

# Annual Report

## Sioux Lookout Urban Drinking Water System



# 2023

Prepared by **Northern Waterworks Inc.**  
on behalf of the **Municipality of Sioux Lookout**



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# 1 Introduction

## 1.1 Annual Reporting Requirements

This consolidated Annual Report (the Report) has been prepared in accordance with both section 11 (Annual Reports) and Schedule 22 (Summary Reports for Municipalities) of Ontario Regulation 170/03 (Drinking Water Systems Regulation). This Report is intended to inform both the public and Municipal Council about the operation of the system over the previous calendar year (January 1 to December 31, 2023).

Section 11 of O. Reg. 170/03 requires the development and distribution to the public of an annual report summarizing water quality monitoring results, adverse water quality incidents, system expenses and chemicals used in the water treatment process. Schedule 22 of O. Reg. 170/03 requires the development and distribution to Council of an annual report summarizing incidents of regulatory non-compliance and associated corrective actions, in addition to providing flow monitoring results for the purpose of enabling the Owner to assess the capability of the system to meet existing and planned demand.

## 1.2 Report Availability

In accordance with section 11 of O. Reg. 170/03, this Report must be given, without charge, to every person who requests a copy. Effective steps must also be taken to advise users of water from the system that copies of the report are available, without charge, and of how a copy may be obtained. This Annual Report shall be made available for inspection by the public at the Municipal Office in Sioux Lookout, at the Lost Lake Seniors Drop-In Centre in Hudson and on the Municipality's website.

In accordance with Schedule 22 of O. Reg. 170/03, this Annual Report must be given to the members of Municipal Council. Section 19 (Standard of care, municipal drinking-water system) of Ontario's *Safe Drinking Water Act* (SDWA) also places certain responsibilities upon those municipal officials who oversee an accredited operating authority or exercise decision-making authority over a system. The examination of this Report is one of the methods by which municipal officials may fulfil the obligations required by section 19 of the SDWA.

System users and members of Council should contact a representative of NWI for assistance in interpreting this Report. Questions and comments may be directed to the local NWI Operations Manager or by email to [compliance@nwi.ca](mailto:compliance@nwi.ca).

## 2 System Overview & Expenses

### 2.1 System Description

The Sioux Lookout Urban Drinking Water System must meet extensive treatment and testing requirements to ensure that human health is protected. The operation and maintenance of the system is governed by Ontario's *Safe Drinking Water Act* and the regulations therein, in addition to requirements within system-specific environmental approvals. Important system information is summarized in Table 1.

Drinking-Water System Name:	Sioux Lookout Urban Drinking Water System
DWS Number:	220001405
DWS Category:	Large Municipal Residential
DWS Owner:	The Corporation of the Municipality of Sioux Lookout
DWS Operating Authority:	Northern Waterworks Inc.
DWS Components:	<ul style="list-style-type: none"> <li>• Raw water pumping station</li> <li>• Sioux Lookout Water Treatment Plant</li> <li>• Sioux Lookout water distribution system, including the community standpipe and a booster station</li> </ul>
Treatment Processes:	<ul style="list-style-type: none"> <li>• Chemical coagulation and flocculation</li> <li>• Membrane ultrafiltration</li> <li>• Ultraviolet disinfection (primary disinfection)</li> <li>• Free chlorine disinfection (primary and secondary disinfection)</li> <li>• Fluoridation</li> <li>• pH adjustment</li> </ul>

Water production begins as raw water flows by gravity from the intake structure located in Pelican Lake to an underground reservoir located at the raw water pumping station. Pumps then transfer water from the reservoir and through a transmission line to the flocculation tanks at the water treatment plant. At the treatment facility, aluminum sulphate (coagulant) and sodium hydroxide (pH/alkalinity adjustment) are injected and rapidly mixed into the raw water immediately upstream from the flocculation tanks. In the tanks water is gently mixed to promote floc formation, which will in turn facilitate filtration.

Flocculated water is directed to underground process reservoirs containing submerged membrane ultrafilters. Permeate (filtered water) is drawn through the filters using a vacuum generated by pumps, effectively filtering impurities from the water. Permeate is then passed through one of two available UV reactors for disinfection and is injected with sodium hypochlorite (disinfectant), fluorosilicic acid (fluoridation) and sodium hydroxide (pH/alkalinity adjustment) as it is directed to the chlorine contact chamber and reservoir. The disinfected water is held in the contact chamber and reservoir for a sufficient amount of time to achieve free chlorine primary disinfection.

