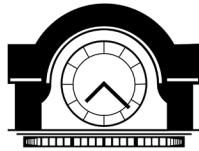


BROCKVILLE DRINKING WATER SYSTEM



BROCKVILLE

CITY OF THE 1000 ISLANDS

2024 ANNUAL WATER QUALITY REPORT

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DATE: February 25, 2025

EXECUTIVE SUMMARY

The City of Brockville's Water Systems Division is pleased to provide the 2024 Annual Drinking Water Quality Report. The purpose of this report is to keep the public and Council informed regarding the quality of the City's drinking water and the performance and maintenance of our water treatment and distribution systems.

The City of Brockville is dedicated to delivering a clean, safe, reliable, drinking water supply to the consumer while remaining compliant with all regulatory requirements. Achievement of those commitments is supported by risk-based process evaluation, staff competency, effective communications, and appropriate contingency / incident response measures. The managers and employees of the City of Brockville who are directly involved in the production and delivery of safe drinking water are committed to and share in the responsibilities for implementing, maintaining, and contributing to the continual improvement of the Drinking Water Quality Management System. The water delivered to the consumers in the City of Brockville and a portion in the Township of Elizabethtown-Kitley continues to be safe, meeting all drinking water quality regulatory standards.

This Annual Drinking Water Quality Report is prepared in accordance with the Municipal Drinking Water Licence, Drinking Water Works Permit for the Brockville Drinking Water System and Ontario Regulation 170/03, Section 11 and Schedule 22. Included with this report are analytical data, plant flow, adverse water quality incidents and corrective action resolutions, as well as a process flow schematic of the facility.

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LIST OF ACRONYMS & DEFINITIONS

AWQI	Adverse Water Quality Incidents
	Examples of adverse water results:
	<ul style="list-style-type: none">▪ An analytical result that exceeds a health-based water quality standards▪ Any evidence that disinfection may not have been effective▪ Low chlorine residuals
C of A	Certificate of Approval
CFU	colony forming units
CGSB	Canadian General Standards Board
DWQMS	Drinking Water Quality Management Standard
GUDI	groundwater under the direct influence of surface water
L/s	litres per second
m ³ /d	cubic metres per day
mg/L	milligrams per litre
mL	milliliter
ML/d	Mega (million) litres per day
MECP	Ministry of the Environment, Conservation and Parks (Ontario)
MOH	Medical Officer of Health
PVC	Poly Vinyl Chloride
O. Reg.	Ontario Regulation
PTTW	Permit to Take Water
R.R.O.	Revised Regulations Ontario (1990)
SCADA	Supervisory Control and Data Acquisition
SDWA	Safe Drinking Water Act, 2002
WTP	Water Treatment Plant

1. INTRODUCTION

This Annual Water Quality Report is for the period from January 1st to December 31st, 2024 and includes reporting for both the municipal drinking water treatment and distribution systems that the City of Brockville owns and operates and the water distribution system that the Township of Elizabethtown-Kitley owns and the City of Brockville operates.

This report contains three different reports required for the City of Brockville and the Elizabethtown-Kitley Drinking Water Systems:

- Section 11 Annual Report, as per Section 11 of O. Reg. 170/03
- Summary report as per Schedule 22 of O. Reg. 170/03
- Summary of the raw water values that were submitted to the Ministry of the Environment, Conservation and Parks under O. Reg. 387/04 Water Taking & Transfer

This annual report is available to the public at no charge. Users of this drinking water system have been notified that this annual report is available by placing a notice on the City of Brockville's website. The 2024 Annual Water Quality Report is available at the following locations:

- City of Brockville's website - www.brockville.com
- City of Brockville – Public Library
- City of Brockville – Customer Service office, City Hall
- City of Brockville – Water Systems Division, 20 Rivers Ave., 613-342-8772 ext. 5512
- Township of Elizabethtown-Kitley's website - <http://www.ektwp.ca>
- Township of Elizabethtown-Kitley's Municipal Office – 6544 New Dublin Road, Addison

2. LEGISLATED REQUIREMENTS

2.1 Drinking-Water Systems Regulation (O. Reg. 170/03)

Under Section 11 of the Drinking Water Systems Regulation (O. Reg. 170/03), the annual report must cover the period from January 1st to December 31st in a year and must be prepared not later than February 28th of the following year.

Under Schedule 22 of the Drinking Water Systems Regulation (O. Reg. 170/03), Summary Reports for Municipalities, annual reports to the owners of large municipal residential systems and small municipal systems are required. The summary report must be submitted no later than March 31st to members of municipal council. The contents must list the requirements of the *Safe Drinking Water Act, 2002*, the regulations, the system's approval and any order that the system failed to meet at any time during the reporting period covered, specify the duration of the failure, and the measures taken to correct the failure.

Under Section 9 of O. Reg. 387/04 Water Taking & Transfer on or before March 31st, in every year the data collected from the previous year shall be submitted to a Director.

This information is reported through the Ministry of the Environment, Conservation and Parks Water Taking Reporting System.

In addition, the report must include a summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly averages, maximum daily flows and daily instantaneous peak flows. The summary must be compared to the rated capacity and flows provided in the system’s Municipal Drinking Water Licence.

The City of Brockville is the Owner of the Water Treatment Plant, trunk and local water distribution systems, and the City of Brockville is the Operating Authority for the Township of Elizabethtown-Kitley’s water distribution system.

2.2 Summary of Regulatory Requirements

Acts and Regulations

Regulated systems must meet the requirements of Ontario's *Safe Drinking Water Act, 2002* and its regulations. Most notably, the Drinking Water Systems Regulation sets out treatment and testing requirements for all categories of regulated water systems, including small non-municipal and seasonal operations.

Safe Drinking Water Act, 2002

In the Part Two Report of the Walkerton Inquiry, Justice O'Connor recommended that the Ontario government enact a *Safe Drinking Water Act, 2002* to deal with matters related to treatment and distribution of drinking water. As articulated by Justice O'Connor, the purpose of the *Safe Drinking Water Act, 2002* is to gather in one place all legislation and regulations relating to the treatment and distribution of drinking water.

