

2024 Annual/Summary Report for the Cobalt Drinking Water System

PREPARED BY

Ontario Clean Water Agency
on behalf of the Town of Cobalt

Date: February 6, 2025

Rev: 0

Revision History

Rev. No.	Date	Prepared by:	Approved by:	Description
0	February 6, 2025	I. Bruneau, PCT	B. Logan, Senior Operations Manager	Revision 0 issued

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Background

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the Safe Drinking Water Act (SDWA) since June 2003. The Act was passed following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking-water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

O. Reg. 170/03 requires the owner to produce an Annual Report, under Section 11. This report must include the following:

1. Description of system and chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This Annual Report must be completed by February 28th of each year.

The regulation also requires a Summary Report which must be presented and accepted by Council by March 31st of each year for the preceding calendar year reporting period.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any regulatory requirement the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The Safe Drinking Water Act, 2002 and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The two reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2024 Annual/Summary Report.

Section 11 – Annual Report

1. Introduction

Drinking-Water System Name	Cobalt Drinking Water System
Drinking-Water System Number	220000362
Drinking-Water System Owner	The Corporation of the Town of Cobalt
Drinking-Water System Category	Large Municipal, Residential System
Municipal Drinking Water Licence No.	206-101-6 (issued September 14, 2022)
Drinking Water Work Permit No.	206-201-4 (issued April 28, 2021)
Permit to Take Water No.	6462-BB9RFA (issued May 2, 2019)
Reporting Period	January 1, 2024 to December 31, 2024

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

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

Yes at: <https://www.cobalt.ca>

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

Town of Cobalt Municipal Office
 18 Silver Street, Cobalt
 ON P0J 1C0

Township of Coleman Municipal Office
 937907 Marsh Bay Road, Coleman
 ON P0J 1C0

Drinking Water Systems that receive drinking water from the Cobalt Drinking Water System

The Cobalt Drinking Water System provides drinking water to the Town of Cobalt and the Coleman distribution system.

Drinking Water System Name	Drinking Water System Number
Cobalt Drinking Water System	220000362
Coleman Distribution System	260074321

The Annual Report was provided to all connected Drinking Water System Owners

The Ontario Clean Water Agency prepared the 2024 Annual/Summary Report for the Cobalt Drinking Water System and provided a copy to the system owner; the Town of Cobalt and to the connected system owner; the Township of Coleman.

System Users are notified that the Annual Report is available for viewing through:

- Notice at the Municipal Office

2. Description of the Cobalt Drinking Water System

The Cobalt Drinking Water System is owned by the Corporation of the Town of Cobalt and consists of a Class 2 water treatment subsystem and a Class 1 water distribution subsystem that services the Town of Cobalt and Coleman Township. The system serves a population of approximately 1350 residents including the connected population in the Coleman Township Distribution System. The Ontario Clean Water Agency is the accredited operating authority and is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities.

Raw Water Supply

The raw water is taken from a protected water body, Sasaginaga Lake and directed to the water treatment plant located about 500 meters West of Pyrite Street in Cobalt. The intake structure is located 191 meters into the lake, at a depth of 7.5 meters and is equipped with a 244 mm diameter drum base with a 560 mm diameter manually adjustable conical cover. The raw water intake pipe consists of a 215 m long, 450 mm diameter polyethylene pipe with a design capacity of 8726 m³/day.

A flow meter is located in the water treatment plant to monitor raw water flows. The raw water is also continuously monitored for pH, turbidity and temperature.

Water Treatment

The Cobalt water treatment plant is a direct filtration facility with two treatment trains operating in parallel, each consisting of coagulant addition, pH adjustment (if needed), a pre-contact tank, and two dual media pressure filters. Primary disinfection is accomplished by ultraviolet light (UV) radiation and chlorine gas.

The plant consists of a raw water wet well with manual screens and lifting equipment, two low lift suction pumps (one duty and one standby) each rated at 36 L/s at a TDH of 42.1m, two high lift suction pumps (one duty and one standby) each rated at 79.0 L/s at a TDH of 50m equipped with variable frequency drives (VFDs) and two pre-contact vessels, each having a volume of 3.6 cubic meters. Poly Aluminum Chloride (PAC) is added prior to the pre-contact tank for coagulation and flocculation. The low lift pumps feed four pressurized dual media

sand/anthracite filters. Each filter is equipped with an on-line turbidity analyzer to monitor the effluent turbidity.

Water is then directed to two (2) parallel UV irradiation systems which are used to achieve most of the required primary disinfection. Each unit is rated at 3974 m³/day at a 85% UVT with a design does of 40 mJ/cm² and is equipped with actuated control valves that allow switchover between units.

A chlorine gas feed system is housed in a separate room of the plant with access from the outside only. Chlorine gas is injected into the water following the UV system treatment using two booster pumps and two manually controlled v-chlorination feed units capable of providing 45 kilograms/day of chlorine. The chlorine is added pace-to-flow to meet the remaining primary disinfection requirements and maintain the required secondary disinfection within the distribution systems.

Water Storage

The water then goes into an 8.527 m diameter and 10.869 m high glassed fused to steel standpipe, having a total volume of 621 m³. Two submersible high lift pumps (one duty and one standby) pump water from the standpipe to the Cobalt and Coleman Distribution Systems and to the Cobalt Water Tower.

Before entering the distribution systems, the treated water is monitored for pH, free chlorine residual and turbidity using continuous on-line analyzers. The plant is protected with alarms and a stand-by generator in the event of power loss.

Emergency Power

A 180 kW diesel generator with a 1500 Liter fuel tank is available outside of the water treatment plant and is capable of supplying power to the facility during power failures.

