

COBOURG DRINKING WATER SYSTEM 2023 ANNUAL REPORT

Drinking Water System Number:	220000825
Drinking Water System Name:	Cobourg Drinking Water System
Drinking Water System Owner:	Corporation of the Town of Cobourg
Drinking Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2023 to December 31, 2023

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking Water System serve more than 10,000 people? Yes No

Is your annual report available to the public at no charge on a web site on the Internet? Yes No

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Lakefront Utility Services Inc.
Office
207 Division Street,
Cobourg, Ontario

<https://www.lakefrontutilities.com/regulatory-water/>

Complete for all other Categories

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve? Yes No

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes No

Note: For the following tables below, additional rows or columns may be added, or an appendix may be attached to the report

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

Drinking Water System Name	Drinking Water System Number
Hamilton Township Distribution System	260039208

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 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
- 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 Cobourg Water Treatment Plant (WTP) takes water from Lake Ontario through an 860m-long intake pipe. Raw water is pre-chlorinated for zebra-mussel control before it enters a full conventional treatment process. The treatment process includes coagulation, flocculation, sedimentation, and filtration. Aluminum sulphate is used as the coagulation agent, with an addition of Flopam AN 934 PWG (polymer) to aid in the process. Primary disinfection is achieved with gaseous chlorine after water undergoes an appropriate contact time, after which the water is stored in a 6240 m³ in-ground reservoir, from where it is then pumped to the distribution system. The distribution system consists of two pressure zones, with an elevated water storage tank in each of the zones. The WTP supplies water to the Zone 1 tower, with a holding capacity of 1332 m³. The booster station, located at the boundary of the two zones, supplies water to the Zone 2 tower, with a holding capacity of 3734 m³. Zone 1 tower, Zone 2 tower and the booster station are all equipped with sodium hypochlorite and rechlorination equipment to maintain proper chlorine residuals. Water from the Cobourg DWS is conveyed to Hamilton Township, as an extension of the Cobourg DWS, agreed upon in writing.

List all water treatment chemicals used over this reporting period

Aluminum Sulphate
 Polymer – Flopam AN 934 PWG
 Chlorine
 Sodium Hypochlorite

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

PROJECT	ESTIMATED COST
Clarifier Inspections/ Repairs	\$19,000
WTP Duty Chlorinator	\$30,000
WTP Chlorine Scale	\$25,000
Chlorine Analyzers (3)	\$25,000
Chlorine Feed Line Report	\$10,000
ROV Inspection- Tower #1	\$4,000
Raw Intake Inspection	\$6,000
WTP Valve House Repairs	\$40,000
Rebuild Waste Pumps in Backwash Tank	\$15,000
Security Cameras System WTP	\$16,000
Booster Station PRV	\$12,000
ICI Meter Audits	\$35,000
Acoustic Leak Detection	\$20,000
Water Main Design	\$75,000
Watermain Replacement Westwood Drive	\$2,375,000
Distribution Valve Replacement	\$120,000
Programable Auto Flusher Valves	\$25,000
Hydrant Replacement (Wilmott Drive)	\$15,000
Hydrant Flow Testing & Painting	\$19,000
Water Meter Replacement	\$132,000
Water System (Buildings) Asset Management Plan	\$75,000

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
There were no Adverse Water Quality Incidents during the reporting period					

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 Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	52	0 - 1	0 - 255	-	-
Treated	52	0	0	52	0 - 1
Distribution	418	0	0	260	0 - 11

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 #)	Unit of Measure
Turbidity	8760	0.011 – 0.131	NTU
Chlorine	8760	1.25 – 1.98	mg/L
Fluoride (If the DWS provides fluoridation)	NA		

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

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
June 8, 2021	Suspended Solids	Yearly Average	2.67	mg/L
	Total Chlorine Residual	Yearly Average	0.013	mg/L

