

S
U
M
M
A
R
Y
R
E
P
O
R
T

ST. THOMAS WATER DISTRIBUTION SYSTEM

License Number: 057-101
Permit Number: 057-201

Ontario Regulation 170/03
Summary Report

For the Period
January 1, 2023 – December 31, 2023



Table of Contents

1	Summary Report Requirements	1
1.1	Introduction	1
1.2	System Description.....	1
1.3	System Approvals and Regulatory Requirements.....	1
2	Evaluation of Water Quantities and Flow Rates.....	2
2.1	Albert Roberts Booster Station – Elgin Area Primary Water Supply System	2
2.2	East Chamber – St. Thomas Area Secondary Water Supply System	3
2.3	West Chamber – St. Thomas Area Secondary Water Supply System	3
2.4	Wellington Road Chamber – St. Thomas Area Secondary Water Supply System	3
2.5	Fingal Line Chamber – Southwold Water Distribution System	4
3	Water Quality Summary	5
4	Summary of Non-Compliant Conditions	5
4.1	Ministry of the Environment, Conservation and Parks Inspection	5
4.2	Adverse Test Results and Issue Resolution.....	5
5	List of Appendices	6

1 Summary Report Requirements

1.1 Introduction

The 2023 Summary Report for the St. Thomas Water Distribution System is being submitted to satisfy Schedule 22 of Ontario Regulation 170/03, the requirement to prepare and distribute a summary report of water system operations, outlining regulatory non-compliance with respect to water quality and water system management and administration and evaluating the water system infrastructure adequacy, with respect to its ability to continue to meet the communities water demands.

As per Ontario Regulation 170/03, the summary report must:

- a. List the 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; and
- b. For each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.

The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:

- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement, to the flow rates specified in the written agreement.

The information provided is for the purpose of enabling the owner of the system to assess the capacity of the system. This report covers the reporting period from January 1, 2023, to December 31, 2023.

1.2 System Description

The St. Thomas Water Distribution System has three entry points into the network from the St. Thomas Area Secondary Water Supply System, the East Chamber located at the Elgin Middlesex Booster Station (490 South Edgeware Road), the West Chamber located in Water Works Park (2 South Edgeware), and the Wellington Road Chamber (Ford Line and Wellington Road). The system also receives water from one entry point into the network from the Elgin Area Primary Water Supply System at the Albert Robert Booster Station (8754 Tyke Road) in the Municipality of Central Elgin and one entry point into the network from the Southwold Water Distribution System on Fingal Line at the municipal boundary.

1.3 System Approvals and Regulatory Requirements

Operation and Maintenance of the STDWS is governed by the Safe Drinking Water Act, 2002, and the regulations established under this Act. In accordance with the Safe Drinking Water Act, The City of St. Thomas holds a Municipal Drinking Water Licence and Drinking Water Works Permit, which provide approval for the establishment of drinking water infrastructure and provide the authority to operate and maintain said water system.

During the reporting period, The St. Thomas Drinking Water System was operated pursuant to the approvals, licences and permits listed below:

- City of St. Thomas Water Distribution System
 - MDWL No. 057-101, issued on June 30, 2021
 - DWWP No. 057-201, issued on June 30, 2021

Ontario Regulation 170/03 – Drinking Water Systems, governs the operation, maintenance and water quality monitoring requirements for municipal drinking water systems in Ontario. Ontario Regulation 128/04 – Certification of Drinking Water System Operations and Water Quality Analysts sets out the requirements for persons performing operational or maintenance activities on the water system. The Safe Drinking Water Act, 2002 and the associated regulations are enforced by the Ministry of Environment, Conservation and Parks (MECP) and monitored through annual inspections by Ministry personnel. Any non-compliant conditions identified during the course of the annual inspection are listed in the Inspection Report issued at the conclusion of the inspection period and are summarized in section 4.1 of this report.