Summary of Provincial Legislation Significant to Water Operations

ACT	O. Reg.
WATER OPPORTUNITIES and WATER CONSERVATION ACT	
➤ Water Opportunities and Water Conservation Act, 2010	Bill 72
CLEAN WATER ACT, 2006	
➤ Source Protection Areas and Regions	O. Reg. 284/10
➤ Source Protection Committees	O. Reg. 288/10
➤ Terms of Reference	O. Reg. 287/07
SAFE DRINKING WATER ACT, 2002	
➤ Drinking Water Systems Regulation	O. Reg. 170/03
➤ Certification of Drinking-Water System Operators and Water Quality Analysts	O. Reg. 128/04
➤ Drinking Water Testing Services - relating to laboratory licensing	O. Reg. 248/03
➤ Schools, private schools and day nurseries	O. Reg. 243/07

➤ Compliance and Enforcement Regulation	O. Reg. 242/05
SAFE DRINKING WATER ACT, 2002 Continued	
➤ Ontario Drinking Water Quality Standards	O. Reg. 169/03
➤ Definitions of Words and Expressions Used in the Act	O. Reg. 171/03
➤ Definition of Deficiency and Municipal Drinking Water System	O. Reg. 172/03
➤ Licensing of Municipal Drinking-Water Systems	O. Reg. 188/07
➤ Financial Plans	O. Reg. 453/07
ONTARIO WATER RESOURCES ACT	
➤ Licensing of Sewage Works Operators	O. Reg. 129/04
➤ Approval Exemption	O. Reg. 525/98
➤ Wells	R.R.O. 1990, Reg. 903
➤ Revoking Ontario Regulation 459/00	O. Reg. 175/03
➤ Revoking Ontario Regulation 505/01	O. Reg. 176/03
➤ Water Taking	O. Reg. 387/04
➤ Charges for Industrial and Commercial Water Users	O. Reg. 450/07
ENVIRONMENTAL PROTECTION ACT	
➤ Certificate of Approval Exemptions - Air	O. Reg. 524/98
ENVIRONMENTAL BILL OF RIGHTS ACT	
➤ Prescribing the Safe Drinking Water Act, 2002	O. Reg. 257/03

3. ANNUAL WATER QUALITY SUMMARY FOR 2024

The City of Brockville’s Water Systems Division is responsible for the Brockville Drinking Water System under O. Reg. 170/03 including water treatment plant, trunk water distribution system (elevated storage, reservoirs, booster stations) and local water distribution systems. Staff’s primary responsibility is water treatment and distribution in compliance with all applicable legislation and municipal drinking water licenses and drinking water works permits. Routine water quality testing and continuous monitoring of water quality and quantity is conducted to ensure compliance. All data from SCADA, process control point data, in-house laboratory results and external laboratory results are all captured in a WaterTrax data management system.

3.1 Water Quality Data

Raw and treated water is sampled and tested for chemical, physical and microbiological parameters in accordance with the requirements of O. Reg. 170/03 and individual municipal licenses and permits. Sampling is also conducted in the distribution system primarily for bacteriological indicators and evidence of sustained chlorine residuals. Enhanced sampling programs are also defined by the Water Systems Division, and testing procedures followed and where necessary submitted to external accredited laboratory for analysis. This level of water quality monitoring ensures public health and public confidence in the water supply.

Most of the analysis is conducted by an external accredited laboratory, with some specialized analysis contracted to other accredited laboratories. In accordance with Schedule 16 of O. Reg. 170/03, all required notifications of adverse water quality incidents are provided to the Spills Action Centre and Medical Officer of Health.

Operational Testing:

The following table is a summary of the operational testing completed in 2024 (as per O. Reg. 170/03, Schedules 6 and 7).

Parameter	# of Grab Samples	Results		
		MIN	MAX	AVG
Turbidity – Raw (NTU)	Continuous monitoring	0.13	9.99	0.38
Turbidity – Filter 1 (NTU)	Continuous monitoring	0.03	0.14	0.07
Turbidity – Filter 2 (NTU)	Continuous monitoring	0.04	2.39	0.06
Turbidity – Treated (NTU)	Continuous monitoring	0.03	10.0	0.07
Chlorine – Pre Filter (mg/l)	Continuous monitoring	0.0002	2.40	0.43
Chlorine – Reservoir (Main Plant) (mg/l)	Continuous monitoring	1.78	2.65	2.17
Chlorine – Plant Effluent (mg/l)	Continuous monitoring	0.57	2.56	2.11
Chlorine – Distribution System Parkedale Reservoir (mg/l)	Continuous monitoring	1.23	2.50	1.81
Chlorine – Elizabethtown-Kitley Distribution System (mg/l)	53	0.86	1.60	1.33
Fluoride – Plant Effluent (mg/l)	366	0.31	1.08	0.64
UV Dosage (mJ/cm ²)	Continuous monitoring	0	3277	1.51
UV Intensity (mW/cm ²)	Continuous monitoring	0	0	n/a
UV Transmittance (%)	366	94.8	99.8	96.5

Microbiological Testing:

Microbiological testing completed under the Schedule 10, 11 or 12 of O. Reg. 170/03 during 2024 reporting period.

Sample Description:	Number of Samples	Range of E. Coli Or Fecal Results CFU/100ml		Range of Total Coliform Results CFU/100ml		Number of HPC Samples	Range of HPC Results CFU/ml	
		MIN	MAX	MIN	MAX		MIN	MAX
Raw	53	0	7	0	200	53	<10	2000
Treated	53	0	0	0	0	53	<10	60
Distribution	528	0	0	0	0	371	<10	40

Chemical Testing:

The following Tables are a summary of the chemical testing completed in 2024 (as per O. Reg. 170/03, Schedule 13).

Schedule 23

Summary of Inorganic parameters tested during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Exceeded the Standard	Exceeded Half the Standard
Antimony	2024-01-02	0.0001	mg/l	No	No
Arsenic	2024-01-02	0.0005	mg/l	No	No
Barium	2024-01-02	0.022	mg/l	No	No
Boron	2024-01-02	0.018	mg/l	No	No
Cadmium	2024-01-02	<0.000015	mg/l	No	No
Chromium	2024-01-02	<0.0010	mg/l	No	No
Mercury	2024-01-02	<0.00002	mg/l	No	No
Selenium	2024-01-02	<0.001	mg/l	No	No
Sodium	Jan. - Dec. (12 samples)	13.4*	mg/l	No	n/a
Uranium	2024-01-02	0.00026	mg/l	No	No
Nitrite	Quarterly (4 samples)	<0.05*	mg/l	No	No
Nitrate	Quarterly (4 samples)	0.21*	mg/l	No	No