Treated water is delivered from the reservoir to the water distribution system using pumps located at the treatment facility. The Sioux Lookout water distribution system consists of approximately 34 km of water mains, 250 water main gate valves, 172 hydrants, a community standpipe for regulating pressure and providing extra storage, and a booster station serving the northeast portion of the system. Secondary disinfection requirements in the distribution system are achieved by maintaining a free chlorine residual at all locations.

## 2.2 Water Treatment Chemicals

In accordance with section 11 of O. Reg. 170/03, this Report must include a list of all water treatment chemicals used by the system during the period covered by the report (summarized in Table 2). All chemicals used in the treatment process are NSF/ANSI 60 certified for use in potable water, as required by system approvals.

Treatment Chemical	Application
aluminum sulphate	coagulant
fluorosilicic acid	fluoridation
sodium hydroxide	pH/alkalinity adjustment
sodium hypochlorite <sup>1</sup>	disinfectant, membrane filter cleans
calcium thiosuphate <sup>1</sup>	membrane filter cleans (dechlorination)
citric acid <sup>1</sup>	membrane filter cleans (pH adjustment)
hydrochloric acid <sup>1</sup>	membrane filter cleans (pH adjustment)

1. Cleaning and neutralizing agents used for membrane filter cleans are applied in smaller amounts. These chemicals are not injected into the process water stream.

## 2.3 System Expenses

In accordance with section 11 of O. Reg. 170/03, this Report must describe any major expenses incurred during the reporting period to install, repair, or replace required equipment. This Report also summarizes those expenses related to strengthening equipment inventories and to maintenance activities undertaken by subcontracted service providers. Major expenses incurred in 2023 are summarized in Table 3.

**Table 3:** Major expenses incurred in 2023

Category	Description	Expense
Inventory	Motor for recirculating pump at Standpipe	\$2,072
Inventory	Repair kits for chemical pumps	\$2,646
Inventory	Actuators and valves	\$2,771
Inventory	Pressure relief valves	\$1,491
Maintenance	Load test Generator	\$1,572
Maintenance	Reject pump repair	\$5,576
Maintenance	Annual Backflow preventor testing	\$1,373
Maintenance	Annual flow meter verifications	\$15,66
Inspection	Standpipe inspection	\$14,944
Maintenance	Annual Scada programming	\$3,000
Maintenance	Permeate Pump repair	\$9,938
Replacement	New Turbidity Analyzer for filter #2	\$10,045
Replacement	Front St watermain replacement and extension	\$159,208
Extension	Watermain into Hillcrest sub-division	\$406,571
Replacement	Booster pumping station	\$1,149,633
Extension	5th avenue watermain upgrade	\$134,347
Extension	Bigwood Watermain extension	\$191,760

### 3 Water Quality

#### 3.1 Overview

Water quality monitoring is conducted to determine and confirm that drinking water delivered to the consumer is safe and aesthetically pleasing. Monitoring is also required to assess compliance with legislation and to control the treatment process. In accordance with section 11 of O. Reg. 170/03, this Report must summarize the results of water quality tests required by regulations, approvals, and orders. The following sections summarize the results of all required water quality tests and compare the results to applicable water quality standards.

#### 3.2 Microbiological Parameters

Microbiological sampling and testing requirements are provided in Schedule 10 (Microbiological sampling and testing) of O. Reg. 170/03. In 2023, a total of 333 source, treated and distribution water samples were collected for microbiological analysis by an accredited laboratory. Samples were collected on a weekly basis and included tests for E. coli (EC), total coliforms (TC) and heterotrophic plate counts (HPC). Results from microbiological analyses are summarized in Table 4.

Sample Type	# of Samples	EC Results Range <sup>1</sup> (MPN/100mL)	TC Results Range <sup>1</sup> (MPN/100mL)	# of HPC Samples	HPC Results Range (CFU/mL)
Raw Water	52	0 to 13	0 to 261	---	---
Treated Water	55	absent	absent	55	0 to 1
Distribution	226	absent	absent	106	0 to 3

1. The Ontario Drinking Water Quality Standard for E. Coli and Total Coliforms in a treated or distribution sample is 'not detectable'. The presence of either parameter in a treated or distribution sample is considered an exceedance.