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	13-Jan-2023	0.6 < MDL	ug/L	No
Arsenic	13-Jan-2023	0.2	ug/L	No
Barium	13-Jan-2023	21.3	ug/L	No
Boron	13-Jan-2023	23	ug/L	No
Cadmium	13-Jan-2023	0.005	ug/L	No
Chromium	13-Jan-2023	0.2	ug/L	No
Mercury	13-Jan-2023	0.01 < MDL	ug/L	No
Selenium	13-Jan-2023	0.19	ug/L	No
Sodium	16-Sep-2019	12.6	mg/L	No
Uranium	13-Jan-2023	0.029	ug/L	No
Fluoride	16-Sep-2019	0.06	mg/L	No
Nitrite	30-Nov-2023	0.003 < MDL	mg/L	No
Nitrate	30-Nov-2023	0.273	mg/L	No

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 #)	Unit of Measure	Number of Exceedances
Plumbing	Not required, plumbing exemption and only pH and Alkalinity required in distribution samples			
Distribution	9	NA – pH (6.42-7.22), Alkalinity (74-83 mg/L)		

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	13-Jan-2023	0.02<MDL	ug/L	No
Atrazine + N-dealkylated metabolites	13-Jan-2023	0.01	ug/L	No
Azinphos-methyl	13-Jan-2023	0.05<MDL	ug/L	No
Benzene	13-Jan-2023	0.32<MDL	ug/L	No
Benzo(a)pyrene	13-Jan-2023	0.004<MDL	ug/L	No
Bromoxynil	13-Jan-2023	0.33<MDL	ug/L	No
Carbaryl	13-Jan-2023	0.05<MDL	ug/L	No
Carbofuran	13-Jan-2023	0.01<MDL	ug/L	No
Carbon tetrachloride	13-Jan-2023	0.17<MDL	ug/L	No
Chlorpyrifos	13-Jan-2023	0.02<MDL	ug/L	No
Diazinon	13-Jan-2023	0.02<MDL	ug/L	No
Dicamba	13-Jan-2023	0.2<MDL	ug/L	No
1,2-Dichlorobenzene	13-Jan-2023	0.41<MDL	ug/L	No
1,4-Dichlorobenzene	13-Jan-2023	0.36<MDL	ug/L	No
1,2-Dichloroethane	13-Jan-2023	0.35<MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	13-Jan-2023	0.33<MDL	ug/L	No
Dichloromethane	13-Jan-2023	0.35<MDL	ug/L	No
2,4-dichlorophenol	13-Jan-2023	0.15<MDL	ug/L	No
2,4-dichlorophenoxyacetic acid (2,4-D)	13-Jan-2023	0.19<MDL	ug/L	No
Diclofop-methyl	13-Jan-2023	0.4<MDL	ug/L	No
Dimethoate	13-Jan-2023	0.06<MDL	ug/L	No
Diquat	13-Jan-2023	1<MDL	ug/L	No
Diuron	13-Jan-2023	0.03<MDL	ug/L	No
Glyphosate	13-Jan-2023	1<MDL	ug/L	No
Malathion	13-Jan-2023	0.02<MDL	ug/L	No
MCPA	13-Jan-2023	0.00012<MDL	mg/L	No
Metolachlor	13-Jan-2023	0.01<MDL	ug/L	No
Metribuzin	13-Jan-2023	0.02<MDL	ug/L	No
Monochlorobenzene	13-Jan-2023	0.3<MDL	ug/L	No
Paraquat	13-Jan-2023	1<MDL	ug/L	No
Pentachlorophenol	13-Jan-2023	0.15<MDL	ug/L	No
Phorate	13-Jan-2023	0.01<MDL	ug/L	No
Picloram	13-Jan-2023	1<MDL	ug/L	No
Polychlorinated Biphenyls (PCBs) Total	13-Jan-2023	0.04<MDL	ug/L	No
Prometryne	13-Jan-2023	0.03<MDL	ug/L	No
Simazine	13-Jan-2023	0.01<MDL	ug/L	No
Terbufos	13-Jan-2023	0.01<MDL	ug/L	No
Tetrachloroethylene (perchloroethylene)	13-Jan-2023	0.35<MDL	ug/L	No
2,3,4,6-tetrachlorophenol	13-Jan-2023	0.2<MDL	ug/L	No
Triallate	13-Jan-2023	0.01<MDL	ug/L	No
Trichloroethylene	13-Jan-2023	0.44<MDL	ug/L	No
2,4,6-trichlorophenol	13-Jan-2023	0.25<MDL	ug/L	No