Control System

The Cobalt Water Treatment System is controlled by a dedicated Programmable Logic Controller (PLC) and monitored through a Supervisory Control and Data Acquisition (SCADA) system. All analyzing, monitoring and control module equipment information is routed through the SCADA system for operator monitoring and control. Control of equipment can be accomplished locally using the SCADA computer or remotely using operator computers and cell phones. Alarm capability and set point adjustment along with trend monitoring are also available through SCADA system controls.

Distribution System

The Cobalt drinking water system is classified as a Large Municipal Residential Drinking Water System and serves an approximate population of 1350 residents, including the connected population in the Coleman Distribution System. The Cobalt Distribution System is comprised of

PVC water mains, 139 valves and approximately 615 service connections. There are 89 fire hydrants connected to the system to aid in fire protection.

The water tower, located on Ferland Avenue in the Town of Cobalt is a composite concrete/steel tank that was built in 1988. The off-site elevated water storage tank is 15m in diameter and 43.4m high and has a storage volume of 1400 cubic meters. It provides storage and maintains pressure in the distribution system during peak hours of demand. Re-chlorination equipment is on hand at the water tower to provide secondary disinfection if required.

3. List of Water Treatment Chemicals Used

- Chlorine Gas – disinfection
- Poly Aluminum Chloride (PAC) – high performance coagulant used for flocculation
- Sodium Hydroxide – pH and alkalinity adjustment of the finished water
- Sodium Hypochloride – disinfection; re-chlorination at the Cobalt Water Tower

All treatment chemicals meet AWWA and NSF/ANSI standards.

4. Significant Expense Incurred in 2024

OCWA is committed to maintaining the assets of the drinking water system and sustains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS).

Significant maintenance and capital expenses incurred in the system include the following:

- UV reference sensor calibrations,
- UV tester replacement,
- Generator service,
- Trojan maintenance for UV1 and UV2,
- Installed chlorine room ramps,
- Chlorination maintenance by SCG,
- Installed LED lights at the water plant and tower,
- Photocell and preventative maintenance kits for the chlorine analyzer,
- Dessicant packs for turbidity analyzer,
- PLC remote access license,
- One (1) emergency watermain repair,
- Quality and Environmental Management System (QEMS) external surveillance audit conducted by Intertek-SAI Global.

5. Details of Notices Reported & Submitted to the Spills Action Center

Based on information kept on record by OCWA, two (2) adverse water quality incidents (AWQIs) and one (1) spill event were reported to the Ministry's Spills Action Centre (SAC) in 2024.

Incident #1: Total Coliform

AWQI No.	164454
Date	February 7, 2024
Details	One (1) total coliform was detected in a sample collected at 9 Hudson Bay Road (Public Work Department) in the Cobalt distribution system. The sample was collected on February 5, 2024 at 1306 hours. Free chlorine residual = 1.72 mg/L
Corrective Actions	<p>Re-samples (upstream, downstream and the site of the adverse result) were collected on February 7th and all results were acceptable having zero total coliforms and <i>E.coli</i>.</p> <p>The incident was resolved with the submission of the Notice of Issue Resolution report and resample results to SAC, the local Health Unit, the local MECP and Owner on February 9, 2024.</p>

Incident #2: Loss of Pressure / BWA

AWQI No.	164833
Date	April 17, 2024
Details	A loss of pressure occurred when repairing leaking service lines to 3 homes located on Miller Avenue and Cobalt Street. The local Health Unit was notified and issued a precautionary boil water advisory (BWA) for the affected residences.
Corrective Actions	<p>After the work was complete and pressure was restored, the area was flushed until acceptable chlorine residuals were achieved (Hydrant 32 = 1.50, Hydrant 37 = 1.37 & Hydrant 24 = 1.56 mg/L).</p> <p>Two sets of 3 bacteriological samples were collected (upstream, downstream and at the site of the work) on April 18th and 19th. All results were acceptable having zero total coliforms and <i>E.coli</i>.</p> <p>The Health Unit lifted the BWA on April 22, 2024 at 11:00 AM.</p>

Incident #3: Spill from the Standpipe

SAC Event No.	1-6V52G1
Date	May 20, 2024
Details	A pressure transmitter faulted causing the standpipe to fill above its high-level set point causing approx. 6.84 m ³ of chlorinated drinking water to spill from the standpipe onto the ground with some entering Sasaginaga Lake.
Corrective Actions	<p>OCWA's Instrumentation Technician completed a verification of the pressure transmitter and it was out of calibration. The unit was replaced. A possible plan is to install a second transmitter as a back-up.</p> <p>Verbal notifications were made to SAC, the local Health Unit, and the local MECP. Written Report sent to SAC, local MECP, Owner and Environment Canada on May 21, 2024.</p>

6. Microbiological Testing

Table 1: Summary of Microbiological Results

Sample Type	# of Samples	Range of <i>E.coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw	53	0 to 5	0 to 230	N/A	N/A
Treated	53	0 to 0	0 to 0	53	< 10 to 150
Distribution	159	0 to 0	0 to 1*	53	< 10 to 70

Maximum Acceptable Concentration (MAC) for treated and distribution samples: *E. coli* = 0 CFUs/100 mL and MAC for Total Coliforms = 0 CFUs/100 mL

"<" denotes less than the laboratory's method detection limit

Notes:

One microbiological sample is collected and tested each week from the raw and treated water supply. A total of three microbiological samples are collected and tested each week from the distribution system. At least 25% of the distribution samples must be tested for HPC bacteria.