### 3.3 Operational Parameters

In accordance with Schedule 7 (Operational checks) of O. Reg. 170/03, regulated operational parameters that must be monitored include raw water turbidity, filtrate turbidity, treated water fluoride residuals and free chlorine residuals associated with primary and secondary disinfection. Table 5 summarizes water quality results for regulated and selected unregulated operational parameters. In accordance with Schedule 6 (Operational checks, sampling, and testing – general) of O. Reg. 170/03, certain operational parameters are continuously monitored. No Adverse Water Quality Incidents (AWQIs) pertaining to operational parameters occurred during the reporting period.

**Table 5:** Results summary for operational parameters

Parameter (Sample Type)	No. of Samples	Units	Min. Result	Max. Result	Annual Avg.	Adverse Result
Turbidity (Raw Water)	52	NTU	0.220	1.102	0.656	n/a
Turbidity (Filter 1)	Continuous	NTU	0.026	0.030	0.028	>1.0
Turbidity (Filter 2)	Continuous	NTU	0.023	0.033	0.026	>1.0
Turbidity (Treated)	365	NTU	0.015	0.116	0.066	n/a
pH (Treated)	Continuous	---	7.7	7.9	7.8	n/a
Alkalinity (Treated)	52	mg/L	20	35	25	n/a
Aluminum Residual (Treated)	53	mg/L	0.001	0.098	0.031	n/a
Fluoride Residual (Treated)	Continuous	mg/L	0.73	0.80	0.76	>1.5
FCR <sup>1</sup> (Treated)	Continuous	mg/L	2.08	2.47	2.23	n/a
FCR <sup>1</sup> (Distribution) <sup>2</sup>	520+	mg/L	0.31	2.54	n/a	<0.05

1. FCR = free chlorine residual.  
 2. Free chlorine residuals are tested at various locations in the distribution system. The free chlorine residual varies with water age and distribution system location, and the values in the table pertain to the minimum and maximum results collected across all locations in the calendar year.

### 3.4 Membrane Filtration & UV Disinfection Performance

In accordance with the *Municipal Drinking Water Licence*, the filtration process must meet certain performance criteria in order to claim removal credits for *Cryptosporidium* oocysts and *Giardia* cysts. Specifically, filter integrity must be monitored, and turbidity must be less than or equal to 0.1 NTU in at least 99% of the measurements each month. Table 6 summarizes filtrate turbidity compliance against the <0.1 NTU/99% performance criterion, and minimum and maximum values in the table correspond to the proportion of time that turbidity was less than or equal to 0.1 NTU in a calendar month in 2023. No Adverse Water Quality Incidents (AWQIs) pertaining to membrane filtration performance occurred during the reporting period.

Filter	Minimum Result	Maximum Result	Adverse Result
Filter 1	100%	100%	<99%
Filter 2	100%	100%	<99%

To achieve primary disinfection, the UV reactors at the Sioux Lookout WTP must operate within their validated operating conditions to achieve a minimum continuous pass-through UV dose of 20 mJ/cm<sup>2</sup> (based on a *Cryptosporidium* bracket reduction equivalent dose). The dose is a function of the flow through the reactors, the applied UV intensity and the UV transmittance (purity) of the filtrate. The reactors are considered to be operating “off-specification” any time when conditions are below a minimum calculated dosage, below a minimum UV transmittance or above a maximum flow rate for more than 2 minutes.



Table 7 summarizes UV equipment performance against the validated operating conditions. An off-specification event is classified as an AWQI if UV equipment operates outside of the validated range for a continuous period of 10 minutes. No AWQIs pertaining to UV disinfection occurred during the reporting period.

