

Bluewater Lakeshore Distribution System

Waterworks # 260006542
System Category – Large Municipal Residential

Annual Drinking Water Report

Prepared For: Municipality of Bluewater

Reporting Period of January 1st – December 31st, 2023

Issued: February 23, 2024

Revision: 0

Operating Authority:



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Overview

This report fulfills requirements of Ontario Regulation 170/03 Section 11 and Schedule 22. The report must be made available to anyone that requests a copy of the report. By March 31st, 2024 the report must be provided to members of municipal council.

Report Availability

This system does not serve more than 10,000 residences and the annual reports will be available to residents at the Municipal Office as well as as on the municipal website. Notification will be at the Municipal Office and copies provided free of charge if requested. The Municipal Office is located at 14 Mill Avenue Zurich, ON N0M 2T0.

System Process Description

The Bluewater Lakeshore distribution system trunk main (250mm, 300mm, 350mm) is fed from the Lake Huron Primary Water Supply System (LHPWSS) north along Highway 21 to Bayfield. The Stanley Booster Pumping Station is located on the southwest corner of Highway 21 and Danceland Road. This booster station increases system pressure during periods of high demand. An elevated storage tank, with a total volume of 4000 m³ supplies water to the remainder of the residents of Bayfield. This elevated tank facility contains standby re-chlorination equipment, two chemical metering pumps (one duty and one standby) and an online chlorine analyzer. The online chlorine analyzer residuals are monitored by a SCADA system located in Zurich. This system serves a population of 7,400 residents.

Summary of Non-Compliance

Adverse Water Quality Incidents

Under the *Safe Drinking Water Act*, O.Reg 170/03, any adverse water quality incidents (AWQI) are required to be reported to the Ministry of the Environment, Conservation and Parks (MECP) and corrective action taken. Refer to Table 1 below for a summary of AWQI incidents in 2023.

Table 1: *Adverse Water Quality Incidents*

Date	AWQI #	Problem	Details	Legislation	Corrective Action Taken
There were no AWQI's reported during the reporting period.					

Non-Compliance

Under the *Safe Drinking Water Act*, O.Reg 170/03, any events where legislative requirements were not met are required to be reported to the MECP and corrective actions taken. Refer to Table 2 below for a summary of non-compliance incidents in 2023.

Table 2: Summary of Non-Compliance Incidents

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliance issues reported during the reporting period.				

Non-Compliance Identified in a Ministry Inspection

The routine MECP Inspections have an Inspection Rating Record. This record evaluates the system to provide information for the owner/operator on areas that need to be improved. The particular areas that were evaluated for the Bluewater Lakeshore Distribution System were: Treatment Processes, Operations Manuals, Logbooks, Certification and Training, Water Quality Monitoring, and Reporting and Corrective Actions. This system received 0 out of 220 non-compliance ratings and as such received 100% for the Final Inspection Rating.

