

Lindsay Drinking Water System

Waterworks # 220000175

System Category – Large Municipal Residential

Annual Water Report

Reporting Period of January 1st – December 31st 2023

Issued: February 14, 2024

Operating Authority:



This report has been prepared to satisfy the annual reporting requirements in
O. Reg. 170/03 Section 11 and Schedule 22

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Report Availability

This system serves more than 10,000 residents. The annual reports are available to residents at the City of Kawartha Lakes Public Works Administration Office by appointment and on [City website](#). Notification that reports are available free of charge will be made on the City of Kawartha Lakes website. The City of Kawartha Lakes Public Works Administration Office is located at 322 Kent Street W., in Lindsay, Ontario.

Compliance Report Card

Drinking Water System Number: 220000175

Drinking Water System Name: Lindsay DWS

Drinking Water System Owner: City of Kawartha Lakes

Drinking Water System Category: Large Municipal Residential

Reporting Period: January 1, 2023 - December 31, 2023

	# of Events	Date	Details
Drinking Water			
MECP Inspections	1	2023 11 23	2023/2024 Announced, Focused Drinking Water Inspection – No non-compliances
AWQI's	1	2023 10 13	THM Running Annual Average of 107.50 µg/L
Number of Non-Compliances	1	2023 07 03	O. Reg. 170/03 Schedule 13-4 Nitrate and Nitrite – missing sample from July 2023 (Q3) Not identified until February 13, 2024
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The Lindsay Water Treatment Plant receives raw water from the Scugog River, which is a surface water source.

Treatment

The treatment system consists of the following:

- Two screened intake pipes
- Three low lift pumps
- CO₂ pH correction
- Coagulant and polymer addition
- Two ballasted floc/clarification units each with coagulation, flocculation, up-flow settling tank with inclined tube settlers and “micro-sand” recirculation pumps
- Five GAC/sand filters
- Chlorination
- Two clearwells, East & West Cells
- Four high lift pumps
- On-site wastewater equalization and sludge thickening
- Standby power
- SCADA system
- Thornhill Reservoir and pumping station
- Verulam elevated storage tank
- Oakwood Reservoir and pumping station

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Lavo
Sodium Hydroxide	pH Correction	UBA
Carbon Dioxide	pH Correction	Linde
Polyaluminumchloride (PAC)	Coagulation	Kemira
Magna Floc Polymer	Coagulation	Northland Chemical

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
2023 10 13	N/A	Lindsay Distribution	THM Running Annual Average	107.50 µg/L	O. Reg. 170/03	N/A

Non-Compliance(s)

Legislation requirement(s) system failed to meet during the reporting period and the Corrective Action taken to resolve the issue.

- O. Reg. 170/03 Schedule 13-4 Nitrate and Nitrite – sample was missed in July 2023. Non-compliance was determined by staff during the preparation of this report, and was reported both verbally and in writing to the Water Inspector at MECP. Corrective actions include adding additional checklists to verify receipt of all required sample results during the review and filing of lab analysis by staff.

Non-Compliance Identified in a Ministry Inspection

- There were no non-compliances identified during the inspection for the period of 2023/2024.