**Table 7: UV disinfection performance summary**

Parameter	Number of Samples	Units	Min. Result	Max. Result	Annual Avg.	Adverse Result
Flow (Combined Filtrate)	Continuous	L/s	n/a	68.6 <sup>1</sup>	49.1	>65.0
UV Dosage (Reactor 1)	Continuous	mJ/cm <sup>2</sup>	22.77	n/a	28.5	<20.0
UV Dosage (Reactor 2)	Continuous	mJ/cm <sup>2</sup>	5.74 <sup>2</sup>	n/a	41.5	<20.0
UV Transmittance (Filter 1)	103	%/1cm	86.0	91.5	89.1	<82.0
UV Transmittance (Filter 2)	103	%/1cm	87.0	91.4	89.2	<82.0

1 – max result duration was 7 seconds (< 2 minutes)  
 2 – see notes above. The minimum dosage was 25.51 mJ/cm<sup>2</sup> when “off-specification” events are excluded

### 3.5 Nitrate & Nitrite

Treated water is tested for nitrate and nitrite concentrations on a quarterly basis in accordance with Schedule 13 (Chemical sampling and testing) of O. Reg. 170/03. Nitrate and nitrite results are provided in Table 8. All results were below the Ontario Drinking Water Quality Standards.

**Table 8: Nitrate and nitrite results**

Sample Date	Nitrate		Nitrite	
	Result (mg/L)	ODWQS (mg/L)	Result (mg/L)	ODWQS (mg/L)
15-Feb-2023	0.086	10	<0.010	1
16-May-2023	0.080		<0.010	
15-Aug-2023	<0.020		<0.010	
14-Nov-2023	0.067		<0.010	

### 3.6 Trihalomethanes & Haloacetic Acids

Trihalomethanes (THMs) and haloacetic acids (HAAs) are sampled on a quarterly basis from a distribution system location that is likely to have an elevated potential for their formation, in accordance with Schedule 13 (Chemical sampling and testing) of O. Reg. 170/03. Total THM and HAA results are provided in Table 9 and Table 10, respectively. Compliance with the provincial standards for trihalomethane and haloacetic acid concentrations is determined by calculating a running annual average (RAA). The 2023 running annual average for THMs was below the respective Ontario Drinking Water Quality Standards. Three (3) AWQIs were reported for an HAA exceedance in 2023.

Sample Date	Result (µg/L)
15-Feb-2023	53.3
16-May-2023	45.6
1-Aug-2023	83.0
15-Nov-2023	68.8
Regulatory Average (RAA)	62.7
ODWQS (RAA)	100

Sample Date	Result (µg/L)	Quarterly RAA
15-Feb-2023	52.2	80.8
16-May-2023	40.0	70.3
15-Aug-2023	72.4	60.4
14-Nov-2023	63.9	57.1
Regulatory Average (RAA)	57.1	
ODWQS (RAA)	80	

### 3.7 Lead Sampling

Based upon favourable drinking-water lead sampling results in the community, the Sioux Lookout Urban Drinking Water System previously qualified for reduced lead sampling and ultimately became exempt from sampling at plumbing locations in accordance with Schedule 15.1 (Lead) of O. Reg. 170/03. Distribution samples must now be collected every year and analyzed for pH and alkalinity. Additionally, these distribution system samples must be analyzed for lead in every third 12-month period (last completed in 2021) after the plumbing sample exemption was activated. Table 11 summarizes the results of lead sampling and related required tests.

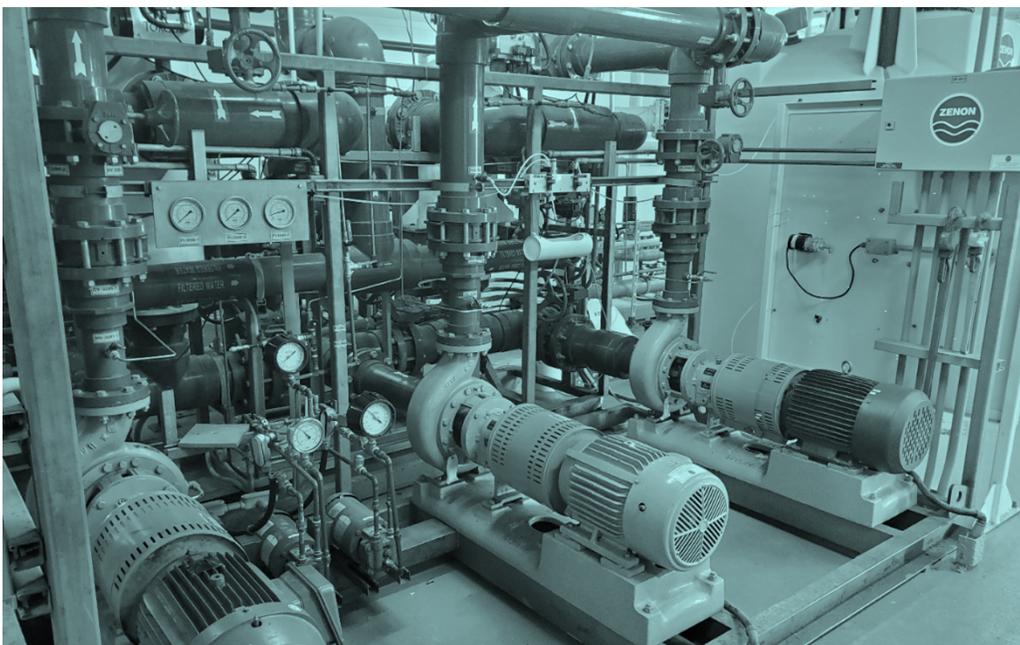
**Table 11:** Distribution pH, alkalinity and lead sampling results