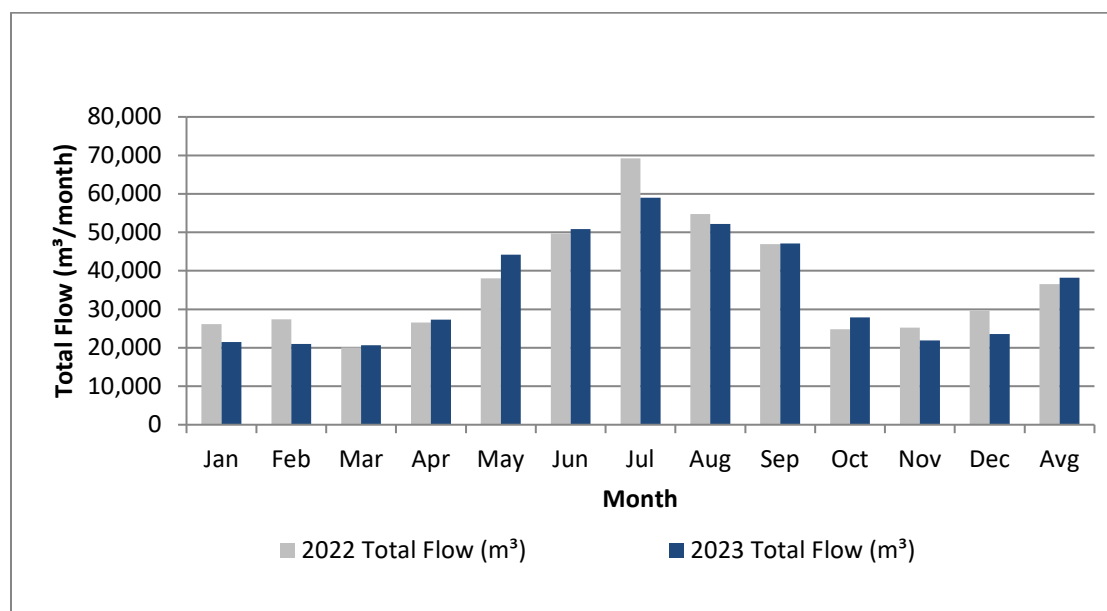
Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliances identified in the Inspection Report.				

Flows

Flows to Distribution System from LHPWSS

The total flow to the Bluewater Lakeshore Distribution System from LHPWSS was 417,113 m³. This is a 5% increase from 2022. See Figure 1 below for the monthly flows to the Bluewater Lakeshore Distribution System.

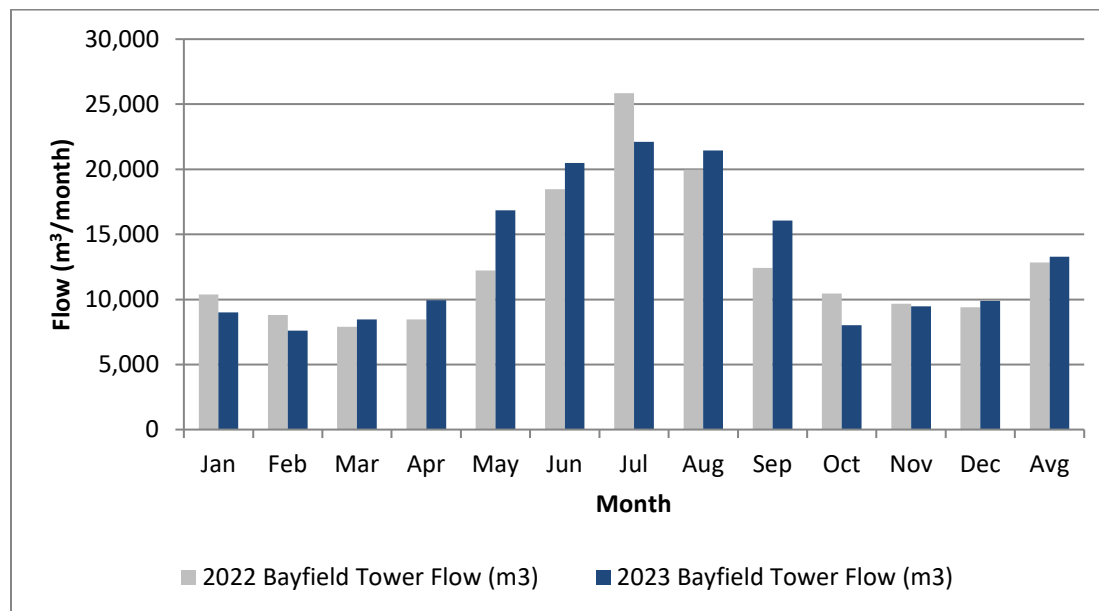
Figure 1: Monthly Flows to the Bluewater Lakeshore Distribution System



Flows through the Bayfield Water Tower

Flow is also measured at the Bayfield Water Tower. Figure 2 provides the total monthly flow of water that has passed through the tower.