***average**

n/a – not applicable

Schedule 24

Summary of Organic parameters sampled during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Exceeded the Standard	Exceeded Half the Standard
Alachlor	2024-01-02	<0.3	ug/l	No	No
Atrazine + N-dealkylated metabolites	2024-01-02	<0.5	ug/l	No	No
Azinphos-methyl	2024-01-02	<1	ug/l	No	No
Benzene	2024-01-02	<0.5	ug/l	No	No
Benzo(a)pyrene	2024-01-02	<0.006	ug/l	No	No
Bromoxynil	2024-01-02	<0.5	ug/l	No	No
Carbaryl	2024-01-02	<3	ug/l	No	No
Carbofuran	2024-01-02	<1	ug/l	No	No
Carbon Tetrachloride	2024-01-02	<0.2	ug/l	No	No
Chlorpyrifos	2024-01-02	<0.5	ug/l	No	No
Diazinon	2024-01-02	<1	ug/l	No	No
Dicamba	2024-01-02	<1	ug/l	No	No
1,2-Dichlorobenzene	2024-01-02	<0.5	ug/l	No	No
1,4-Dichlorobenzene	2024-01-02	<0.5	ug/l	No	No
1,2-Dichloroethane	2024-01-02	<0.5	ug/l	No	No
1,1-Dichloroethylene	2024-01-02	<0.5	ug/l	No	No
Dichloromethane	2024-01-02	<5	ug/l	No	No
2-4 Dichlorophenol	2024-01-02	<0.2	ug/l	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2024-01-02	<1	ug/l	No	No
Diclofop-methyl	2024-01-02	<0.9	ug/l	No	No
Dimethoate	2024-01-02	<1	ug/l	No	No
Diquat	2024-01-02	<5	ug/l	No	No
Diuron	2024-01-02	<5	ug/l	No	No
Glyphosate	2024-01-02	<25	ug/l	No	No
Malathion	2024-01-02	<5	ug/l	No	No
2-Methyl-4-Chlorophenoxyacetic acid (MCPA)	2024-01-02	<10	mg/l	No	No
Metolachlor	2024-01-02	<3	ug/l	No	No

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Parameter	Sample Date	Result Value	Unit of Measure	Exceeded the Standard	Exceeded Half the Standard
Metribuzin	2024-01-02	<3	ug/l	No	No
Monochlorobenzene	2024-01-02	<0.5	ug/l	No	No
Paraquat	2024-01-02	<1	ug/l	No	No
Pentachlorophenol	2024-01-02	<0.2	ug/l	No	No
Phorate	2024-01-02	<0.3	ug/l	No	No
Picloram	2024-01-02	<5	ug/l	No	No
Polychlorinated Biphenyls(PCB)	2024-01-02	<0.05	ug/l	No	No
Prometryne	2024-01-02	<0.1	ug/l	No	No
Simazine	2024-01-02	<0.5	ug/l	No	No
THM (NOTE: shows latest annual average)	Quarterly (min) (4 samples)	39.0*	ug/l	No	No
HAA's (NOTE: shows latest annual average)	Quarterly (min) (4 samples)	20.7*	ug/l	No	No
Terbufos	2024-01-02	<0.5	ug/l	No	No
Tetrachloroethylene	2024-01-02	<0.5	ug/l	No	No
2,3,4,6-Tetrachlorophenol	2024-01-02	<0.2	ug/l	No	No
Triallate	2024-01-02	<10	ug/l	No	No
Trichloroethylene	2024-01-02	<0.5	ug/l	No	No
2,4,6-Trichlorophenol	2024-01-02	<0.2	ug/l	No	No
Trifluralin	2024-01-02	<0.5	ug/l	No	No
Vinyl Chloride	2024-01-02	<0.2	ug/l	No	No

***average**

LEAD SAMPLING:

Brockville Drinking Water System (Lead Sampling Exemption for plumbing only)

Sampling Period – Winter (December 15th to April 15th)	Plumbing	Distribution
Number of individual samples	N/A	4
Number of sample points (locations)	N/A	4
Number of individual sample exceedances	N/A	0
Number of sample points with an exceedance during the period	N/A	0
Percentage of sample points with an exceedance	N/A	0
Is the system required to have a Corrosion Control Plan prepared?	NO	NO
Do the reduced sampling & frequency requirements apply to the system?	N/A	YES
Do the plumbing sample exemptions apply to the system?	YES	N/A

Sampling Period - Summer (June 15th to October 15th)	Plumbing	Distribution
Number of individual samples	N/A	4
Number of sample points (locations)	N/A	4
Number of individual sample exceedances	N/A	0
Number of sample points with an exceedance during the period	N/A	0
Percentage of sample points with an exceedance	N/A	0
Is the system required to have a Corrosion Control Plan prepared?	NO	NO
Do the reduced sampling & frequency requirements apply to the system?	N/A	YES
Do the plumbing sample exemptions apply to the system?	YES	N/A

Elizabethtown-Kitley Distribution System (Lead Sampling Exemption for plumbing only)

Sampling Period – Winter (December 15th to April 15th)	Plumbing	Distribution
Number of individual samples	(Lead Sampling Regulatory Relief)	2
Number of sample points (locations)	N/A	2
Number of individual sample exceedances	N/A	0
Number of sample points with an exceedance during the period	N/A	0
Percentage of sample points with an exceedance	N/A	0
Is the system required to have a Corrosion Control Plan prepared?	NO	NO
Do the reduced sampling & frequency requirements apply to the system?	N/A	YES
Do the plumbing sample exemptions apply to the system?	YES	N/A

Sampling Period - Summer (June 15th to October 15th)	Plumbing	Distribution
Number of individual samples	(Lead Sampling Regulatory Relief)	2
Number of sample points (locations)	N/A	2
Number of individual sample exceedances	N/A	0
Number of sample points with an exceedance during the period	N/A	0
Percentage of sample points with an exceedance	N/A	0
Is the system required to have a Corrosion Control Plan prepared?	NO	NO
Do the reduced sampling & frequency requirements apply to the system?	N/A	YES
Do the plumbing sample exemptions apply to the system?	YES	N/A