Sample Date	Distribution Sample Location	pH	Alkalinity (mg/L)	Lead Result <sup>1</sup> (µg/L)
3-Apr-2023	Bleeder - 92 Ethel St	7.6	30	n/a
3-Apr-2023	Bleeder – Queen St/Second Ave	7.7	25	n/a
3-Apr-2023	Standpipe	7.6	30	n/a
13-Sept-2023	Hydrant at Meadwell/Fourth Ave	7.6	35	n/a
13-Sept-2023	Hydrant at Prince St/Fourth Ave	7.7	35	n/a
13-Sept-2023	Hydrant at Front St/Third Ave	7.6	35	n/a

1. The Ontario Drinking Water Quality Standard for lead in drinking-water is 10 µg/L.

### 3.8 Inorganic & Organic Parameters

Most inorganic parameters are sampled on an annual basis in treated water in accordance with Schedules 13 (Chemical sampling and testing) and 23 (Inorganic parameters) of O. Reg. 170/03. The inorganic parameter sodium is sampled every five (5) years in treated water in accordance with Schedules 13 and 23 of O. Reg. 170/03. Although grab samples may be analyzed, regulatory testing for fluoride is achieved using continuous monitoring equipment at the Sioux Lookout Water Treatment Plant in accordance with Schedule 6 of O. Reg. 170/03. The most recent inorganic parameter sampling results are provided in Table 12. All results were below the associated Ontario Drinking Water Quality Standards.



**Table 12:** Inorganic parameter sampling results

Parameter	Most Recent Sample Date	Units	Result	ODWQS
Antimony	15-Aug-2023	µg/L	<0.60	6
Arsenic	15-Aug-2023	µg/L	<1.0	10
Barium	15-Aug-2023	µg/L	<10	1000
Boron	15-Aug-2023	µg/L	<50	5000
Cadmium	15-Aug-2023	µg/L	<0.10	5
Chromium	15-Aug-2023	µg/L	<1.0	50
Fluoride	25-Feb-2020	mg/L	0.688	1.5
Mercury	15-Aug-2023	µg/L	<0.100	1
Selenium	15-Aug-2023	µg/L	<1.0	50
Sodium	25-Feb-2020	mg/L	13.4	20
Uranium	15-Aug-2023	µg/L	<2.0	20

Organic parameters are sampled on an annual basis in treated water in accordance with Schedules 13 (Chemical sampling and testing) and 24 (Organic parameters) of O. Reg. 170/03. These parameters include various organic acids, pesticides, herbicides, PCBs, volatile organics and other chemicals. Sampling for the organic parameters was conducted on August 15, 2023. Sampling results for organic parameters are provided in Table 13; all results were below the associated Ontario Drinking Water Quality Standards.

**Table 13:** Organic parameter sampling results

Parameter	Result (µg/L)	ODWQS (µg/L)	Parameter	Result (µg/L)	ODWQS (µg/L)
Alachlor	<0.10	5	Diuron	<1.0	150
Atrazine & Metabolites	<0.20	5	Glyphosate	<0.20	280
Azinphos-methyl	<0.10	20	Malathion	<0.10	190
Benzene	<0.50	1	MCPA	<0.0002	100
Benzo(a)pyrene	<0.005	0.01	Metolachlor	<0.10	50
Bromoxynil	<0.20	5	Metribuzin	<0.10	80
Carbaryl	<0.20	90	Monochlorobenzene	<0.50	80