Trifluralin	13-Jan-2023	0.02<MDL	ug/L	No
Vinyl Chloride	13-Jan-2023	0.17<MDL	ug/L	No
HAAs (show latest running annual average)	30-Nov-23	5.3<MDL	ug/L	No
THMs (show latest running annual average)	30-Nov-23	32.0	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
No parameters exceeded half the standard			

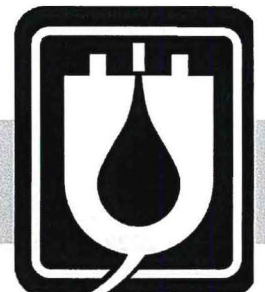
2023

Annual
Summary
Report

The Corporation of the Town of Cobourg

Cobourg Drinking Water System

Prepared by: Lakefront Utility Services Inc. (2023)



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1. PURPOSE

The purpose of the Annual Water Quality Report is to provide information to residents and stakeholders of the Town of Cobourg. Furthermore, satisfying the regulatory requirements of the *Safe Drinking Water Act, 2002* including the Drinking Water Quality Management Standard (DWQMS) reports to owner, and regulatory reporting required under *Ontario Regulation 170/03*. This annual water quality report fulfills all requirements of *Ontario Regulation 170/03* Section 11 Annual Reports and Schedule 22 Summary Reports for Municipalities.

The Annual Water Quality Report is prepared by Lakefront Utility Services Inc. (operating authority) on behalf of The Town of Cobourg (owner).

Scope

The Annual Water Quality Report includes information pertaining to the Town of Cobourg's Drinking Water System (DWS) for the period of January 1, 2023 to December 31, 2023. *Ontario Regulation 170/03* requires reported information be provided to:

- **Drinking Water System Owners (Mayor and Council)**
- **Owner and Operating Authority Top Management**
- **The Public**

Availability

The Cobourg DWS is a large municipal residential system that serves more than 10,000 people. Copies of this annual water quality report are available online at <https://www.lakefrontutilities.com/regulatory-water/>. Hard copies are also available at the LUSI's office at 207 Division St, Cobourg ON, K9A 4L3.

Customers of the Cobourg DWS are notified that the annual water quality report is available via "What's New" <https://www.lakefrontutilities.com/whats-new/>, social media posts and "Stay Connected" LUSI bill insert.

Council Resolution

Ontario Regulation 170/03 requires Summary Reports be distributed to municipal council no later than March 31 of each year. The Town of Cobourg must provide LUSI with a copy of council resolution indicating the report has been accepted.

2. COBOURG DRINKING WATER SYSTEM OVERVIEW

The Cobourg Water Treatment Plant (WTP) takes water from Lake Ontario through an 860m-long intake pipe. Raw water is pre-chlorinated for zebra-mussel control before it enters a full conventional treatment process. The treatment process includes coagulation, flocculation, sedimentation, and filtration. *Aluminum sulphate* is used as the coagulation agent, with an addition of *Flowpam AN 934 PWG* (polymer) to aid in the process. Primary disinfection is achieved with *gaseous chlorine* after which the water is stored in a 6,240 m³ in-ground reservoir, from where it is pumped to the distribution system.

The distribution system consists of two pressure zones, with an elevated water storage tank in each of the zones. The Water Treatment Plant supplies water to the zone 1 tower, with a holding capacity of 1,332 m³. The booster station, located at the boundary of the two zones, supplies water to the zone 2 tower, with a holding capacity of 3,734 m³. Zone 1 tower, zone 2 tower and the booster station are all equipped with *sodium hypochlorite* and re-chlorination equipment to ensure adequate secondary disinfection.

Water from the Cobourg DWS is conveyed to Hamilton Township, as an extension of the Cobourg DWS, agreed upon in writing.

3. 2023 COMPLIANCE

3.1 MECP INSPECTION

The MECP began an announced focused inspection of the Cobourg DWS on July 18, 2023. A final inspection rating of 100% was achieved. There was one non-compliance with regulatory requirements which did not affect the final inspection rating.