* One (1) total coliform was detected in a distribution sample collected at 9 Hudson Bay Road (Public Works Department). The sample was collected on February 5, 2024 at 1306 hours. Free chlorine residual = 1.72 mg/L. AWQI No. 164454

7. Operational Testing

Table 2: Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Turbidity (Filter 1)	8760 ^{Note 1}	0.00 to 0.99	NTU	≤ 1.0 ^{Note 2}
Turbidity (Filter 2)	8760	0.00 to 0.97	NTU	
Turbidity (Filter 3)	8760	0.00 to 0.99	NTU	
Turbidity (Filter 4)	8760	0.00 to 0.99	NTU	
Free Chlorine Residual	8760	1.06 to 2.52	mg/L	CT ^{Note 3}

Notes:

- For continuous monitors 8760 is used as the number of samples.
- Effective backwash procedures, including filter to waste and automatic filter shut down features are in place to ensure that the effluent turbidity requirements as described in the Filter Performance Criteria are met all times. Turbidity exceedances occur when two (2) readings are above 1 NTU for 15 minutes or more in a 24 hour period. Filters will backwash if turbidity reaches 0.3 NTU, filters will shut down and alarm at 0.7 NTU, filters also shut down and alarm at 1.0 NTU. The system performed as programmed and no high turbidity water was directed to the next phase of the process.
- CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Cobalt water plant if the free chlorine residual level drops below 1.0 mg/L to ensure primary disinfection is achieved.

Table 3: Summary of Chlorine Residuals in the Distribution System

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	371	0.66 to 2.18	mg/L	≥ 0.05

Note: A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix A* for a monthly summary of the above microbiological and operational test results.

8. Chemical Testing

Table 4: Summary of Nitrate & Nitrite Data from the Water Treatment Plant

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 8	< 0.05	< 0.05	mg/L	No
April 8	0.6	< 0.05	mg/L	No
July 8	< 0.05	< 0.05	mg/L	No
October 7	< 0.1	< 0.01	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L and for Nitrite = 1 mg/L

Table 5: Summary of Total Trihalomethane Results from the Distribution System

Date of Sample	THM Result	Unit of Measure	Running Average	Exceedance
January 8	52.0	ug/L	Q1 = 50.3	No
April 8	36.6	ug/L	Q2 = 51.1	No
July 8	65.4	ug/L	Q3 = 56.5	No
October 7	54.3	ug/L	Q4 = 52.1	No

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Four Quarter Running Average)

Table 6: Summary of Total Haloacetic Acid Results from the Distribution System

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 8	34	ug/L	Q1 = 54.3	No
April 8	29	ug/L	Q2 = 50.8	No
July 8	51	ug/L	Q3 = 49.3	No
October 7	31	ug/L	Q4 = 36.3	No

Maximum Allowable Concentration (MAC) for Total Haloacetic Acid = 80 ug/L (Four Quarter Running Average)

Table 7: Summary of Lead Results under Schedule 15.1 (from the distribution system)

Date of Sample	# of Samples	Field pH (min to max)	Field Temperature (°C) (min to max)	Alkalinity (mg/L) (min to max)	Lead (ug/L) (min to max)
March 20	2	7.23 to 7.31	4.8 to 5.2	57 to 57	N/A
September 9	2	7.44 to 7.54	15.0 to 16.5	52 to 53	N/A

Maximum Allowable Concentration (MAC) for Lead = 10 ug/L

The system is required to test for total alkalinity and pH in two distribution samples collected during the period of December 15 to April 15 (winter period) and two distribution sample during the period of June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Lead testing was not required this reporting period, but was done in 2022. The results were <0.1 and 0.2 ug/L sampled on March 15th and 0.3 and 18.1 ug/L sampled on September 13th. One sample collected on September 13th exceeded the maximum allowable concentration of 10 ug/L. The suspected cause was that the sample was collected during distribution flushing. Resample result was <0.1 ug/L.

Next lead sampling is scheduled for 2025.

Table 8: Most Recent Schedule 23 Inorganic Results from the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Antimony	< 0.5	ug/L	6	No	No
Arsenic	< 1	ug/L	10	No	No
Barium	5	ug/L	1000	No	No
Boron	< 2	ug/L	5000	No	No
Cadmium	< 0.1	ug/L	5	No	No
Chromium	< 1	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No
Selenium	< 0.2	ug/L	50	No	No
Uranium	< 1	ug/L	20	No	No

Note: Sample required every 12 months (sample date = October 7, 2024)

Table 9: Most Recent Schedule 24 Organic Results from the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.272	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.204	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.01	ug/L	0.01	No	No
Bromoxynil	< 0.1	ug/L	5	No	No
Carbaryl	< 3	ug/L	90	No	No
Carbofuran	< 5	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.204	ug/L	90	No	No
Diazinon	< 0.204	ug/L	20	No	No
Dicamba	< 0.0876	ug/L	120	No	No
1,2-Dichlorobenzene	< 0.2	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.2	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1	ug/L	50	No	No
2-4 Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.375	ug/L	100	No	No
Diclofop-methyl	< 0.125	ug/L	9	No	No
Dimethoate	< 0.204	ug/L	20	No	No
Diquat	< 0.2	ug/L	70	No	No
Diuron	< 20	ug/L	150	No	No
Glyphosate	< 20	ug/L	280	No	No

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Malathion	< 0.204	ug/L	190	No	No
Metolachlor	< 0.136	ug/L	50	No	No
Metribuzin	< 0.136	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No
Paraquat	< 0.2	ug/L	10	No	No
Polychlorinated Biphenyls (PCBs)	< 0.06	ug/L	3	No	No
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.136	ug/L	2	No	No
Picloram	< 0.0876	ug/L	190	No	No
Prometryne	< 0.0681	ug/L	1	No	No
Simazine	< 0.204	ug/L	10	No	No
Terbufos	< 0.136	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No
2,3,4,6-Tetrachlorophenol	< 0.3	ug/L	100	No	No
Triallate	< 0.136	ug/L	230	No	No
Trichloroethylene	< 0.2	ug/L	5	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA)	< 6.26	ug/L	100	No	No
Trifluralin	< 0.136	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

Note: Sample required every 12 months (sample date = October 7, 2024)

Inorganic or Organic Parameter(s) that Exceeded Half the Standard Prescribed in Schedule 2 of Ontario Drinking Water Quality Standards

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 (parameters listed in Table 8 and Table 9 of this report) exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg.169/03) during the reporting period.