**Table 13:** Organic parameter sampling results

Parameter	Result (µg/L)	ODWQS (µg/L)	Parameter	Result (µg/L)	ODWQS (µg/L)
Carbofuran	<0.20	90	Paraquat	<1.0	10
Carbon Tetrachloride	<0.20	2	Pentachlorophenol	<0.50	60
Chlorpyrifos	<0.10	90	Phorate	<0.10	2
Diazinon	<0.10	20	Picloram	<0.20	190
Dicamba	<0.20	120	Total PCBs	<0.030	3
1,2-Dichlorobenzene	<0.50	200	Prometryn	<0.10	1
1,4-Dichlorobenzene	<0.50	5	Simazine	<0.10	10
1,2-Dichloroethane	<0.50	5	Terbufos	<0.10	1
1,1-Dichloroethylene	<0.50	14	Tetrachloroethylene	<0.50	10
Dichloromethane	<1.0	50	2,3,4,6-Tetrachlorophenol	<0.50	100
2,4-Dichlorophenol	<0.30	900	Triallate	<0.10	230
2,4-D	<0.20	100	Trichloroethylene	<0.50	5
Diclofop-methyl	<0.10	9	2,4,6-Trichlorophenol	<0.50	5
Dimethoate	<0.10	20	Trifluralin	<0.10	45
Diquat	<1.0	70	Vinyl Chloride	<0.50	1

### 3.9 Harmful Algae Bloom Monitoring

Starting in 2022 a requirement was added to the Municipal Drinking Water License to monitor for Harmful Algae Blooms. If a bloom is identified or suspected, then microcystin testing must be undertaken. According to the HAB plan sampling must continue for three (3) weeks of no microcystin identified. There were two (2) suspected blooms in 2023. Testing results shown in Table 15 did not identify any microcystin.

Occurrence Date	27-Jun-2023		4-Jul-2023	
Microcystin (µg/L)	Raw (1) <sup>1</sup>	Treated (1) <sup>1</sup>	Raw (3) <sup>1</sup>	Treated (3) <sup>1</sup>
	NR	<0.1	<0.1	<0.1
1 – this indicates the number of weekly samples taken				

## 4 Water Production

### 4.1 Overview

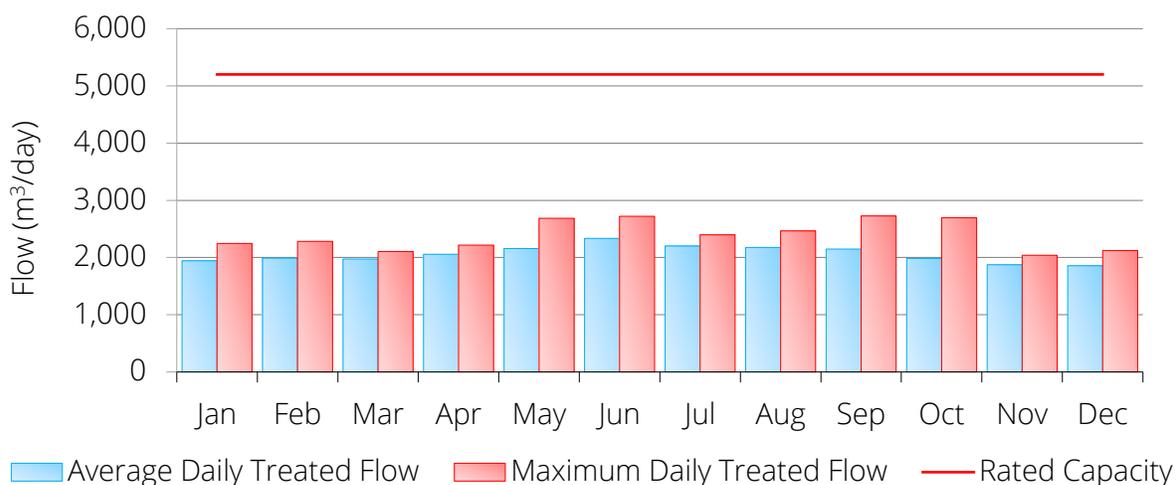
In accordance with Schedule 22 (Summary Reports for Municipalities) of O. Reg. 170/03, this Annual Report must include certain information for the purpose of enabling the Owner to assess the capability of the system to meet existing and planned uses. Specifically, this Report must include a summary of the quantities and flow rates of the water supplied during the reporting period, including monthly average and maximum daily flows. The Report must also include a comparison of flow monitoring results to the rated capacity and flow rates approved in the system's *Municipal Drinking Water Licence*.