Figure 2: Bayfield Tower Flows



Total and Average Daily Flows by Month

The Bluewater Lakeshore Distribution System Municipal Drinking Water License (License Number: 045-102) does not identify a system rated capacity. The agreement between the Municipality of Bluewater and the LHPWSS Board of Management (Regional Water Supply) does not specify a maximum water taking volume.

The 2023 total flow and average daily flows per month and the maximum total and daily flow are listed in Table 3 below.

Table 3: Bluewater Lakeshore Distribution System Flows

Month	Total Flow (m ³)	Average Daily Flow (m ³)
January	21 456	692
February	21 009	750
March	20 644	666
April	27 309	910
May	44 193	1426
June	50 859	1695
July	58 963	1902
August	52 201	1684
September	47 083	1569
October	27 881	899
November	21 935	731
December	23 580	761
TOTAL	417 113	13 686
MAXIMUM	58 963	1902
AVERAGE	38 191	1141

Regulatory Sample Results Summary

Microbiological Testing

To meet regulatory requirements, the distribution system is sampled on a weekly basis at various locations for E. coli, Total Coliforms and heterotrophic plate count (HPC). The regulatory limit for Total Coliform and E. coli is zero, heterotrophic plate count (HPC) doesn't have a limit. Refer to Table 4 below.

Table 4: Microbiological Testing Summary

	No. of Samples Collected	Range of E.Coli Results (cfu/100mL)		Range of Total Coliform Results (cfu/100mL)		No. of HPC Samples Collected	Range of HPC Results (cfu/mL)	
		Min	Max	Min	Max		Min	Max
Distribution Water	206	0	0	0	0	90	10	30

Operational Testing

Free chlorine residuals are monitored throughout the distribution system to meet regulatory requirements and ensure adequate secondary disinfection is provided. Refer to Table 5 below.

Table 5: Free Chlorine Residuals

Parameter	No. of Samples Collected	Range of Results	
		Min	Max
Free Chlorine Residual, grab (mg/L)	364	0.42	1.14

Inorganic Parameters

Schedule 15.1 Sampling

The Schedule 15.1 Sampling is required under O.Reg 170/03, this includes sampling for lead, alkalinity and pH. The Bluewater Lakeshore Distribution system is under reduced sampling. As such, no residential plumbing samples were required to be collected. Monitoring the pH and alkalinity in the distribution system is essential to ensure adequate buffering for corrosion control and to minimize exposure to metals such as lead. Refer to Table 6 below.

Table 6: Schedule 15.1 Sample Results

Distribution System	Number of Samples	Range of Results		MAC	Number of Exceedances
		Minimum	Maximum		
Alkalinity (mg/L)	6	80	84	n/a	n/a
pH	6	7.15	7.92	n/a	n/a
Lead (ug/l)	2	0.16	0.4	10	0

Organic Parameters

Organic parameters are tested quarterly as a requirement under O.Reg 170/03. This includes testing for chlorine byproducts including Trihalomethane and Halocetic Acid. Refer to Table 7 below.

Table 7: Organic Parameter Testing

Distribution Water	Annual Running Average	MAC	Number of Exceedances
Trihalomethane: Total (ug/L)	36.5	100	0
Halocetic Acids: Total (ug/L)	13.6	80	0

MAC = Maximum Allowable Concentration as per O.Reg 169/03

Additional Legislated Samples

There are no additional sampling requirements within the Bluewater Lakeshore Distribution System.

Major Maintenance and Capital Summary

The Bluewater Lakeshore Distribution System completed a number of repairs, installations, replacements and projects as listed below. These represent the major expenses incurred in 2023.

Table 8: *Major Maintenance in 2023*

Item	Description
1	Watermain and Appurtenance Repairs
2	Bayfield Water Tower Painting and Disinfection
3	Water Service Installation
4	Lake Huron Primary Water Supply System Shutdowns

Revision History

Date	Revision #	Revision Notes
February 23, 2024	0	Issued Report