Table 10: Most Recent Sodium Data (from the Water Treatment Plant)

Date of Sample	# of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 7, 2024	1	7.98	mg/L	20	No

Note: Sample required every 60 months.

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. It is required that the local Medical Officer of Health be notified when the concentration exceeds 20 mg/L so that persons on sodium restricted diets can be notified by their physicians.

Table 11: Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 7, 2024	1	< 0.05	mg/L	1.5	No

Note: Sample required every 60 months.

9. Additional Testing Performed in Accordance with a Legal Instrument

1. Ultraviolet (UV) Monitoring

Condition 1.6 of Schedule C to Municipal Drinking Water License (MDWL) No. 206-101 issued on April 28, 2021 requires the UV disinfection system to maintain a continuous pass-through UV dose of at least 40 mJ/cm².

Table 12: Summary of UV Dosage

UV System	Range of Results (min to max)	Unit of Measure	Standard
UV Unit No. 1	0 to 199.9	mJ/cm ²	40
UV Unit No. 2	0 to 200.0	mJ/cm ²	40

Note: Zero results occur when the plant is not producing water and the units are off. The duty UV unit will alarm and automatically switch over to the standby unit if the dose falls to 40 mJ/cm². If both units fail, the system will alarm and automatically shut down. Flow through the UV is not to exceed 46 L/s.

2. Chlorine Residual Monitoring when Standpipe is Off-line

Condition 2.2 of Schedule D to MDWL No. 206-101 requires that; when the standpipe is off line, the free chlorine residual shall be continuously monitored at the plant discharge, and a grab sample shall be taken and tested for free chlorine residual weekly from the Cobalt and Coleman watermain at a point near the first or second consumer.

Table 13: Summary of Chlorine Residual Monitoring at the First Consumer

Cobalt WTP	Coleman Distribution	Correlation Difference	Cobalt Distribution	Correlation Difference	Unit of Measure
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The standpipe was on-line for the duration of 2024 and this sampling was not required.

3. Harmful Algal Bloom Monitoring

Condition 6.0 (6.1) of Schedule C to MDWL No. 206-101 requires a Harmful Algal Bloom (HAB) monitoring, sampling, and reporting plan. The plan must be implemented during the harmful algae bloom season, during but not limited to the warm seasonal period between June 1st and October 31st of each year, or as otherwise directed by the Medical Officer of Health. A Plan has been developed and is in effect for the Cobalt Drinking Water System during the HAB season. The Plan includes visual inspection of the HAB monitoring area at least once per week. Sampling and testing for microcystins on the raw and treated water is only required if a HAB is suspected or occurring in the HAB monitoring area. Reporting to the local Health Unit and the Ministry’s Spills Actions Center if a suspected bloom is observed or if microcystins are detected in either the raw or treated water samples.

Table 14: Summary of Microcystin Results

Sample Type	# of Samples	Range of Microcystin Results <i>(min to max)</i>	Unit of Measure	Exceedance
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No incidents of suspected and/or confirmed harmful blue green algal blooms were observed in the HAB monitoring area during the 2024 season.

Maximum Allowable Concentration (MAC) for Microcystin-LR = 1.5 ug/L

Schedule 22 – Summary Reports for Municipalities

10. Requirements the System Failed to Meet

The following table lists the requirements of the Safe Drinking Water Act (2002), the drinking water regulations, the Permit to Take Water (PTTW), the Municipal Drinking Water Licence (MDWL), the Drinking Water Works Permit (DWWP), and any other orders applicable to the system that were not met at any time during the reporting period.

According to information kept on record by OCWA, the Cobalt Drinking Water System complied with all the requirements set out in the above mentioned legal instruments.

Table 15: Requirements the System Failed to Meet

Legislation	Requirement(s) not Met	Duration	Corrective Action(s)
	N/A		

Also to be noted in this section, two (2) adverse water quality incidents and one (1) spill event were reported to the Ministry’s Spills Action Center during the reporting period. Refer to *Section 5 - Details of Notices Reported & Submitted to the Spills Action Center* on page 6 of this report for details.

11. Summary of Quantities and Flow Rates

11.1 Flow Monitoring

The Municipal Drinking Water Licence (MDWL) No. 206-101 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of water conveyed from the treatment system to the distribution system,
- the flow rate and daily volume of water conveyed into the treatment system.

The systems’ Permit to Take Water (PTTW) No. 6462-BB9RFA requires that on each day water is taken from the source, the date, the volume of water taken on that date and the rate at which it was taken be recorded.

The Cobalt drinking water system has one flow meter to monitor the raw water entering the treatment plant and one to monitor the treated water entering the distribution system. These flow metering devices are calibrated in accordance to manufacturers’ specifications on an annual basis and are operating as required.

11.2 Rated Capacity & Flow Rates

The system's PTTW allows the plant to withdraw a maximum volume of 3974 cubic meters from Sasaginaga Lake each day. A review of the raw water flow data indicates that the system did not exceed this allowable limit having a maximum volume of 1727 m³.

The Permit also allows a maximum flow rate of 2760 L/minute which was not exceeded during the reporting period having a maximum flow rate of 1601 L/minute.