Flows

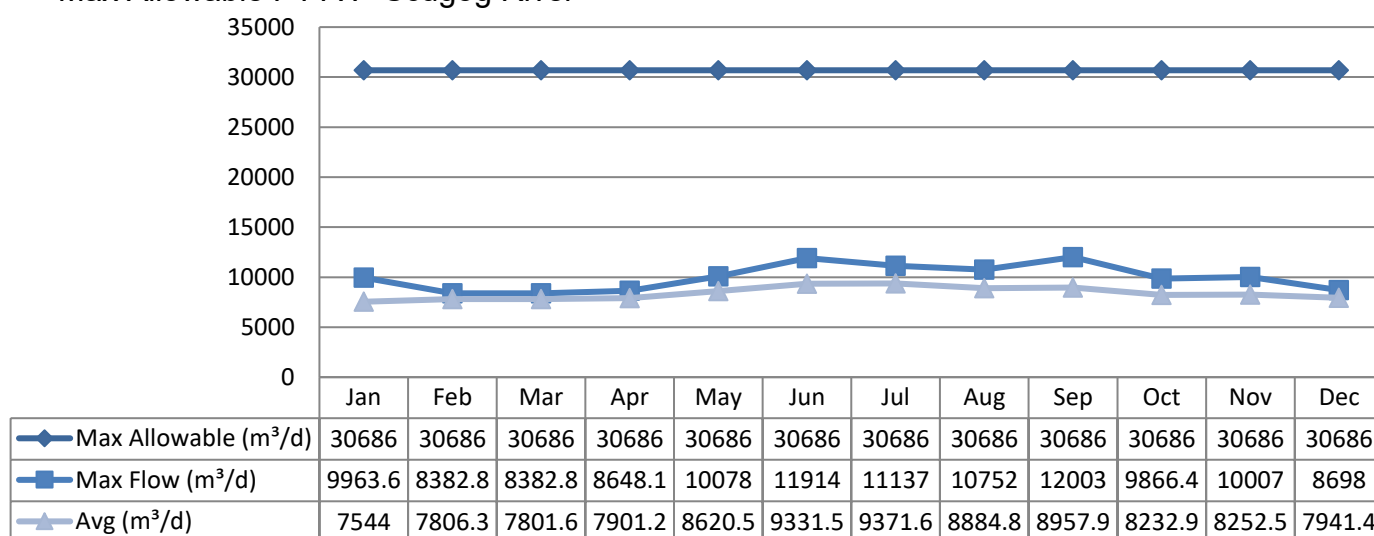
The Lindsay Drinking Water System maximum allowable water taking is 30,685.5 m³/day, and on average the plant is operating at under half this capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2023 Raw Flow Data was submitted to the Ministry electronically under permit #8160-B3MP6L. The confirmation and a copy of the data that was submitted are attached in Appendix A.

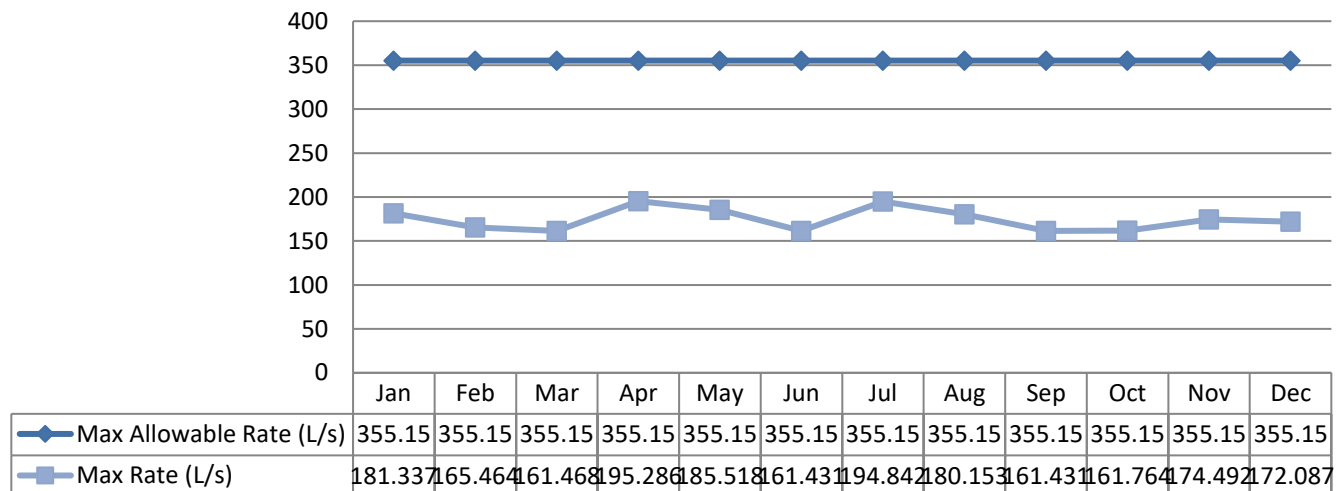
Total Monthly Flows (m³/d)