4. BROCKVILLE DRINKING WATER SYSTEM

4.1 Water System Description

Drinking-Water System Number:	220001263
Drinking-Water System Name:	Brockville Drinking Water System
Drinking-Water System Owner:	City of Brockville
Accredited Operating Authority:	City of Brockville
Municipal Drinking Water Licence:	152-101
Drinking Water Works Permit:	152-201
Permit To Take Water:	3112-CZQS85
Drinking-Water System Category:	Large Municipal
Design Capacity:	36.4 ML/D
Treatment:	Direct Filtration Class III
Local Distribution:	Class II
Trunk Distribution:	Class III
Source Water:	St Lawrence River
Population Served:	22,000

Connected Drinking-Water Systems:

Drinking-Water System Number:	260007777
Drinking-Water System Name:	Elizabethtown-Kitley Distribution System
Drinking-Water System Owner:	Township of Elizabethtown-Kitley
Accredited Operating Authority:	City of Brockville
Municipal Drinking Water Licence:	257-101
Drinking Water Works Permit:	257-201
Drinking-Water System Category:	Large Municipal Class I
Water Source:	City of Brockville DWS
Population Served:	350

4.1.1 Water Treatment Plant

The City of Brockville’s Water Treatment Plant is a Class III direct filtration facility located at 20 Rivers Avenue, located on the St. Lawrence River and serves the City of Brockville (population 22,000), and a portion of the Township of Elizabethtown-Kitley (population 350).

A 900 mm raw water intake pipe equipped with zebra mussel control lies on the bottom of the St. Lawrence River extending 300 meters offshore at a depth of 10.5 meters. The treatment process has a design maximum flow rate of 36.4 ML/d and is composed of a number of sub-units:

- low lift pumping station
- coagulation and flocculation using polyaluminum chloride (PAC)
- pre- and post-filter disinfection with chlorine gas
- two granular activated carbon filters
- fluoride addition
- treated water reservoir and high lift pumping station
- final treated water UV disinfection and additional chlorination

4.1.2 Treatment Chemicals Used

All chemicals used in the operation of the drinking water system meets all applicable standards set by both the American Water Works Association (“AWWA”) and the American National Standards Institute (“ANSI”) safety criteria standards NSF/60 and NSF/61

Chemical	Application	Supplier
Chlorine Gas	Pre Filter, Post Filter, Plant Effluent (Primary Disinfection)	Brenntag Canada
Poly Aluminum Chloride XL-6 (SternPAC) PAX XL-1900 (ACH)	Pre Filter (Coagulant)	Kemira Water Solutions
Hydrofluorosilicic acid (HFSA)	Plant Effluent (Fluoride)	Brenntag Canada

4.1.3 Water Distribution System – Trunk and Local Systems

The Water Distribution System is separated into a Class III Trunk Water Distribution System (Certificate #3811) and a Class II Local Water Distribution System (Certificate #2193).

The distribution is comprised of 3 distinct pressure zones and consists of underground pipes ranging in size from 100 mm to 600 mm in diameter, made of a variety of materials including cast iron, ductile iron, poly vinyl chloride (PVC), concrete, steel, high density polyethylene (HDPE), and asbestos cement. There are approximately 8,400 service connections, 940 fire hydrants and 2,800 valves. Several treated water storage facilities and booster stations are located throughout the system as indicated below.

- Trunk Feeder Main & Local Distribution Systems
600 mm single trunk feeder main from the WTP to the Church Street/Perth Street area where flow splits between the Water Tower and the Local and Trunk distribution systems.

- Water Booster Stations
There are three (3) booster pump stations (First Avenue., Sunset Boulevard., Parkedale Avenue.) within the distribution system. These booster stations utilize pumps to ensure consistent pressure throughout the system.

- Perth Street Elevated Storage Tank (Water Tower)
The most visible feature of the distribution system is the 2,270 m³ (500,000 IG) elevated storage tank located on Perth St in Zone 1. It is a single cell, steel, non-baffled treated water storage tank.

- Parkedale Avenue Reservoir Booster Station
The Parkedale Avenue Reservoir Booster Station is a 7,600 m³ capacity reservoir at-grade, single cell, concrete, non-baffled, treated water reservoir. The station services two geographical areas. Zone 1 is the area South of Highway 401, and Zone 2 is the area North of Highway 401.
Zone 1 and Zone 2 booster stations are located on this site and assist in maintaining system pressures within the 2 zones.

- First Avenue Booster Station
The First Avenue Booster Station located on First Avenue services Zone 3. Zone 3 is defined by the boundary of First Avenue to the West, King Street East to the South, Broadway Avenue to the North, and Oxford Avenue to the East.

- Sunset Boulevard Booster Station
This booster station is located within a below grade pump chamber on Sunset Boulevard and provides consistent pressure locally to Sunset Boulevard and Hollywood Place

4.2 MECP Inspections

As per MECP 2024 Inspection Event Number 1-312856146 covering the period of October 27, 2023 to October 21, 2024:

Ministry of the Environment,
Conservation and Parks

Ministère de l'Environnement, de la
Protection de la nature et des Parcs



NON-COMPLIANCE

The following item(s) have been identified as non-compliance, based on a "No" response captured for a legislative question(s). For additional information on each question see the Inspection Details section of the report.

Ministry Program: DRINKING WATER | Regulated Activity: DW Municipal Residential

Item	Question	Compliance Response/Corrective Action(s)
NC-1	<p>Question ID: DWMR1111001</p> <p>Did the summary report contain the required information and was it completed and distributed as required?</p>	<p>The summary report did not contain the required information, and/or was not completed and distributed as required by Schedule 22-2 of O. Reg. 170/03.</p> <p>Prior to the release of this inspection report the summary report was revised to include the missing information.</p> <p>The owner/operating authority shall provide notification to the signed Provincial Officer when the revised report has been presented to Municipal Council.</p>

Ministry of the Environment,
Conservation and Parks

Ministère de l'Environnement, de la
Protection de la nature et des Parcs



RECOMMENDATIONS

The following item(s) have been identified as non-conformance, based on a "No" response captured for a best management practice (BMP) question(s). For additional information on each question see the Inspection Details section of the report.

Ministry Program: DRINKING WATER | Regulated Activity: DW Municipal Residential

Item	Question	Recommendation(s)
R-1	<p>Question ID: DWMR1050001</p> <p>Was there a program in place for inspecting and exercising valves?</p>	<p>There was no program in place for inspecting and exercising valves.</p> <p>The owner is recommended to initiate a formal program. The owner may refer to AWWA Standard G200-15 Distribution System Operation and Management.</p>

4.3 2024 Flow Summary

In 2024 the maximum or peak instantaneous raw water flow recorded was 31.968 ML/day (22,200 L/min) which occurred on April 26th, 2024 and was below the permitted maximum amount of 36.400 ML/day (25,278 L/min). The maximum volume of raw water taken on any single day was 13.440 ML which occurred on August 9th, 2024, and was also below the permitted maximum of 36.400 ML/d.