Condition 1.0 (1.1) to Schedule C of MDWL No. 206-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system not exceed a maximum flow of 3974 m³ on any calendar day. The Cobalt DWS complied with this limit having a recorded maximum volume of 1747 m³/day, which is 44% of the rated capacity.

The following tables (Table 16 and Table 17) indicate the quantities and flow rates of water taken and produced during the reporting period, including monthly average flows, maximum daily flows and total monthly volumes. A comparison of the water data is made to the rated capacity and flow rates specified in the system's Permit to Take Water and the Municipal Drinking Water License.

Figure 1 is a comparison of the maximum allowed water taking identified in the system's PTTW to the average and maximum raw water flows entering the water treatment plant.

Figure 2 is a comparison of the maximum rated capacity specified in the system's MDWL to the average and maximum treated water flows entering the distribution system.

Table 18 provides a comparison of Cobalt and Coleman flows.

Table 19 lists historical maximum raw and treated flows from 2018 to 2024.

Table 16: 2024 – Monthly Summary of Water Takings from the Source (Sasaginaga Lake)

Regulated by Permit to Take Water (PTTW) #6462-BB9RFA, issued May 2, 2019

Sasaginaga Lake	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Volume (m ³)	34821	36065	44719	43633	40470	38660	38873	39338	38110	36375	36696	40987	468747
Average Volume (m ³ /d)	1123	1244	1443	1454	1305	1289	1254	1269	1270	1173	1223	1322	1281
Maximum Volume (m ³ /d)	1417	1539	1639	1727	1691	1601	1643	1712	1635	1528	1397	1458	1727
PTTW - Maximum Allowable Volume (m ³ /day)	3974	3974	3974	3974	3974	3974	3974	3974	3974	3974	3974	3974	3974
Maximum Flow Rate (L/min)	1278	1559	1601	1594	1592	1586	1555	1548	1543	1554	1553	1571	1601
PTTW - Maximum Allowable Flow Rate (L/min)	2760	2760	2760	2760	2760	2760	2760	2760	2760	2760	2760	2760	2760

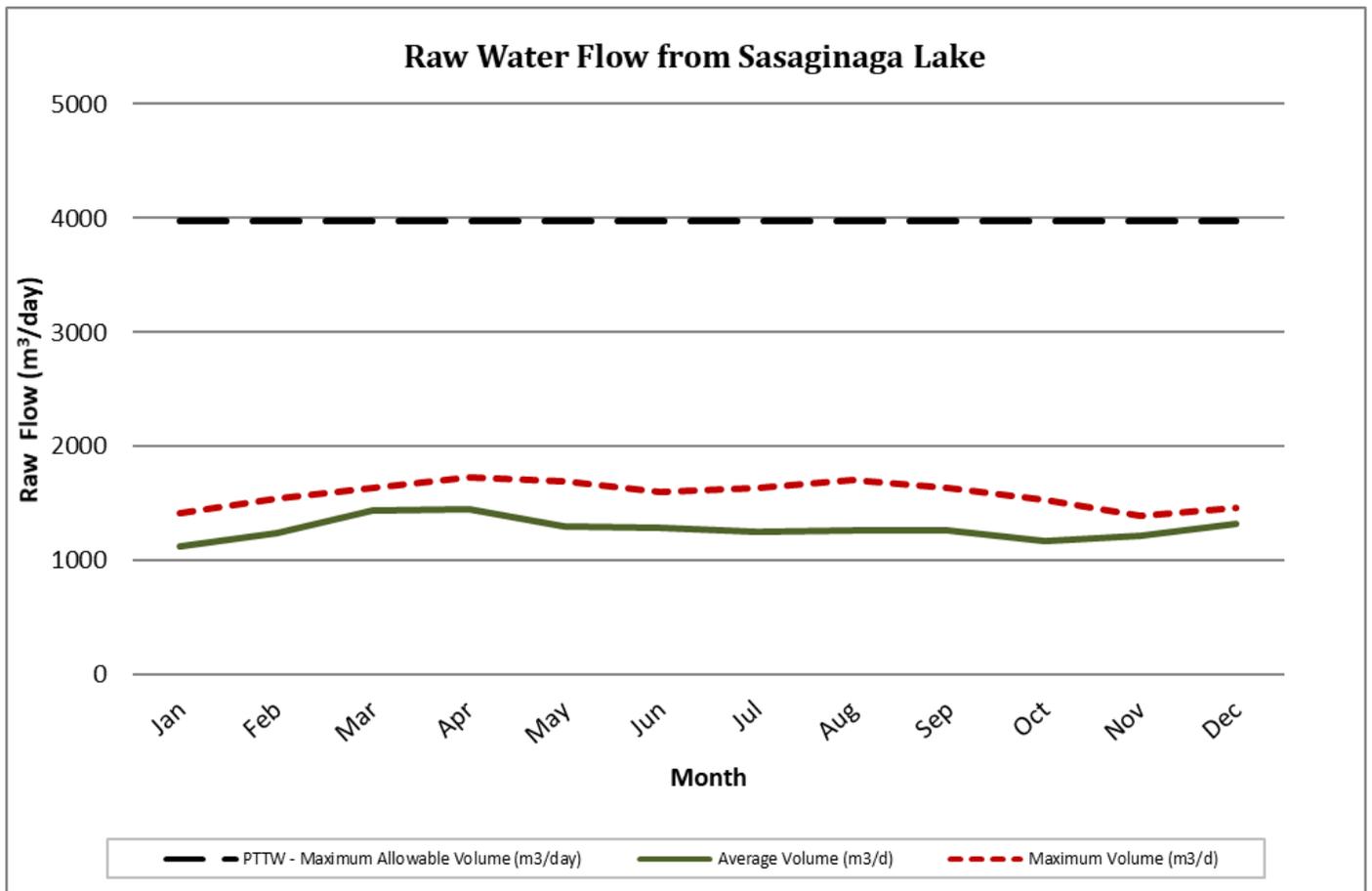


Figure 1: Comparison of Raw Water Flows to the Maximum Allowable Water Taking

Table 17: 2024 – Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #206-101-6, issued September 14, 2022