Max Allowable PTTW- Scugog River



Monthly Rated Flows (L/s)

Max Allowable Rate – PTTW- Scugog River

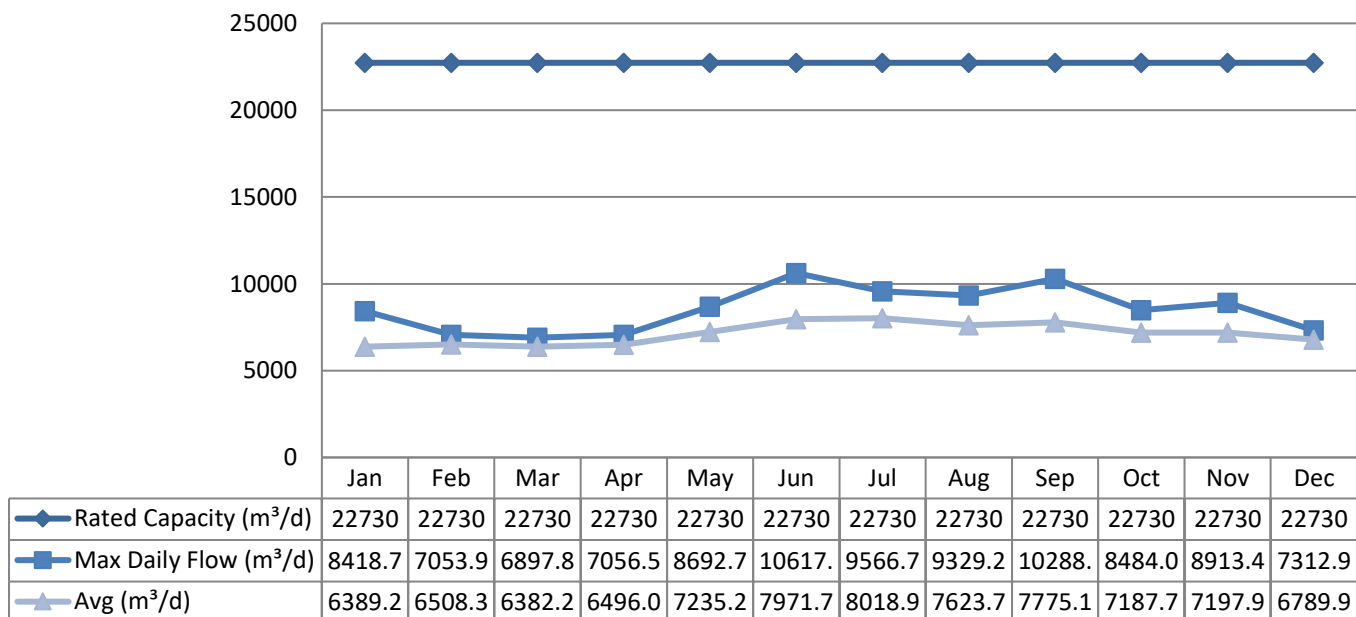


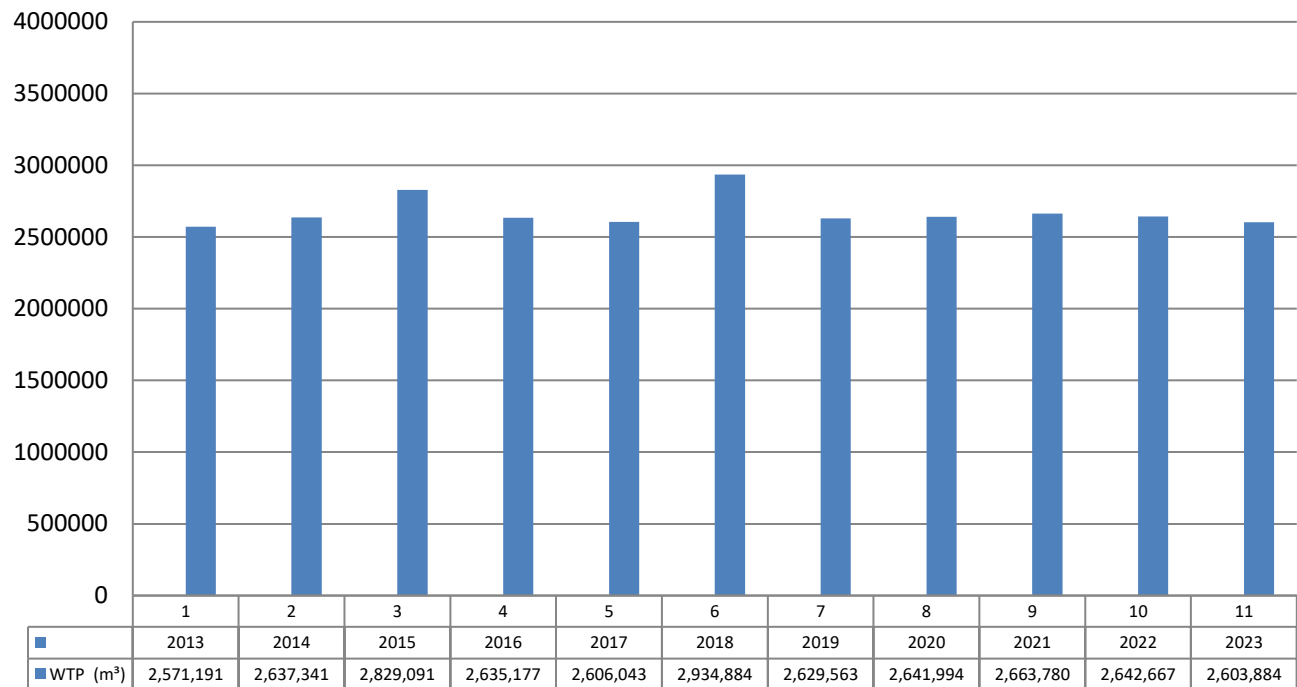
Treated Water Flows

The Treated Water flow is regulated under the Municipal Drinking Water Licence 141-120.

Monthly Rated Flows

Rated Capacity - MDWL



Annual Total Flow ComparisonTotal Annual m³**Regulatory Sample Results Summary**

The City of Kawartha Lakes adheres to operational and compliance limits however, during certain operational circumstances some results may be temporarily outside of limits but not limited to pump start-ups, power outages/generator tests, alarm verification, maintenance, etc. These are normal occurrences and are listed within the report; however, it is not indicative of a true exceedance.

Microbiological Testing

Source	No. of Samples Collected	Range of E.coli Results MIN	Range of E.coli Results MAX	Range of Total Coliform Results MIN	Range of Total Coliform Results MAX	Range of HPC Results	Range of HPC Results
Raw	52	4	1300	40	12600		
Treated	52	0	0	0	0	0	3
Distribution	618	0	0	0	0	0	83

Operational Testing

	No. of Samples Collected	Range of Results MIN	Range of Results MAX
Raw Turbidity (NTU)	8760	0	25.48

	No. of Samples Collected	Range of Results MIN	Range of Results MAX
Turbidity Filter 1 (NTU)	8760	0.006	2.03
Turbidity Filter 2 (NTU)	8760	0.004	0.49
Turbidity Filter 3 (NTU)	8760	0.009	2.03
Turbidity Filter 4 (NTU)	8760	0.006	2.03
Turbidity Filter 5 (NTU)	8760	0.013	1.27
Chlorine (CT Analyzer)	8760	0	3.66
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

Note: Record the unit of measure if it is **not** milligrams per litre.