The non-compliance identified was for a missing procedure for responding to complaints and for responding to and testing alarms. The required procedure for dealing with complaints along with procedures that were already in place for responding to and testing alarms were provided to the MECP Inspector and no further action was required.

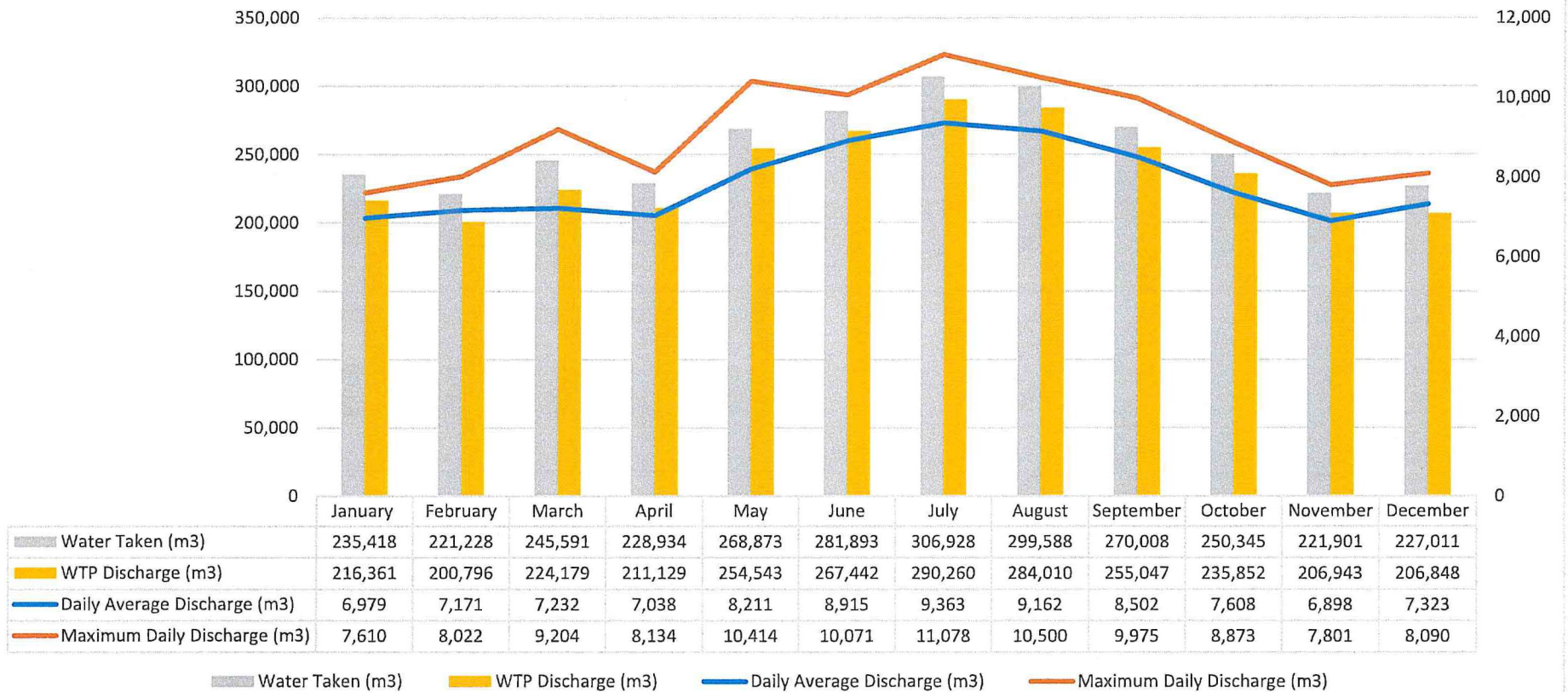
3.2 LICENSE & PERMIT COMPLIANCE

The Cobourg DWS maintained compliance with all applicable legislation, and all terms and conditions of the Municipal Drinking Water License (137-101, Issue 4, June 8, 2021), Drinking Water Works Permit (137-201) and Permit to Take Water (November 10, 2022) in 2022.