Treatment Plant	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Volume (m ³)	31192	32550	39970	39015	35795	34587	34600	35465	33814	32470	32589	36106	418153
Average Volume (m ³ /d)	1006	1122	1289	1301	1155	1153	1116	1144	1127	1047	1086	1165	1143
Maximum Volume (m ³ /d)	1338	1747	1517	1596	1554	1413	1564	1551	1606	1344	1260	1428	1747
MDWL - Rated Capacity (m ³ /day)	3974	3974	3974	3974	3974	3974	3974	3974	3974	3974	3974	3974	3974
% Rated Capacity	34	44	38	40	39	36	39	39	40	34	32	36	44

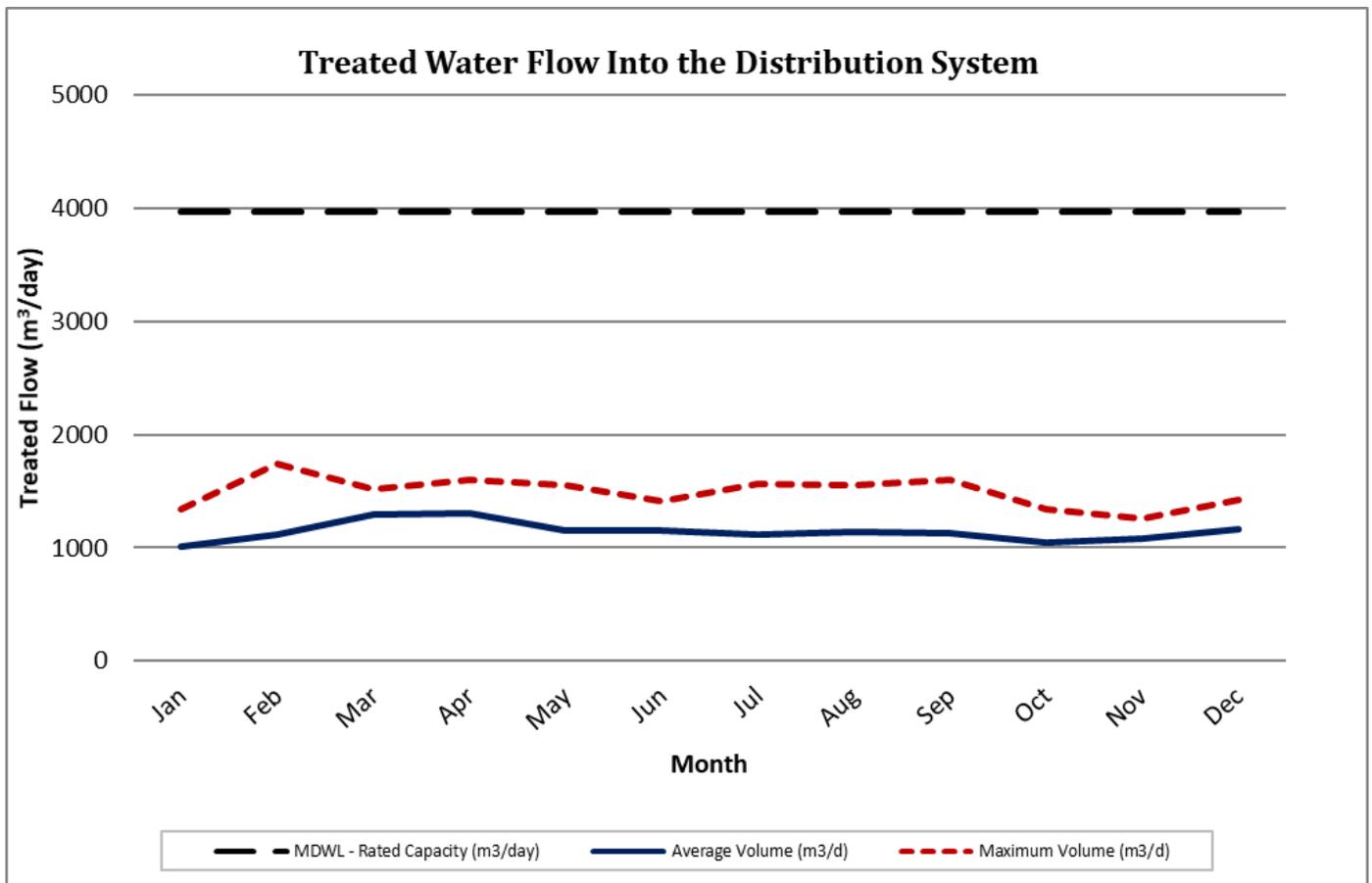


Figure 2: Comparison of Treated Flows to the Maximum Rated Capacity

Table 18: 2024 – Monthly Consumption (Cobalt vs Coleman)

Month	Total (m ³)	Usage (m ³)		% Used By	
		Cobalt	Coleman	Cobalt	Coleman
January	31,192	29,671	1521	95.1	4.9
February	32,550	31,027	1523	95.3	4.7
March	39,970	38,351	1619	96.0	4.0
April	39,015	38,296	719	98.2	1.8
May	35,795	34,589	1206	96.6	3.4
June	34,587	32,488	2099	93.9	6.1
July	34,600	32,790	1810	94.8	5.2
August	35,465	33,602	1863	94.7	5.3
September	33,814	32,737	1077	96.8	3.2
October	32,470	31,248	1222	96.2	3.8
November	32,589	31,637	952	97.1	2.9
December	36,106	34,467	1639	95.5	4.5
TOTALS	418,153	400,903	17,250	95.9%	4.1%