Note: For continuous monitors 8760 is used as the number of samples. Spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O. Reg. 170/03.

Inorganic Parameters

These parameters are tested as a requirement under O. Reg. 170/03. Sodium and Fluoride are required to be tested every 5 years. Nitrate and Nitrite are tested quarterly and the metals are tested annually as required under O. Reg. 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O. Reg. 169/03
- MDL = Method Detection Limit

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2023 01 03	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L) - TW	2023 01 03	0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2023 01 03	31.7	1000.0	No	No
Boron: B (ug/L) - TW	2023 01 03	15	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2023 01 03	0.008	5.0	No	No
Chromium: Cr (ug/L) - TW	2023 01 03	<MDL 0.08	50.0	No	No
Mercury: Hg (ug/L) - TW	2023 01 03	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2023 01 03	0.09	50.0	No	No
Uranium: U (ug/L) - TW	2023 01 03	0.030	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2023 12 11	0.11	1.5	No	No
Nitrite (mg/L) - TW	2023 01 03	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2023 04 03	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	Missed	sample	1.0	No	No
Nitrite (mg/L) - TW	2023 10 02	<MDL 0.003	1.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Nitrate (mg/L) - TW	2023 01 03	4.95	10.0	No	No
Nitrate (mg/L) - TW	2023 04 03	2.36	10.0	No	No
Nitrate (mg/L) - TW	Missed	sample	10.0	No	No
Nitrate (mg/L) - TW	2023 10 02	0.043	10.0	No	No
Sodium: Na (mg/L) - TW	2022 07 05	38.2	20*	Yes	Yes

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified mg/L when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium-restricted diets.

Schedule 15 Sampling:

The Schedule 15 Sampling is required under O. Reg. 170/03. This system is under reduced sampling. No plumbing samples were collected.

Distribution System	No. of Sampling Points	No. of Samples	Range of Results MIN	Range of Results MAX	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	4	8	144	177	N/A	N/A
pH	4	8	7.09	7.36	N/A	N/A
Lead (ug/L)	4	8	0.02	0.21	10	0

Organic Parameters

These parameters are tested annually as a requirement under O. Reg. 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

	Sample Date	Sample Results	MAC	Exceedance MAC	Exceedance ½ MAC
Treated Water					
Alachlor (ug/L) - TW	2023 01 03	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2023 01 03	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2023 01 03	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2023 01 03	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2023 01 03	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2023 01 03	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2023 01 03	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2023 01 03	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) -	2023 01 03	<MDL 0.17	2.00	No	No

	Sample Date	Sample Results	MAC	Exceedance MAC	Exceedance $\frac{1}{2}$ MAC
TW					
Chlorpyrifos (ug/L) - TW	2023 01 03	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2023 01 03	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2023 01 03	<MDL 0.20	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2023 01 03	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2023 01 03	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2023 01 03	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2023 01 03	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2023 01 03	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2023 01 03	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2023 01 03	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2023 01 03	<MDL 0.40	9.00	No	No
Dimethoate (ug/L) - TW	2023 01 03	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW	2023 01 03	<MDL 1	70.00	No	No
Diuron (ug/L) - TW	2023 01 03	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2023 01 03	<MDL 1	280.00	No	No
Malathion (ug/L) - TW	2023 01 03	<MDL 0.02	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA)	2023 01 03	<MDL 0.00012	0.01	No	No
Metolachlor (ug/L) - TW	2023 01 03	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2023 01 03	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2023 01 03	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2023 01 03	<MDL 1	10.00	No	No
PCB (ug/L) - TW	2023 01 03	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2023 01 03	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2023 01 03	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2023 01 03	<MDL 1	190.00	No	No
Prometryne (ug/L) - TW	2023 01 03	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2023 01 03	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2023 01 03	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2023 01 03	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2023 01 03	<MDL 0.20	100.00	No	No