The annual average daily raw water volume to the WTP was 10.113 ML/day or 27.8% of its maximum approved treatment capacity of 36.4 ML/day.

Maximum Permitted Water Taking (PTTW) – WTP

Condition:	Maximum Permitted Water Taking
Maximum Amount of Water Taken per Minute	25,278 (L/min)
Maximum Amount of Water Taken per Day	36.4 (ML/d)

The Permit to Take Water specifies the maximum flow into individual treatment systems as indicated below.

Maximum Flow to Treatment System – WTP

Treatment System/Stage:	Maximum Flow Rate (ML/d)
GAC Filters – Flow	19.6 each
UV Disinfection System	36.4 each

The summary of the volume of water taken daily and the flows of the water supplied during the 2024 calendar year is provided in **Appendix C** and includes 2024 flow data and historical flow of past years of pumping at the WTP.

The historical total plant distributed volume is also displayed in **Appendix C**. The total annual plant distributed volume for 2024 is 3.26% more than the total annual plant distributed volume from 2023. This information is provided for interest and to evaluate the treatment system trends over time in order to prepare for any future improvements required to meet this demand.

4.4 Adverse Water Quality Incident (AWQI) Test Results

In accordance with Schedule 16 of O. Reg. 170/03, all required notifications of adverse water quality incidents were provided to the Medical Officer of Health (MOH) and the Spills Action Centre (SAC). In 2024 there were three (3) Adverse Water Quality Incidents to report.

AWQI Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
AWQI # 164358	Observation of improperly disinfected Water directed to users	N/A	Repairs to watermain with a minimum 1% sodium hypochlorite solution. After repairs of 200mm water service were completed, 2 active hydrants on the property were flushed until acceptable water quality parameters were achieved at which point bacteriological samples were collected. Internal plumbing was flushed through a washroom until acceptable water quality parameters were achieved, at which point a bacteriological sample was collected. Using the same flushing and sample locations a second set of bacteriological samples were collected 24 hours after the first set (as per direction MOH). All samples verified no evidence of contamination.	January 22, 2024
AWQI #165982	Observation of improperly disinfected Water directed to users	N/A	Watermain isolated and taken out of service. Do Not Drink Water notices distributed to affected users. Repairs to watermain with a minimum 1% sodium hypochlorite solution. After repairs were completed, uni-directional flushing through the break to normal system parameters to restore chlorine residuals at which point 2 sets of bacteriological samples were collected. Internal plumbing was also flushed until acceptable water quality parameters were achieved. Using the same flushing and sample	August 13, 2024

AWQI Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
			locations a second set of bacteriological samples were collected 24 hours after the first set (as per direction MOH). All samples verified no evidence of contamination.	
AWQI #166785	Raw Source Water Contamination	N/A	<p>Removed oil sheen off Raw water intake wet well with hydro vac Oct 30.</p> <p>Inspected flocculation tanks and filters for sheen - none visible Oct 30</p> <p>Inspected raw water intake wet well, flocculation tanks, and filters for 24 hour period for any sheen formation - none visible Oct 30-31</p> <p>Monitored raw water turbidity and raw pre-chlorination demand throughout same period - no change Oct 30-31</p> <p>Completed 3 rounds of sampling for PHC F2-F4 Oct 30-31</p> <p>Completed 4 rounds of sampling for VOCs F1 Oct 31-Nov 1. All samples verified no evidence of contamination.</p>	November 7, 2024

4.5 Operator Certification

The *Certification of Drinking-Water System Operators and Water Quality Analysts* (O. Reg. 128/04) requires owners to ensure that every operator employed in the facility holds a Licence applicable to that type of facility. All operators in the Water Systems Division hold the required certifications for treatment and distribution.

4.6 Capital Program

The 2024 Capital Program can be found in **Appendix B** of this Report. All works are subject to the annual budget process and approval by Council. A 30 Year Capital Replacement Equipment Plan has been developed that includes an extensive breakdown of all capital equipment that requires allocated funds for refurbishment or replacement. This is not included in the Annual Summary Report but can be made available upon request.

5. TOWNSHIP OF ELIZABETHTOWN-KITLEY WATER DISTRIBUTION SYSTEM

5.1 Water System Description

The City of Brockville provides treated water from its Water Treatment Plant to the Elizabethtown-Kitley Class I Water Distribution System (Certificate# 3536) west of the City. This is facilitated through a 14 kilometer water main that extends along County Road #2 to the Country Club, through a meter chamber and associated appurtenances. This distribution system services approximately 350 residential customers. This system was installed in 1998 by the Ministry of Transportation and the Ontario Clean Water Agency and turned over to the Township of Elizabethtown-Kitley in 1999.

A booster station at Lily Bay provides for increased pressure only. The Township Fire Department is aware of this operational constraint and does not use the distribution system for firefighting or training purposes. An automated flushing station at the end of the service line is required to maintain free chlorine residual above the regulated minimum level of 0.20 mg/L. City Staff operate and maintain this system on behalf of the Township as the Operating Authority.

Township of Elizabethtown-Kitley

Drinking-Water System Number:	260007777
Drinking-Water System Name:	Elizabethtown-Kitley Distribution System
Drinking-Water System Owner:	Township of Elizabethtown-Kitley
Accredited Operating Authority:	City of Brockville
Municipal Drinking Water Licence:	257-101
Drinking Water Works Permit:	257-201
Drinking-Water System Category:	Large Municipal Class 1
Water Source:	City of Brockville DWS
Population Served:	350

5.2 MECP Inspections

As per MECP 2024 Inspection Event Number 1-312856274 covering the period of October 27, 2023 to October 21, 2024:

No non-compliances or recommendations issued.

5.3 Adverse Water Quality Incident (AWQI) Test Results

No adverse water quality incidents reported to SAC in 2024 for the Township of Elizabethtown-Kitley Water Distribution System.

5.4 Historical Flow Results

A summary of the volume of water taken daily and the flows of the water supplied during the 2024 calendar year is provided in **Appendix C**.

The historical flow is also displayed in **Appendix C**. The total flow for 2024 is 16.5% less than the total flow from 2023. This information is provided for interest and to evaluate the system flow trends over time to prepare for any future improvements required to meet this demand.