11.3 System Performance

The following information is provided to enable the Owner to assess the capability of the system to meet existing and future water usage needs:

Rated Capacity of the Plant (MDWL)	3,974 m ³ /day	
Average Daily Flow for 2024	1143 m ³ /day	27 % of the rated capacity
Maximum Daily Flow for 2024	1747 m ³ /day	41 % of the rated capacity
Total Treated Water Produced in 2024	418,453 m ³	

Table 19: 2024 – Historical Maximum Flows (2018 to 2024)

Year	Maximum Raw Flow (m ³ /d)	Max. Day % of PTTW Allowable (3974 m ³ /d)	Maximum Treated Flow (m ³ /d)	Max. Day % of MDWL Capacity (3974 m ³ /d)
2024	1727	43%	1747	44%
2023	2036	51%	1648	41%
2022	2296	58%	1970	50%
2021	1938	49%	1708	43%
2020	1681	42%	1422	36%
2019	1514	38%	1252	32%
2018	1817	46%	1193	30%

Conclusion

The water quality data collected in 2024 demonstrates that the Cobalt drinking water system provided high quality drinking water to its users.

The system was able to operate in accordance with the terms and conditions of the Permit to Take Water and in accordance with the rated capacity of the licence while meeting the community’s demand for water use.

All Adverse Water Quality Incidents and events that occurred during the reporting period were reported to the Local Health Unit and the Ministry’s Spills Action Center as required. All corrective actions were completed and the incidents were resolved as soon as possible.



APPENDIX A

Monthly Summary of Microbiological & Operational Test Results



From 01/01/2024 to 12/31/2024

Raw Water																
Sasaginaga Lake	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Total	Avg	Max	Min
Total Coliform: TC - cfu/100mL																
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			
Lab Month.Max	170.00	94.00	100.00	230.00	175.00	205.00	18.00	6.00	14.00	38.00	68.00	78.00			230.00	
Lab Month.Mean	82.80	50.50	60.50	127.80	107.75	80.00	7.60	1.50	9.00	27.60	59.00	54.80		56.15		
Lab Month.Min	18.00	8.00	12.00	54.00	26.00	10.00	0.00	0.00	1.00	4.00	44.00	12.00				0.00
E. Coli: EC - cfu/100mL																
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			
Lab Month.Max	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 5.00	< 2.00	0.00	2.00	2.00	2.00	< 2.00			5.00	
Lab Month.Mean	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 5.00	< 0.40	0.00	1.00	< 1.60	< 2.00	< 2.00	<	1.81		
Lab Month.Min	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 5.00	0.00	0.00	0.00	0.00	< 2.00	< 2.00				0.00
Filtered Water																
Filter #1	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Total	Avg	Max	Min
Turbidity (Max 1 NTU) - NTU																
OL Month.Max	0.18	0.29	0.51	0.89	0.94	0.47	0.46	0.56	0.26	0.52	0.94	0.99			0.99	
OL Month.Mean	0.05	0.05	0.07	0.07	0.08	0.09	0.09	0.08	0.08	0.08	0.11	0.10		0.08		
OL Month.Min	0.00	0.00	0.04	0.05	0.04	0.06	0.05	0.01	0.06	0.01	0.00	0.00				0.00
Filter #2	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Total	Avg	Max	Min
Turbidity (Max 1 NTU) - NTU																
OL Month.Max	0.28	0.94	0.95	0.90	0.92	0.65	0.31	0.92	0.22	0.25	0.97	0.93			0.97	
OL Month.Mean	0.06	0.05	0.07	0.07	0.07	0.08	0.08	0.09	0.08	0.08	0.10	0.09		0.08		
OL Month.Min	0.04	0.00	0.04	0.04	0.00	0.05	0.00	0.00	0.05	0.00	0.06	0.00				0.00
Filter #3	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Total	Avg	Max	Min
Turbidity (Max 1 NTU) - NTU																
OL Month.Max	0.33	0.98	0.90	0.97	0.98	0.70	0.91	0.94	0.92	0.94	0.98	0.99			0.99	
OL Month.Mean	0.05	0.05	0.06	0.07	0.08	0.08	0.09	0.08	0.08	0.08	0.09	0.09		0.08		
OL Month.Min	0.00	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.04				0.00
Filter #4	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Total	Avg	Max	Min
Turbidity (Max 1 NTU) - NTU																
OL Month.Max	0.31	0.91	0.35	0.91	0.41	0.74	0.51	0.49	0.67	0.35	0.99	0.95			0.99	
OL Month.Mean	0.06	0.05	0.05	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.10	0.09		0.08		
OL Month.Min	0.00	0.04	0.04	0.04	0.04	0.05	0.06	0.06	0.05	0.05	0.06	0.05				0.00

NE_Cobalt DWS_Annual Reg Report

From 01/01/2024 to 12/31/2024

Facility Name: COBALT DRINKING WATER SYSTEM
Receiver:

Facility Org Number: 5070
Facility Owner: Municipality: Town of Cobalt
Service Population: 1350

Works: 220000362
Facility Classification: Class 2 Water Treatment
Total Design Capacity: 8726 m3/day