The Cobourg DWS Permit to Take Water (Permit No. 3404-CKXRLW) allows the taking of 31,822 m³ of water from Lake Ontario per day at a maximum rate of 31,177L/min. The average flow rate from Lake Ontario was 5,815 L/min, below the maximum rate.

The total quantity of water taken and discharged from the WTP is illustrated in Figure 1 and shown in Table 1 and Table 2. In 2023 there were no incidents related to surpassing the maximum volume of water permitted to take. In July 2022, the WTP operated at 30.5 % of its maximum rated treatment capacity, as shown in Figure 2. The labels presented in Figure 2 are representative of the maximum flow observed for the respective month (m³).

Figure 1 - Flow Quantities for the Cobourg Drinking Water System



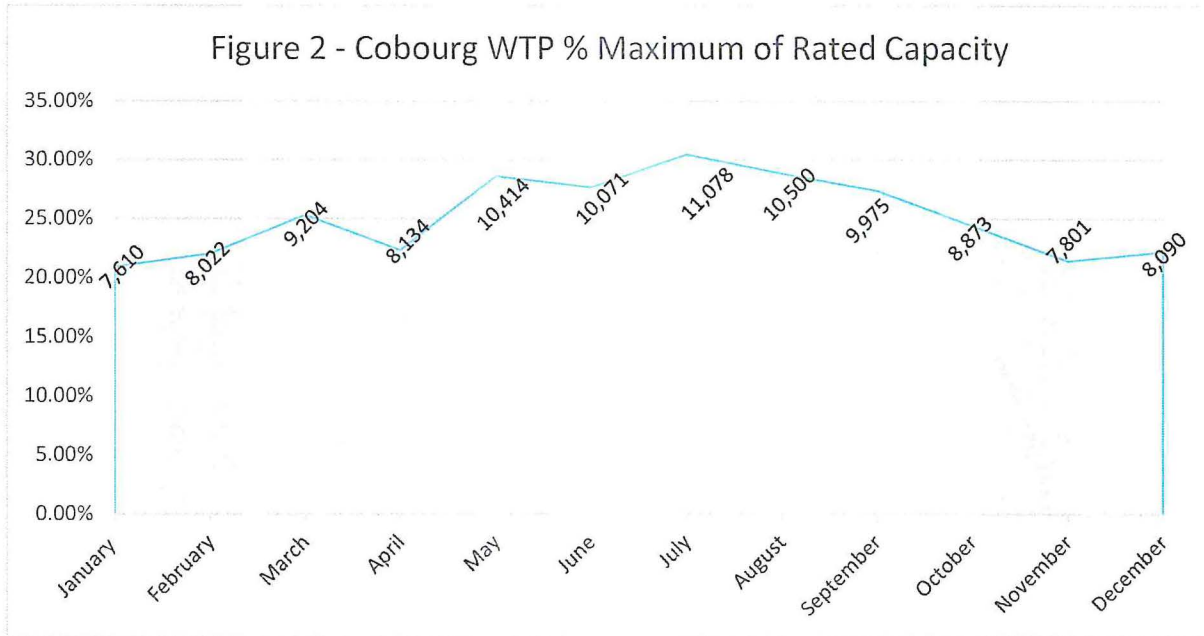


Table 1 - Cobourg WTP Influent Flows

	Influent Flows (m3)			
	Monthly Total	Daily Average	Minimum	Maximum
January	235,418	7,594	6,957	8,189
February	221,228	7,901	7,265	8,671
March	245,591	7,922	7,090	9,737
April	228,934	7,631	7,049	8,774
May	268,873	8,673	7,270	11,084
June	281,893	9,396	7,677	11,275
July	306,928	9,901	8,724	11,432
August	299,588	9,664	7,800	10,880
September	270,008	9,000	8,061	10,334
October	250,345	8,076	6,956	9,250
November	221,901	7,397	6,738	8,098
December	227,011	7,323	6,660	8,685
Total	3,057,719			
Average	254,810	8,373		
Maximum				11,432