6. CONCLUSION

The City of Brockville serves approximately 22,000 residents and about 350 residents in the Township of Elizabethtown-Kitley. One of the City's most important responsibilities is to protect public health by providing its residents with clean, safe drinking water. Routine water quality testing and continuous monitoring of the water quality and quantity is completed by City Staff at the Water Treatment Plant and throughout the distribution systems to demonstrate that the City consistently meets or exceeds the standards set by the MECP.

In Ontario, water taking, treatment and distribution are governed by several Acts and Regulations. This report fulfills the reporting requirements of the Drinking Water System Regulation (O. Reg. 170/03) made under the Safe Drinking Water Act for all of the municipal drinking water treatment systems in the City of Brockville and the Township of Elizabethtown-Kitley and covers the period from January 1st to December 31st 2024. As required under this same regulation, the report is prepared prior to March 31st and is filed for review by both the City of Brockville's and Elizabethtown-Kitley's municipal council. Copies of the report are also on hand at the Public Library, the Customer Service Office at City Hall, the Water Treatment Plant at 20 Rivers Avenue, Brockville and the Township of Elizabethtown-Kitley's Municipal Office at 6544 New Dublin Road, Addison.

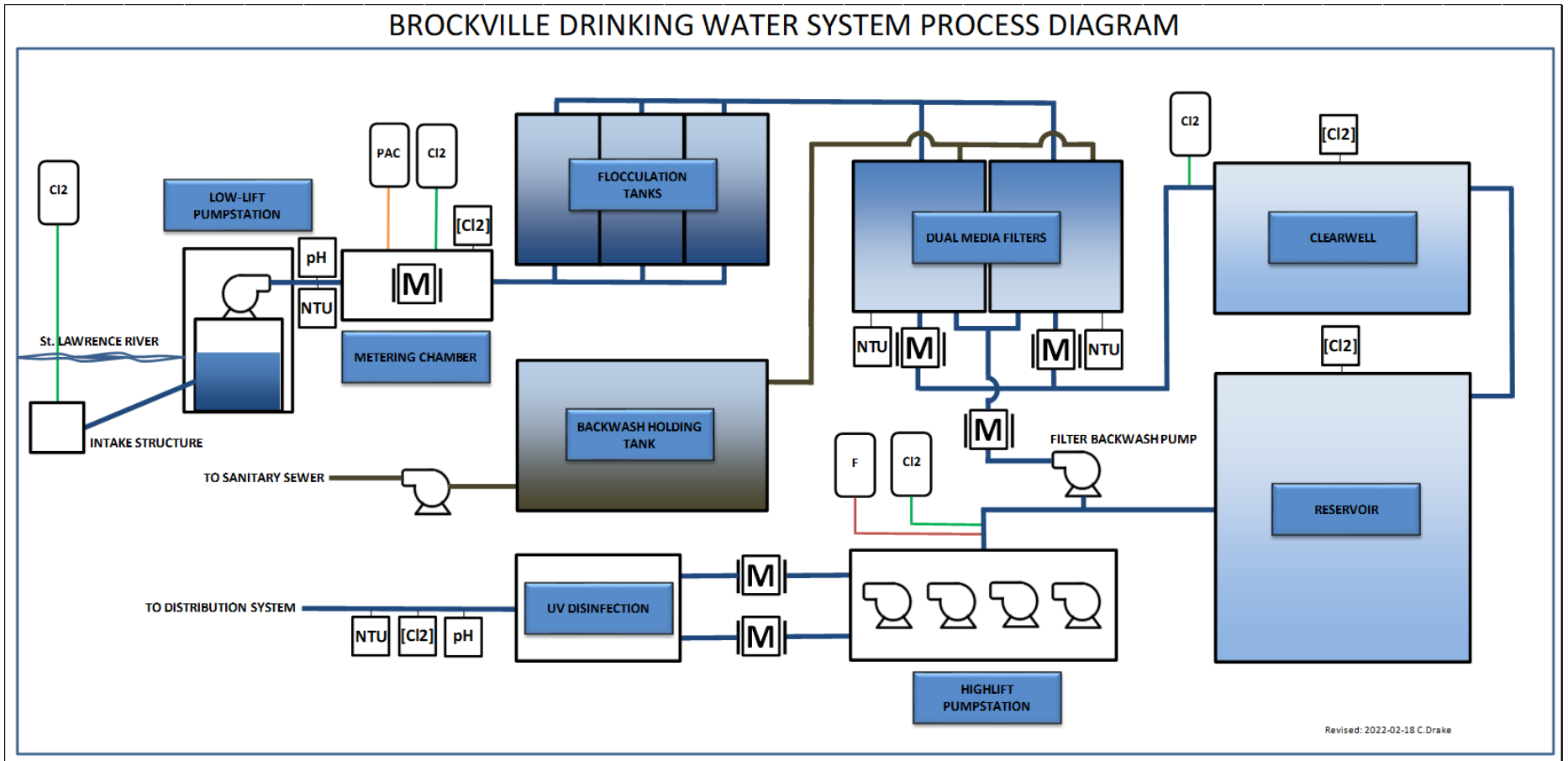
The contents of this report highlight the requirements of the Safe Drinking Water Act, the regulations, and the systems' approval including any reportable events and the corresponding corrective actions undertaken in 2024. In addition, the report also includes a summary of the quantities and flow rates of the water supplied during the calendar year, including monthly averages, maximum daily flows, and daily instantaneous peak flow rates. The summaries are compared to the rated capacity and flow rates in the system approvals.

The Water Systems Division has taken all necessary steps to comply with all regulatory requirements in the production and distribution of safe drinking water and to conform to the requirements of implementing and maintaining a Drinking Water Quality Management System. The dedication and commitment of all Water Systems Staff ensures a safe reliable drinking water supply to consumers of the City of Brockville and a portion of the Township of Elizabethtown-Kitley.