Treated Water																
Treated Water POE	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Total	Avg	Max	Min
Cl Residual OL (Min 1 mg/L) - mg/L																
OL Month.Max	2.11	2.29	1.86	1.84	2.28	2.19	2.30	2.52	2.31	2.20	2.29	1.73			2.52	
OL Month.Mean	1.85	1.85	1.61	1.57	1.76	1.79	1.80	1.86	1.74	1.79	1.60	1.47		1.72		
OL Month.Min	1.50	1.41	1.35	1.33	1.22	1.49	1.43	1.40	1.35	1.39	1.10	1.06				1.06
Total Coliform: TC - cfu/100mL																
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			
Lab Month.Max	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Lab Month.Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		
Lab Month.Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
E. Coli: EC - cfu/100mL																
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			
Lab Month.Max	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Lab Month.Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		
Lab Month.Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
HPC - cfu/mL																
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			
Lab Month.Max	20.00	40.00	10.00	150.00	< 10.00	20.00	10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00			150.00	
Lab Month.Mean	< 12.00	< 17.50	< 10.00	< 40.00	< 10.00	< 12.50	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00		< 13.77		
Lab Month.Min	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00				< 10.00
Distribution Water																
1st Bacti/Residual	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Total	Avg	Max	Min
Cl Residual: Free - mg/L																
IH Edited Count	9.00	9.00	8.00	9.00	9.00	8.00	10.00	9.00	8.00	10.00	8.00	9.00	106.00			
IH Month.Max	2.01	1.86	1.41	1.62	1.64	1.94	1.75	2.16	2.18	1.91	1.37	1.51			2.18	
IH Month.Mean	1.65	1.57	1.24	1.27	1.25	1.20	1.33	1.40	1.30	1.18	1.10	1.16		1.31		
IH Month.Min	1.44	1.23	1.06	1.00	1.08	0.89	1.01	1.07	0.66	0.74	0.85	0.94				0.66
Total Coliform: TC - cfu/100mL																
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			
Lab Month.Max	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Lab Month.Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		
Lab Month.Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00

NE_Cobalt DWS_Annual Reg Report

From 01/01/2024 to 12/31/2024

Facility Name: COBALT DRINKING WATER SYSTEM
Receiver:

Facility Org Number: 5070
Facility Owner: Municipality: Town of Cobalt
Service Population: 1350

Works: 220000362
Facility Classification: Class 2 Water Treatment
Total Design Capacity: 8726 m3/day



																Total	Avg	Max	Min
E. Coli - cfu/100mL																53.00			
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00						
Lab Month.Max	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00				
Lab Month.Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00					
Lab Month.Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00		
2nd Bacti/Residual																			
CI Residual: Free - mg/L																			
IH Edited Count	9.00	9.00	8.00	9.00	9.00	8.00	10.00	9.00	8.00	10.00	8.00	9.00	106.00						
IH Month.Max	1.62	1.92	1.30	1.31	1.56	1.31	1.59	1.67	1.67	1.66	1.33	1.45			1.92				
IH Month.Mean	1.42	1.50	1.18	1.21	1.15	1.15	1.13	1.15	1.03	1.15	1.09	1.04		1.18					
IH Month.Min	1.00	1.26	0.98	1.11	0.88	0.94	0.98	0.91	0.67	0.85	0.78	0.71					0.67		
Total Coliform: TC - cfu/100mL																			
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00						
Lab Month.Max	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00				
Lab Month.Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00					
Lab Month.Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00		
E. Coli - cfu/100mL																			
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00						
Lab Month.Max	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00				
Lab Month.Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00					
Lab Month.Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00		
3rd Bacti/Residual																			
CI Residual: Free - mg/L																			
IH Edited Count	9.00	9.00	8.00	9.00	9.00	8.00	10.00	9.00	8.00	10.00	8.00	9.00	106.00						
IH Month.Max	1.78	1.94	1.59	1.67	1.74	1.44	1.92	1.74	1.55	1.75	1.68	1.36			1.94				
IH Month.Mean	1.35	1.56	1.13	1.48	1.36	1.21	1.17	1.31	1.33	1.21	1.10	1.03		1.27					
IH Month.Min	0.68	1.01	0.70	1.18	1.08	1.00	0.87	1.07	1.10	0.84	0.81	0.69					0.68		
Total Coliform: TC - cfu/100mL																			
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00						
Lab Month.Max	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			1.00				
Lab Month.Mean	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.02					
Lab Month.Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00		

NE_Cobalt DWS_Annual Reg Report

From 01/01/2024 to 12/31/2024

Facility Name: COBALT DRINKING WATER SYSTEM
Receiver:

Facility Org Number: 5070
Facility Owner: Municipality: Town of Cobalt
Service Population: 1350

Works: 220000362
Facility Classification: Class 2 Water Treatment
Total Design Capacity: 8726 m3/day



E. Coli - cfu/100mL																
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	53.00		
Lab Month.Max	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	
Lab Month.Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	
Lab Month.Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00
HPC - cfu/mL																
Lab Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	53.00		
Lab Month.Max	< 10.00	20.00	10.00	70.00	10.00	10.00	< 10.00	< 10.00	20.00	10.00	< 10.00	10.00	< 10.00		70.00	
Lab Month.Mean	< 10.00	< 12.50	< 10.00	< 22.00	< 10.00	< 10.00	< 10.00	< 10.00	< 12.50	< 10.00	< 10.00	< 10.00	< 10.00	< 11.51		
Lab Month.Min	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00			< 10.00
4th Residual																
	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Total	Avg	Max	Min
Cl Residual: Free - mg/L																
IH Edited Count	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			
IH Month.Max	1.95	1.93	1.61	1.60	1.79	1.72	1.88	1.60	1.54	1.47	1.51	1.56			1.95	
IH Month.Mean	1.74	1.21	1.32	1.46	1.55	1.59	1.59	1.44	1.23	1.29	1.36	1.42		1.44		
IH Month.Min	1.60	0.91	1.08	1.29	1.36	1.44	1.11	1.16	0.94	0.97	1.19	1.31				0.91

NOTES:
1. February 5 - one (1) total coliform was detected in a distribution sample collected at 9 Hudson Bay Road (Public Works Department). AWQI No. 164454.