Table 2 - Treated Water Discharge Flows

	Treated Discharge (m3)			
	Monthly Total	Daily Average	Maximum	% of Max Capacity
January	216,361	6,979	7,610	20.9%
February	200,796	7,171	8,022	22.1%
March	224,179	7,232	9,204	25.3%
April	211,129	7,038	8,134	22.4%
May	254,543	8,211	10,414	28.6%
June	267,442	8,915	10,071	27.7%
July	290,260	9,363	11,078	30.5%
August	284,010	9,162	10,500	28.9%
September	255,047	8,502	9,975	27.4%
October	235,852	7,608	8,873	24.4%
November	206,943	6,898	7,801	21.4%
December	206,848	6,673	8,090	22.2%
Total	2,853,409			
Average	237,784	7,813		
Maximum			11,078	30.5%

3.3 ADVERSE WATER QUALITY INCIDENT(S)

There were no incidents of adverse water quality in 2023.

4. CONTINUAL IMPROVEMENT

LUSI's commitment to continual improvement requires investigating and investing in, where appropriate, methods and technologies to improve:

- The quality of processes used to ensure production of ample clean water, and
- The quality and effectiveness of the distribution system.

During the 2023 reporting year, LUSI demonstrated this commitment by completing all the activities listed in Table 3. Table 3 also satisfies O. Reg 170/03 requirement to describe major expenses occurred during the reporting period.

<i>Cobourg Water Treatment Plant</i>	Clarifier Inspections/ Repairs	\$19,000
	WTP Duty Chlorinator	\$30,000
	WTP Chlorine Scale	\$25,000
	Chlorine Analyzers (3)	\$25,000
	Chlorine Feed Line Report	\$10,000
	ROV Inspection- Tower #1	\$4,000
	Raw Intake Inspection	\$6,000
	WTP Valve House Repairs	\$40,000
	Rebuild Waste Pumps in Backwash Tank	\$15,000
	Security Cameras System WTP	\$16,000
<i>Cobourg Distribution System</i>	Booster Station PRV	\$12,000
	ICI Meter Audits	\$35,000
	Acoustic Leak Detection	\$20,000
	Water Main Design	\$75,000
	Watermain Replacement Westwood Drive	\$2,375,000
	Distribution Valve Replacement	\$120,000
	Programable Auto Flusher Valves	\$25,000
	Hydrant Replacement (Wilmott Drive)	\$15,000
	Hydrant Flow Testing & Painting	\$19,000
	Water Meter Replacement	\$132,000
<i>Miscellaneous</i>	Water System (Buildings) Asset Management Plan	\$75,000
Total		\$3,093,000

5. SAMPLING AND ANALYSIS

The Cobourg DWS exhibited compliance with all sampling and testing as required by *Ontario Regulation 170/03* in the 2020 calendar year. Table 4 illustrates all microbiological testing done under Schedule 10 of *Ontario Regulation 170/03*. There were no instances of adverse water quality as a result of a parameter exceeding its respective maximum acceptable concentration.

	E. Coli, (cfu/100mL)		Total Coliform, (cfu/100mL)		HPC, (cfu/1mL)	
	# of Samples	Range of Results (min # - max #)	# of Samples	Range of Results (min # - max #)	# of Samples	Range of Results (min # - max #)
Raw	52	0 - 1	52	0 - 255	-	N/A
Treated	52	0 - 0	52	0 - 0	52	0 - 1
Distribution	418	0 - 0	418	0 - 0	260	0 - 11

Note: Table 2 contains microbiological sampling taken within the Hamilton Township Stand-alone Distribution System.

Operational testing done under Schedule 7 of Ontario Regulation 170/03 during the 2022 reporting period are tabulated in Table 5.

	Number of Grab Samples	Range of Results (min # - max #)
Filter 1 Turbidity (NTU)	8760 (continuous monitoring)	0.011 – 0.131
Filter 2 Turbidity (NTU)	8760 (continuous monitoring)	0.011 – 0.073
Contact Chamber Effluent Free Chlorine Residual (mg/L)	8760 (continuous monitoring)	1.25 – 1.98

The Cobourg DWS Municipal Drinking Water License (MDWL) requires monthly composite samples of backwash wastewater at the point of discharge to Lake Ontario. Table 6 summarizes the results of the sampling program.