Ontario Regulation 169/03 – Ontario Drinking Water Quality Standards sets the limits for parameters of concern in drinking water. Drinking water quality is monitored by the Operating Authority and any exceedance of the Drinking Water Quality Standards must be reported to the MECP and Public Health Unit, verbally and in written form through the use of a Notice of Adverse Test Results and Issue Resolution Form. Any non-compliant conditions identified through water quality monitoring exercises over the reporting period have been documented on a Notice of Adverse Test Results and Issue Resolution Form and are summarized in section 4.2 of this report.

2 Evaluation of Water Quantities and Flow Rates

2.1 Albert Roberts Booster Station – Elgin Area Primary Water Supply System

The Albert Roberts Booster Station (ARBS) receives treated water from the Elgin Area Primary Water Supply System, which pumps water from the water treatment plant located on the shores of Lake Erie to the east of the Town of Port Stanley. Water is pumped from a connection point on the transmission main that connects the water treatment plant to the Elgin Middlesex Pump Station and reservoir.

The ARBS is comprised of four high lift pumps that deliver water through a transmission main that services the St. Thomas Distribution System. The station maintains the operating pressure and includes a flow meter, chlorine analyzer, monitoring control, alarm system and instrumentation. Remote monitoring and control of the pumps are possible through the St. Thomas SCADA system.

All pumps use a common header and the firm rated pumping capacity (2 pumps operating) of the ARBS is 170.3 l/s or a total of 14,714 m³/d.

The Table below compares the flows experienced in 2023 to the capacity of the Albert Roberts Booster Station's entry point into the St. Thomas Distribution Water System.

Entry Point	Flow Capacity (m ³ /day)	2023 Avg. Day Flow (m ³ /day)	Avg. Day % of Entry Point Capacity	2023 Max Day Flow (m ³ /day)	Max Day % of Entry Point Capacity
Albert Roberts BS	14,714	7174	48	10,940	74

2.2 East Chamber – St. Thomas Area Secondary Water Supply System

The East Chamber is one of three entry points into the St. Thomas DWS from the St. Thomas Area Secondary Water Supply System. The East Chamber is located on the grounds of the Elgin Middlesex Pumping Station. Flow through the East Chamber is restricted to 25,920 m³/day, based on the maximum instantaneous flow rate being 300 L/s.

Monthly flows experienced through the East Chamber for the 2023 calendar year are provided in Appendix B to this report.

The Table below compares the flows experienced in 2023 to the capacity of the East Chamber's entry point into the St. Thomas Distribution Water System.

Entry Point	Flow Capacity (m ³ /day)	2023 Avg. Day Flow (m ³ /day)	Avg. Day % of Entry Point Capacity	2023 Max Day Flow (m ³ /day)	Max Day % of Entry Point Capacity
East Chamber	25,920	2638	10	6730	26

2.3 West Chamber – St. Thomas Area Secondary Water Supply System

The West Chamber is the second of three entry points into the St. Thomas DWS from the St. Thomas Area Secondary Water Supply System. The West Chamber is located at 2 South Edgeware Road, within Waterworks Park. Flow through the West Chamber is restricted to 25,920 m³/day, based on the maximum instantaneous flow rate being 300 L/s.

Monthly flows experienced through the West Chamber for the 2023 calendar year are provided in Appendix B to this report.

The Table below compares the flows experienced in 2023 to the capacity of the West Chamber's entry point into the St. Thomas Distribution Water System.

Entry Point	Flow Capacity (m ³ /day)	2023 Avg. Day Flow (m ³ /day)	Avg. Day % of Entry Point Capacity	2023 Max Day Flow (m ³ /day)	Max Day % of Entry Point Capacity
West Chamber	25,920	867	1	2590	10

2.4 Wellington Road Chamber – St. Thomas Area Secondary Water Supply System

The Wellington Road Chamber is the third entry point into the St. Thomas DWS from the St. Thomas Area Secondary Water Supply System. The Chamber is located at the intersection of Wellington Road and Ford Line. Flow will typically only enter the St. Thomas DWS through the Wellington Road Chamber during periods of very high demand in the WDS. Due to a failure of a pressure valve, higher than normal flows were registered in the month of December as a result 66,025m³ was delivered to the ST Thomas DWS through the Wellington Road Chamber during 2023.