### 4.2 Flow Monitoring Results

Throughout the reporting period the Sioux Lookout Urban Drinking Water System operated within its rated capacity and supplied a total of 751,199 m<sup>3</sup> of treated water. On an average day in 2023, 2,058 m<sup>3</sup> of treated water was supplied to the community, which represents 40% of the rated capacity of the Sioux Lookout Water Treatment Plant (5,200 m<sup>3</sup>/day). The maximum daily flow in 2023 was 2,727 m<sup>3</sup>/day, which represents 52% of the rated capacity of the treatment facility. Flow monitoring results are summarized in Figure 1 and Table 14. The capacity assessments in the table compare the average and maximum daily flows to the rated capacity of the treatment facility.

**Figure 1: 2023 average and maximum daily treated water flows**



**Table 14: 2023 water production summary**

Month	Total Volumes (m³)		Daily Flows (m³/day)		Capacity Assessments	
	Raw Water	Treated Water	Average - Treated Water	Maximum - Treated Water	Average - Treated Water	Maximum - Treated Water
Jan	68,401	60,223	1,943	2,246	37%	43%
Feb	63,421	55,701	1,989	2,283	38%	44%
Mar	69,722	61,207	1,974	2,105	38%	40%
Apr	69,769	61,725	2,058	2,217	40%	43%
May	77,425	66,873	2,157	2,686	41%	52%
Jun	80,928	70,042	2,335	2,721	45%	52%
Jul	78,856	68,235	2,201	2,397	42%	46%
Aug	77,857	67,464	2,176	2,465	42%	47%
Sep	75,278	64,446	2,148	2,727	41%	52%
Oct	71,746	61,524	1,985	2,695	38%	52%
Nov	66,215	56,210	1,874	2,040	36%	39%
Dec	66,382	57,549	1,856	2,123	36%	41%
Total	866,000	751,199	---	MAX:	---	---
Average	72,167	62,600	2,058	2,727	40%	---

### 4.3 Recent Historical Flows

Table 15 summarizes recent historical flow monitoring results for the Sioux Lookout Urban Drinking Water System. There was an increase in the volumes of source water withdrawn and treated water supplied in 2023 when compared to 2022, and system flows have remained stable over the previous decade. Total annual volumes of treated water supplied in the near future may be expected to be between 700,000 m<sup>3</sup> and 850,000 m<sup>3</sup>, which represents approximately 37% to 45% of the rated capacity of the Sioux Lookout Water Treatment Plant.

**Table 15:** Recent historical water production summary

Year	Total Volumes (m <sup>3</sup> )		Daily Flows (m <sup>3</sup> /day)		Annual % Change	
	Raw Water	Treated Water	Average – Treated Water	Maximum – Treated Water	Raw Water	Treated Water
2011	888,430	729,341	1,998	3,008	-3.8%	+6.1%
2012	979,670	785,457	2,146	2,837	+10.3%	+7.7%
2013	846,566	697,954	1,912	3,411	-13.6%	-11.1%
2014	710,645	606,465	1,662	2,385	-16.1%	-13.1%
2015	819,063	663,813	1,819	2,495	+15.3%	+9.5%
2016	804,401	679,025	1,855	2,522	-1.8%	+2.3%
2017	782,201	680,914	1,866	3,111	-2.8%	+0.3%
2018	760,142	652,723	1,788	2,446	-2.8%	-4.1%
2019	755,581	657,334	1,801	2,517	-0.6%	+0.7%
2020	760,661	660,678	1,805	2,363	+0.7%	+0.5%
2021	759,972	656,924	1,800	2,311	-0.1%	-0.6%
2022	800,029	690,435	1,892	2,700	5.3%	5.1%
2023	866,000	751,196	2,058	2,727	8.2%	8.8%

## 5 Compliance

### 5.1 Overview

Northern Waterworks Inc. and the Municipality of Sioux Lookout employ an operational strategy that is committed to achieving the following goals:

- Providing a safe and reliable supply of drinking water to the community of Sioux Lookout;
- Meeting or exceeding all applicable legislative and regulatory requirements; and,
- Maintaining and continually improving the operation and maintenance of the system.