7. KEY CONTACTS

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Clay Sluytman
Supervisor – Water Systems
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Appendix B

2024 CITY OF BROCKVILLE/ELIZABETH TWON KITLEY CAPITAL PROGRAM

<u>PROJECT NAME:</u>	Water Equipment/Construction - Proposed Maintenance and New Capital			<u>YEAR PROPOSED</u>	2024
<u>LOCATION:</u>	Brockville Water Treatment Plant, Distribution System, Trunk Distribution System and Booster Stations				
<u>SCOPE:</u>	Provides for the capital needs of the Water Treatment Plant, Distribution System, Trunk Distribution System and Booster Stations. Funding is provided through water revenues.				
PROJECT ID:	Priority	GL			Budget
WATER SYSTEMS - PROPOSED CAPITAL PROJECTS					
	1		Main Plant - Filter Gallery & Admin Roof *		30,000
	2		Parkedale Roof		7,500
	3		SCADA Computers		35,000
	4		Turbidity Analyzers (2) (Treatment Plant)		25,000
	5		Filter Underdrain Assessment (Treatment Plant)		30,000
	6		Programmable Logic Controllers (PLC's) (Parkedale)		40,000
	7		Reservoir Concrete Repairs and Earthworks (Parkedale)		30,000
	8		Chlorine Analyzer (2) (Parkedale)		20,000
	9		Underground Booster Station Sealing (Country Club)		20,000
	10		Replacement Program Metering		50,000
	11		Replace Replacement Truck (21112) with Lift Gate		90,000
Comments					
					377,500

PREPARED BY (PROJECT MANAGER):

DATE:

C.Sluytman

27-Sep-23

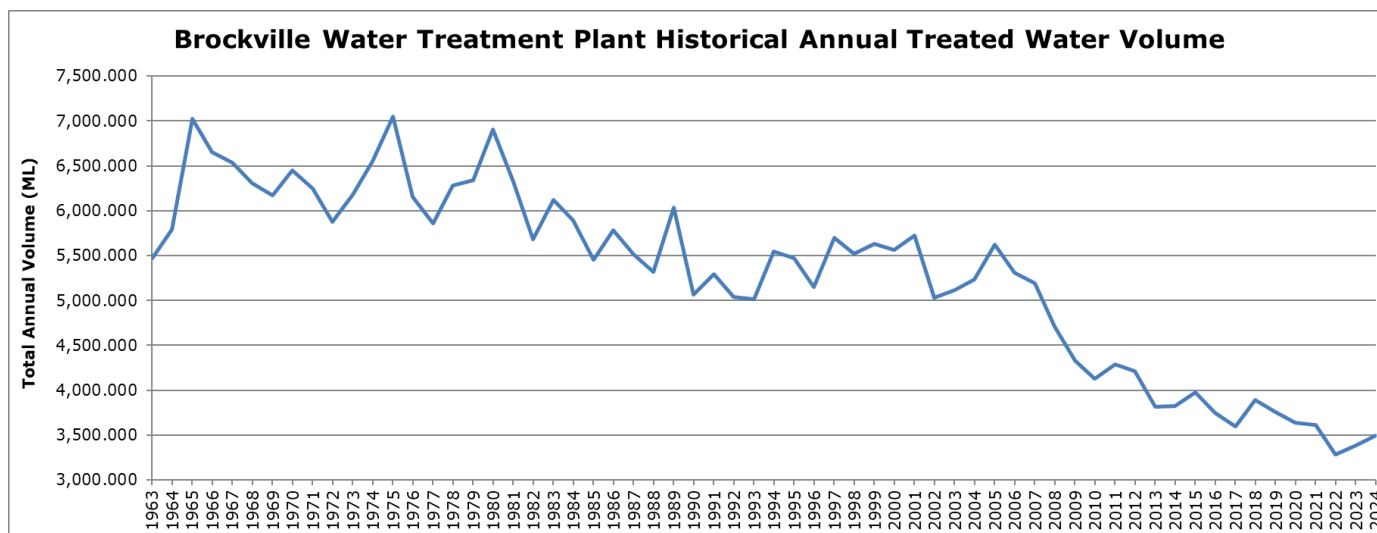
BROCKVILLE WATER SYSTEMS ANNUAL TREATED WATER VOLUME REPORT 2024

Month	WTP Raw Avg Daily Volume (ML)	WTP Raw Max Daily Volume (ML)	WTP Raw Peak Flow (ML/day)	WTP Raw Total Monthly Volume (ML)	WTP Treated Avg Daily Volume (ML)	WTP Treated Max Daily Volume (ML)	Rated Capacity (ML/day)	Rated Flow Capacity (%)	WTP Treated Total Monthly Volume (ML)
January	9.615	10.177	12.002	298.060	9.069	9.616	36.400	26.4	281.126
February	9.867	10.523	12.447	286.139	9.274	9.939	36.400	27.3	268.950
March	9.726	10.229	12.423	301.494	9.143	9.746	36.400	26.8	283.426
April	9.651	10.462	22.200	289.515	9.110	9.976	36.400	27.4	273.313
May	10.704	12.053	14.021	331.812	10.151	11.444	36.400	31.4	314.692
June	11.274	12.711	19.633	338.234	10.637	11.917	36.400	32.7	319.100
July	11.407	12.405	26.307	353.603	10.804	11.593	36.400	31.8	334.936
August	11.196	13.440	22.925	347.079	11.196	12.892	36.400	35.4	329.788
September	10.119	10.957	20.175	303.561	9.610	10.509	36.400	28.9	288.291
October	9.558	10.356	17.566	296.284	9.056	9.884	36.400	27.2	280.721
November	9.013	9.876	21.628	270.392	8.478	9.427	36.400	25.9	254.337
December	9.203	10.018	26.181	285.307	8.680	9.552	36.400	26.2	269.073
TOTAL				3,701.480					3,497.753

BROCKVILLE WATER SYSTEMS HISTORICAL ANNUAL TREATED WATER VOLUMES

Year	Annual Volume (ML)	Year	Annual Volume (ML)
1963	5,468.128	1995	5,467.001
1964	5,792.558	1996	5,148.340
1965	7,026.093	1997	5,698.474
1966	6,652.020	1998	5,519.157
1967	6,531.729	1999	5,631.225
1968	6,302.901	2000	5,565.808
1969	6,174.018	2001	5,726.410
1970	6,447.978	2002	5,032.500
1971	6,246.122	2003	5,117.740
1972	5,876.886	2004	5,238.190
1973	6,179.755	2005	5,625.869
1974	6,552.608	2006	5,308.800
1975	7,049.823	2007	5,189.831
1976	6,157.384	2008	4,715.116
1977	5,862.139	2009	4,332.102
1978	6,283.413	2010	4,128.747
1979	6,340.110	2011	4,291.115
1980	6,905.996	2012	4,213.592
1981	6,324.999	2013	3,815.746
1982	5,685.995	2014	3,822.724
1983	6,119.997	2015	3,972.362
1984	5,894.998	2016	3,744.720
1985	5,451.999	2017	3,595.184
1986	5,780.998	2018	3,889.242
1987	5,515.998	2019	3,753.200
1988	5,319.997	2020	3,641.936
1989	6,034.455	2021	3,615.261
1990	5,064.771	2022	3,280.074
1991	5,297.094	2023	3,387.314
1992	5,037.999	2024	3,497.753
1993	5,013.019		
1994	5,548.256		