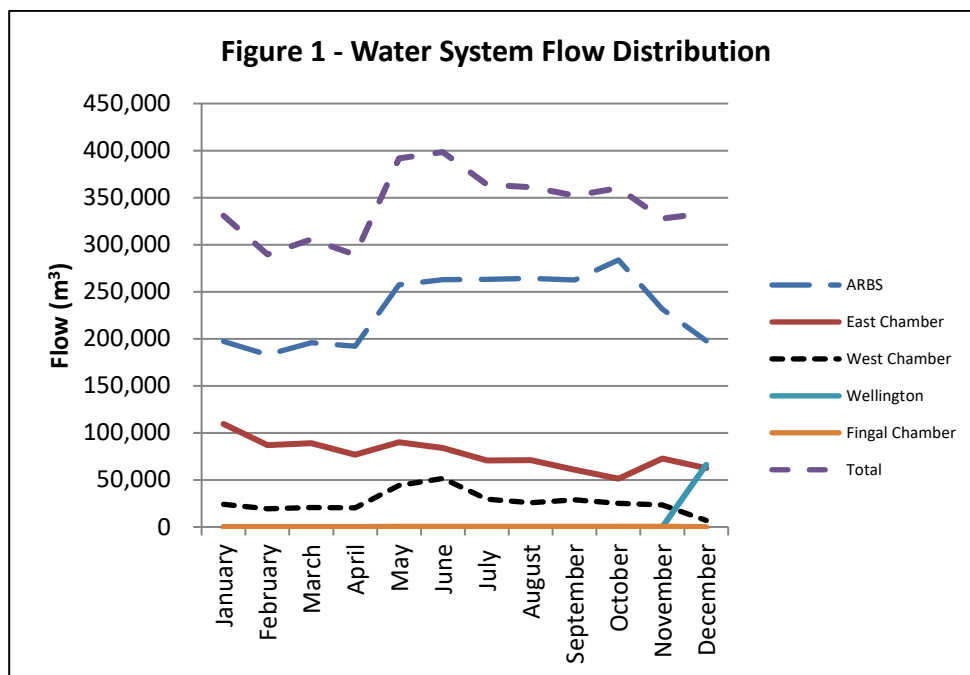
2.5 Fingal Line Chamber – Southwold Water Distribution System

The Fingal Line Chamber supplies water from the Southwold Water Distribution System to a section of the St. Thomas Water Distribution System along Fingal Line. The water in the Southwold Water Distribution System originates from the St. Thomas Area Secondary Water Supply System. The water is rechlorinated within the Southwold Water Distribution System. Flow through the Fingal Line Chamber is restricted to 13,824 m³/day, based on the maximum instantaneous flow rate being 160 L/s.

The Table below compares the flows experienced in 2023 to the capacity of the Fingal Line Chamber’s entry point into the St. Thomas Distribution Water System.

Entry Point	Flow Capacity (m ³ /day)	2023 Avg. Day Flow (m ³ /day)	Avg. Day % of Entry Point Capacity
Fingal Line	13,824	4	3

Figure 1 provides a graphical overview of the flows entering the St. Thomas Water Distribution System. Based on the 2023 flow data, the distribution of flows into the distribution system between the water supplied from the Albert Roberts Booster Station versus the St. Thomas Area Secondary Water Supply System (through the East, West, Wellington, and Fingal Chambers).