Date of MDWL	Parameter	# of Samples	Maximum Annual Average Concentration (mg/L)	Annual Average Concentration (mg/L)
June 8, 2021	Total Suspended Solids	12	25	2.67
	Total Chlorine Residual	12	0.02	0.013

In addition to the microbiological sampling and testing requirements, sampling and testing is required for chemical, inorganic and organic parameters. Table 7 illustrates Schedule 13, Schedule 23 and Schedule 24 sample analysis results, with no exceedances during the reporting period. If there were multiple samples taken during the reporting period, the most recent sample result is provided. A parameter below the method detection limit indicated by (<), cannot be detected as the concentration is lower than minimum concentration that can be measured and reported with 99% certainty.

Table 7: Cobourg DWS Schedule 13, 23 and 24 Requirements		
PARAMETER	SAMPLE RESULT (µg/L)	SAMPLE DATE
Alachlor	0.02<MDL	13-Jan-2023
Atrazine + N-dealkylated metabolites	0.01	
Azinphos-methyl	0.05<MDL	
Benzene	0.32<MDL	
Benzo(a)pyrene	0.004<MDL	
Bromoxynil	0.33<MDL	
Carbaryl	0.05<MDL	
Carbofuran	0.01<MDL	
Carbon tetrachloride	0.17<MDL	
Chlorpyrifos	0.02<MDL	
Diazinon	0.02<MDL	
Dicamba	0.2<MDL	
1,2-Dichlorobenzene	0.41<MDL	
1,4-Dichlorobenzene	0.36<MDL	
1,2-Dichloroethane	0.35<MDL	
1,1-Dichloroethylene (vinylidene chloride)	0.33<MDL	
Dichloromethane	0.35<MDL	
2,4-dichlorophenol	0.15<MDL	
2,4-dichlorophenoxyacetic acid (2,4-D)	0.19<MDL	
Diclofop-methyl	0.4<MDL	
Dimethoate	0.06<MDL	
Diquat	1<MDL	
Diuron	0.03<MDL	
Glyphosate	1<MDL	
Malathion	0.02<MDL	
MCPA	0.00012<MDL	
Metolachlor	0.01<MDL	
Metribuzin	0.02<MDL	
Monochlorobenzene	0.3<MDL	
Paraquat	1<MDL	
Pentachlorophenol	0.15<MDL	
Phorate	0.01<MDL	
Picloram	1<MDL	
Polychlorinated Biphenyls (PCBs) Total	0.04<MDL	
Prometryne	0.03<MDL	
Simazine	0.01<MDL	

PARAMETER	SAMPLE RESULT (µg/L)	SAMPLE DATE
Terbufos	0.01<MDL	
Tetrachloroethylene (perchloroethylene)	0.35<MDL	
2,3,4,6-tetrachlorophenol	0.2<MDL	
Triallate	0.01<MDL	
Trichloroethylene	0.44<MDL	
2,4,6-trichlorophenol	0.25<MDL	
Trifluralin	0.02<MDL	
Vinyl Chloride	0.17<MDL	
Antimony	0.6 <MDL	
Arsenic	0.2	
Barium	21.3	
Boron	23	
Cadmium	0.005	
Chromium	0.2	
Mercury	0.01 <MDL	
Selenium	0.19	30-Nov-23
Uranium	0.029	
THM: Annual Average	32.0	
HAA: Annual Average	5.3 < MDL	
Nitrite	< 0.003 MDL	16-Sept-19
Nitrate	0.273	
Fluoride	0.06	
Sodium	12.6	

Summary of lead testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	Range of Lead Results (min#) – (max #) ug/L	Standard (MAC) ug/L	Number of Exceedances
Plumbing	Not required, plumbing exemption and only pH and Alkalinity required in distribution samples			
Distribution	4 (period 1)	NA – pH (6.42-6.46), Alkalinity (80-83 mg/L)		
	4 (period 2)	NA – pH (6.67-7.22), Alkalinity (74-79 mg/L)		