Appendix C

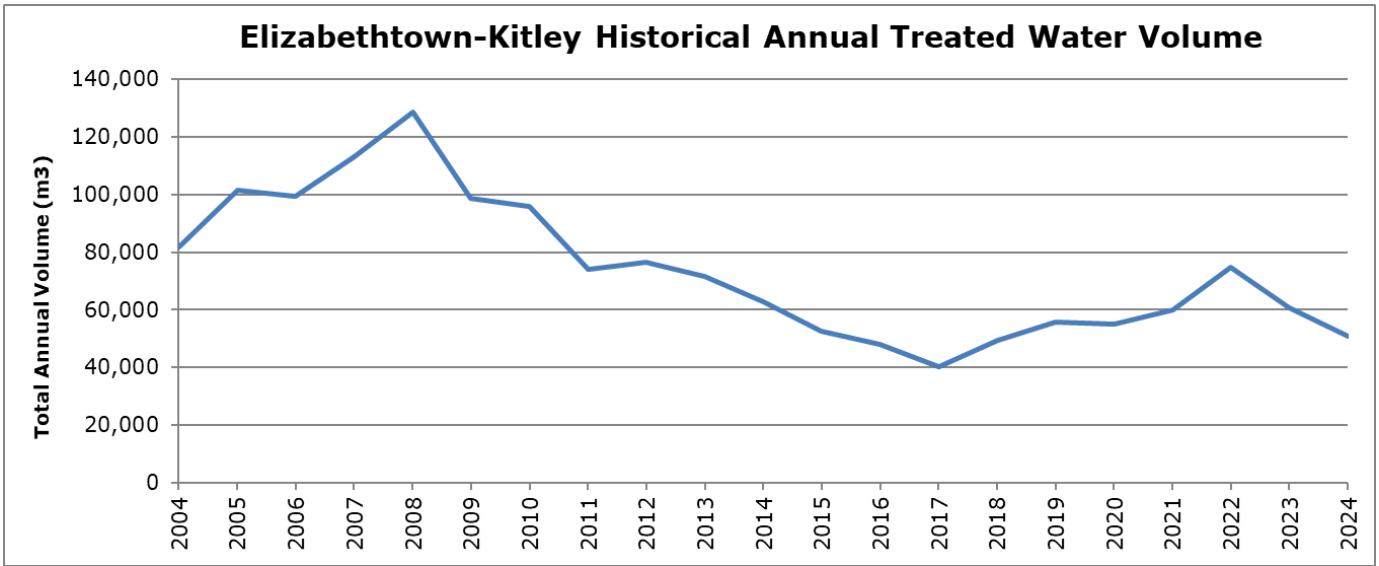


ELIZABETHTOWN-KITLEY WATER DISTRIBUTION ANNUAL TREATED WATER VOLUME REPORT 2024

<u>Month</u>	<u>Avg Daily Volume (m3)</u>	<u>Max Daily Volume (m3)</u>	<u>Max Flow (L/min)</u>	<u>Total Volume (m3)</u>
January	131	155	541	4,056
February	127	163	550	3,694
March	136	232	2,834	4,204
April	134	168	579	4,034
May	151	254	583	4,685
June	157	218	2,501	4,714
July	162	231	1,057	5,008
August	163	225	610	5,054
September	142	179	554	4,269
October	125	149	568	3,880
November	117	171	535	3,521
December	116	139	541	3,607
TOTAL				50,726

ELIZABETHTOWN- KITLEY WATER DISTRIBUTION HISTORICAL ANNUAL TREATED WATER VOLUME

<u>Year</u>	<u>Total Annual Volume (m3)</u>	<u>Year</u>	<u>Total Annual Volume (m3)</u>
2004	81,913	2015	52,646
2005	101,402	2016	47,965
2006	99,254	2017	40,185
2007	113,068	2018	49,216
2008	128,460	2019	55,753
2009	98,782	2020	54,968
2010	95,876	2021	59,876
2011	74,052	2022	74,804
2012	76,372	2023	60,742
2013	71,552	2024	50,726
2014	62,873		





2024 WATER LOSS REPORT

WATER TREATMENT PLANT - DISTRIBUTION TOTAL		3,497,753 m³
Water Sold to Customers		
Residential		1,298,549 m ³
Industrial		1,492,452 m ³
Sales to Elizabethtown-Kitley (East of Brockville, BCC)		53,779 m ³
Sales to Elizabethtown-Kitley (West of Brockville)		39,777 m ³
TOTAL BILLED WATER		2,884,557 m³
Total Non-Revenue Water (NRW)		613,196 m³
		17.53 %
NRW Sources Accounted For		
Flat Rate Water Users		28,000 m ³
Industrial Fire Flow Testing		5,000 m ³
Chlorinator Flow/Mechanical Seals		18,355 m ³
Watermain Breaks/Service Leaks		26,439 m ³
Anti-Freeze Taps		55,926 m ³
Fire Fighting and Training		3,643 m ³
Hydrant Fire Flow Testing and Flushing		51,538 m ³
Flushing Stations		201,184 m ³
Parks and Recreation Water Use		10,453 m ³
TOTAL		400,538 m³
		11.45 %
TOTAL Unaccounted NRW		212,658 m³
		6.08 %

Last Reviewed: Feb 20, 2025

By: S. Allen



2024 WATER LOSS REPORT

TOTAL METERED WATER	50,726 m³
TOTAL BILLED WATER	39,777 m³
Total Non-Revenue Water (NRW)	10,949 m³ 21.58 %
NRW Sources Accounted For	
Watermain Breaks	600 m ³
Hydrant Fire Flow Testing	1,342 m ³
Flushing Stations	2,436 m ³
TOTAL	4,378 m³ 8.6%
TOTAL LOST WATER	6,571 m³ 12.95 %

Last Reviewed: Feb 20, 2025
By: S. Allen