The following sections will summarize incidents of adverse water quality and regulatory noncompliance that occurred during the reporting period. NWI is committed to employing timely and effective corrective actions to prevent recurrence of all identified incidents of adverse water quality and regulatory noncompliance.

### 5.2 Regulatory Compliance

In accordance with Schedule 22 (Summary Reports for Municipalities) of O. Reg. 170/03, this Report must list any requirements of the *Act*, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report (i.e., an incident of regulatory noncompliance). Additionally, this Report must specify the duration of the failure and the measures that were taken to correct the failure.

One (1) inspection by Ontario's Ministry of the Environment, Conservation and Parks was initiated during the reporting period. The inspection was initiated on December 14, 2023; the final inspection rating was 96.45%. One (1) incident of regulatory non-compliance was identified. Information concerning the incident is provided below.

- **Noncompliance item no. 1**

The owner/operating authority was not in compliance with the requirement to collect daily chlorine residuals. 1. O. O.Reg. 170/03, Schedule 7, sections 7-2(3) & (4) states that systems providing secondary disinfection shall ensure that at least seven distribution samples are taken each week and are tested immediately for free chlorine residual if the system provides

chlorination. In order to meet this requirement, operators collect daily chlorine grab samples. Chlorine residuals were also collected during routine bacteriological sampling in the distribution system. Through a record review and discussion with operators, the undersigned officer determined that distribution chlorine residuals were not collected as required during the following dates: November 18, 2022 and November 25, 2022.

Effective immediately, the DWS owner shall ensure that at least seven distribution samples are taken each week and are tested immediately for free chlorine residual in accordance with O.Reg. 170/03, Schedule 7, sections 7-2(3) & (4). Future violations under O. Reg. 170/03, Schedule 7, sections 7-2(3) & (4) may result in the issuance of mandatory abatement instruments including Orders, tickets, penalties, or referrals to the ministry's Environmental Investigations and Enforcement Branch (EIEB).

### **5.3 Adverse Water Quality Incidents**

In accordance with section 11 (Annual Reports) of O. Reg. 170/03, this Report must summarize any reports made to the Ministry under subsection 18(1) (Duty to report adverse test results) of *the Act* or section 16-4 (Duty to report other observations) of Schedule 16 of O. Reg. 170/03. Additionally, this Report must describe any corrective actions taken under Schedule 17 of O. Reg. 170/03 during the period covered by the report.

The four (4) adverse water quality incidents that occurred during the reporting period are summarized below.

- **AWQI 161084 (January 3, 2023) & AWQI 161672 (April 4, 2023)**  
The calculated running annual average (RAA) for haloacetic acid (HAA) at the end of quarter 4 (2022) was 86.5µg/L which was above the regulatory limit of 80µg/L. The calculated running annual average (RAA) for haloacetic acid (HAA) at the end of quarter 1 was 80.8µg/L which was above the regulatory limit of 80µg/L. The Northwest Health Unit recommended continued monitoring until membranes were replaced in Q2 and a possible bleeder at the airport in the summer months if the RAA remained above the limit. A Notice of Issue Resolution was submitted to the Ministry on June 19, 2023 when the calculated running annual average (RAA) for haloacetic acid (HAA) at the end of quarter 2 was 70.3µg/L which was below the regulatory limit of 80µg/L.
- **AWQI 163281 (September 1, 2023)**  
An observation of low chlorine in the distribution system occurred during the installation of a new water main. Valves isolated and a dead end was created with no

hydrant to flush. A bleeder valve was installed at a house before the dead end. Residuals varied from 0.03 to 0.07 mg/L from the bleeder. A localized boil water advisory was issued on September 1 and rescinded on September 20, 2023 following completion of the installation and two consecutive sets of bacteriological samples showing no bacteria present.

- **AWQI 163483 (September 1, 2023)**

An incident of low distribution pressure occurred on September 16, 2023 when a temporary line feeding businesses on Front St. was broken. 5 customers had no pressure. A repair was made to the watermain and the line was flushed. The chlorine residual after flushing was 1.98mg/. A localized boil water advisory (BWA) was initiated on Sept 16, 2023. A sample taken on September 18 showed no bacteria present. The BWA was rescinded on September 20, 2023.