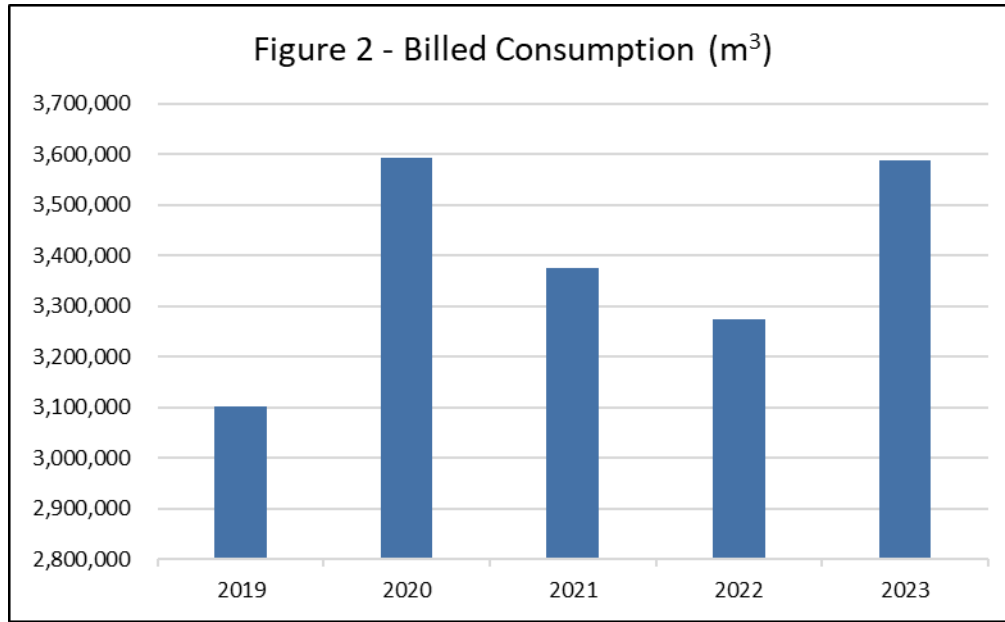


The total billed consumption by customers of the St. Thomas Water Distribution System increased by 9% from 3,273,891 m³ in 2022 to 3,589,158 in 2023. Authorized unbilled usage (fire fighting and training exercises, maintenance programs and capital projects) was estimated to be 104,772 m³.

The total flow into the St. Thomas Water Distribution System increased by 3% from 3,994,210 m³ in 2022 to 4,104,078 m³ over the 2023 year.

The real and apparent water loss in the St. Thomas Water Distribution System was 10% which is within Ontario industry standards

Figure 2 provides an overview of the billed consumption flows in the St. Thomas Water Distribution System over the last number of years.



3 Water Quality Summary

A summary of water quality testing completed by the City of St. Thomas – Environmental Services Dept. over the course of the reporting period is available in the Annual Report, attached as Appendix A.

4 Summary of Non-Compliant Conditions

4.1 Ministry of the Environment, Conservation and Parks Inspection

The Ontario Ministry of the Environment, Conservation and Parks (MECP) conducts an inspection of the St. Thomas Drinking Water System annually. An MECP inspection was completed on Sept 28th. There were no no-compliances identified in the report. The systems resulting inspection risk rating was identified as 0% and an overall final inspection rating of 100%.

MECP Inspection Finding	Action Taken
N/A	

4.2 Adverse Test Results and Issue Resolution

Any non-compliant conditions identified through water quality monitoring exercises over the reporting period, and actions taken are summarized in the table below.

Adverse Test Result (Date / Location)	Action Taken
Potential Contamination July 14/ Parkside Dr	Reported to MECP AWQI 164134, Flushed, samples taken

5 List of Appendices

Appendix A – St. Thomas Distribution System – 2023 Annual Report

Appendix B – Chamber and Station Flows - 2023

APPENDIX A



Ontario Drinking-Water Systems Regulation O. Reg. 170/03

Drinking-Water System Number:	260002187
Drinking-Water System Name:	St. Thomas Water Distribution System
Drinking-Water System Owner:	Corporation of the City of St. Thomas
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2023, through December 31, 2023

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> City of St. Thomas, City Hall Environmental Services 545 Talbot Street St Thomas, Ontario </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <input type="text" value="NA"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Number of Interested Authorities you report to: <input type="text" value="NA"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes <input type="checkbox"/> No <input type="checkbox"/></p>
---	--

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Municipality of Central Elgin	260004761
Township of Southwold	210001362

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes No

Indicate how you notified system users that your annual report is available and is free of charge.

