuous free chlorine residual dropped below the 0.10 mg/L minimum for one 15-minute reading on January 19, 2023. The

chlorine was adequate 99.997% of the time. The EO was notified.

**Comment** – Communication to the analyser was lost for a 1.5-hour period on January 12, 2023. The chlorine residual before the loss was 0.21 mg/L and after the loss was 0.34 mg/L. The EO was notified.

**Comment** – Water to the chlorine analyser was turned off by a third-party contractor on February 3, 2023. Water service was restored by SaskWater on February 6, 2023. Independent chlorine residual and laboratory bacteriological testing was completed successfully on February 6, 2023, to confirm water quality standard. The EO was notified.

**Comment** – An equipment malfunction caused inaccurate results from May 23, 2023, to May 24, 2023. Additional analyser calibrations were required to remedy the issue. Manual chlorine samples at another location on the system yielded adequate chlorine residuals. The EO was notified.

#### *North Central Rural Pipeline Association*

**Requirement** – Test continuously for free or total residual in the water within the distribution system.

**Comment** – The chlorine analyser was reading incorrectly from January 3, 2023, to January 6, 2023. SaskWater staff were aware but due to an unrelated safety issue the customer had previously requested that we not come on site; therefore, we delayed the repairs to the analyser until that was addressed. The EO was aware and SaskWater followed instructions to monitor the supply water chlorine residual.

#### *Village of Air Ronge*

**Requirement** – Sample and have tested (off-site) one fluoride sample per week.

**Comment** – The fluoride sample was missed being tested the week of July 2, 2023. The EO was notified. All fluoride samples tested in 2023 were below the maximum limit.

## Emergency Boil Water Orders

There were no emergency boil water orders (EBWO) issued on any SaskWater owned or operated facilities in 2023.

## Precautionary Drinking Water Advisories

A Precautionary Drinking Water Advisory (PDWA) is issued when drinking water quality concerns exist but immediate public health threats have not been identified. They are commonly issued as a result of power outages or maintenance that may result in depressurization of the distribution system.

There were eight (8) PDWAs issued on SaskWater owned potable water systems in 2023:

- **Buffalo Pound Potable Water System – East** had a PDWA issued on May 15, due to planned piping replacement in a manhole.
- **Buffalo Pound Potable Water System – West** had a PDWA issued on August 16, due to a water line break and repair as well as October 24, and December 13, due to outages at the Buffalo Pound Water Treatment Plant due to planned system work.
- **Buffalo Pound Potable Water System – North** had PDWAs issued on October 24, and December 13, due to outages at the Buffalo Pound Water Treatment Plant due to planned system work.
- **Saskatoon Potable Water System – North** had PDWAs issued on November 22, and November 27, due to planned system maintenance causing depressurization.

Where SaskWater provides operation and maintenance services to systems owned by a community or rural

pipeline association, there were seventeen (17) PDWAs issued in 2023 :

- **The Village of Elbow** had PDWAs issued on February 8, September 19, and October 11 due to hydrant replacements. PDWAs were also issued on October 3, due to a line break and October 23, due to a valve replacement.
- **The Village of Pierceland** had a PDWA issued on March 8, due to a power outage.
- **The Northern Village of Air Ronge** had a PDWA issued on March 21, due to a line break.
- **The Town of Kindersley** had PDWAs issued on February 27 (2), September 15, September 25, October 24, and November 3, due to watermain breaks.
- **The Village of Edenwold** had PDWAs issued on June 6, September 14, and November 8, due to power outages.
- **North Central Rural Pipeline Association** had a PDWA issued on October 31, due to a line break.







**SaskWater**