Public access/notice via the web

City of St. Thomas Website – www.city.st-thomas.on.ca

Public access/notice via Government Office

Public access/notice via a newspaper

Public access/notice via Public Request

Public access/notice via a Public Library

Public access/notice via other method _____



Describe your Drinking-Water System

The St. Thomas Water Distribution System services over 17,100 customers including 900 customers within the Municipality of Central Elgin and 53 customers within the Township of Southwold (Lynhurst Subdivision). The system purchases its water from the Elgin Area Primary Water Supply System, which extends from Lake Erie to the City of London. The St. Thomas Distribution System consists of approximately 226,000 metres of water main ranging in size from 50 mm to 450 mm in diameter with the oldest installation in 1909. Material types include Asbestos Cement, Cast Iron, Concrete Ductile, Iron Polyethylene, and PVC.

List all water treatment chemicals used over this reporting period

12% Sodium Hypochlorite (Disinfection/Repairs)

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

Talbot Street Phase 3 - Mary to Ross	1,596,262
Simcoe Street	322,170
Coyne Street	391,957
Parkside Drive & Bell Avenue	789,184

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
July 14	Potential contamination			Flush	July 15



Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	NA	NA	NA	NA	NA
Treated	NA	NA	NA	NA	NA
St. Thomas	676	(0)-(0)	(0)-(0)	676	(<10)-(>2000)

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)
Chlorine (Grab Samples)	741	(0.16) - (1.58)
*Chlorine (Continuous Monitoring)	8760	(0.0) - (2.00)

NOTE: For continuous monitors use 8760 as the number of samples.

*Online locations- East and West chamber, Albert Roberts, Wellington and Southdale Panels. All incidents of <0.05 were investigated and determined to be under 5 minutes in duration.

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
NA	NA	NA	NA	NA

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
NA	NA	NA	NA	NA



Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	NA	NA	NA
Distribution	0	NA	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
HAA5	Feb 21, 2023 Apr 24, 2023 July 04, 2023 Oct 02, 2023	5.3	ug/L	no
THM (NOTE: show latest annual average)	Feb 21, 2023 Apr 24, 2023 July 04, 2023 Oct 02, 2023	21.3	ug/L	no

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
NA	NA	NA	NA

APPENDIX B

Albert Roberts

Month of the Year	Avg Daily Flow Rate	Max Daily Flow	Discharge Volume
	l/s	l/s	m ³
January	65	100	197,066
February	60	130	183,091
March	70	135	195,804
April	75	150	191,927
May	75	140	257,424
June	80	160	262,686
July	68	165	263,293
August	80	165	264,336
September	80	150	262,540
October	85	160	283,752
November	67	155	231,371
December	65	175	198,000
Average	73	149	232,608
Yearly Total			2,791,290

East Chamber

Month of the Year	Avg Daily Flow Rate	Max Daily Flow	Volume
	<i>l/s</i>	<i>l/s</i>	<i>m³</i>
January	55	135	109,457
February	48	134	86,955
March	36	140	89,160
April	35	135	76,966
May	40	130	90,181
June	50	155	83,861
July	53	175	70,827
August	54	170	70,929
September	50	147	60,837
October	45	140	51,337
November	37	150	72,682
December	35	127	62,437
Average	45	145	77,136
Yearly Total			925,629

West Chamber

Month of the Year	Average Daily Flow Rate	Max Daily Flow	Volume
	<i>l/s</i>	<i>l/s</i>	<i>m3</i>
January	15	50	24,162
February	14	44	19,406
March	12	44	20,724
April	15	42	20,305
May	25	60	44,106
June	30	90	51,576
July	25	50	29,544
August	18	55	25,809
September	15	35	28,711
October	14	35	24,955
November	14	32	23,374
December	10	20	6,962
Average	17	46	26,636
Yearly Total			319,634

Wellington Chamber

Month of the Year	Volume
	<i>m3</i>
January	0
February	0
March	0
April	0
May	-140
June	30
July	5
August	5
September	10
October	0
November	0
December	66,115*
Average	5,502
Yearly Total	66,025

*see Section 2.4 for description