	Sample Date	Sample Results	MAC	Exceedance MAC	Exceedance $\frac{1}{2}$ MAC
Triallate (ug/L) - TW	2023 01 03	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2023 01 03	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2023 01 03	<MDL 0.25	5.00	No	No
Trifluralin (ug/L) - TW	2023 01 03	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2023 01 03	<MDL 0.17	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average Q1 - DW	2023/01/03	85.00	100.0	No	Yes
Trihalomethane: Total (ug/L) Annual Average Q2 - DW	2023/04/03	83.5	100.0	No	Yes
Trihalomethane: Total (ug/L) Annual Average Q3 - DW	2023/07/04	92.25	100.0	No	Yes
Trihalomethane: Total (ug/L) Annual Average Q4 - DW	2023/10/02	107.5	100.0	Yes	Yes
HAA Total (ug/L) Annual Average Q1 - DW	2023/01/03	75.29	80.0	No	Yes
HAA Total (ug/L) Annual Average Q2 - DW	2023/04/03	73.89	80.0	No	Yes
HAA Total (ug/L) Annual Average Q3 - DW	2023/07/04	79.98	80.0	No	Yes
HAA Total (ug/L) Annual Average Q4 - DW	2023/10/02	78.73	80.0	No	Yes

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

MDL = Method Detection Limit

Additional Legislated Sampling

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
Nov 10, 2021	TSS	2023 01 03	6	mg/L
Nov 10, 2021	TSS	2023 02 06	3	mg/L
Nov 10, 2021	TSS	2023 03 06	3	mg/L
Nov 10, 2021	TSS	2023 04 03	4	mg/L
Nov 10, 2021	TSS	2023 05 08	4	mg/L
Nov 10, 2021	TSS	2023 06 05	3	mg/L
Nov 10, 2021	TSS	2023 07 04	2	mg/L
Nov 10, 2021	TSS	2023 08 08	3	mg/L
Nov 10, 2021	TSS	2023 09 11	2	mg/L
Nov 10, 2021	TSS	2023 10 02	2	mg/L

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
Nov 10, 2021	TSS	2023 11 06	3	mg/L
Nov 10, 2021	TSS	2023 12 04	3	mg/L
Summary	TSS	2023	Min: 2 Max: 6 AVG: 3 based on 12 numerical results	mg/L

Municipal Drinking Water Licence	Collected Weekly June – Oct	Total Microcystin Raw Results Range (ug/L)	Total Microcystin Treated Water Results Range (ug/L)	Treated Water Total Microcystin Limit 1.5 ug/L Exceeded Y/N
Harmful Algal Blooms Monitoring required June to October at a minimum. Treated and Raw Water Samples collected weekly.	June	<0.1 – <0.1	<0.1 - <0.1	N
	July	<0.1 - <0.1	<0.1 - <0.1	N
	August	<0.1 - <0.1	<0.1 - <0.1	N
	September	<0.1 - <0.1	<0.1 - <0.1	N
	October	<0.1 – <0.1	<0.1 - <0.1	N
	November	<0.1 - <0.1	<0.1 - <0.1	N

Method Detection Limit is 0.1 ug/L

Major Maintenance Summary incurred to install, repair or replace required equipment

WO #	Description
	Lindsay WTP
49575	Replaced Raw Water Turbidity Analyzer
66840	Replaced Highlift Turbidity Analyzer
No work order - capital	Replaced Actiflo PLC
No work order assigned	Clearwell 1 Level Controller Replacement
No work order assigned	Clearwell 2 Level Controller Replacement

WO #	Description
No Work order - capital	Sodium Hydroxide Bulk Tank Replacement
57390	Highlift Pump #2 Rebuild
58195	Rebuild Hydrocyclone Pumps
58699	Replace piping and removal of sodium hypochlorite day tanks
60154	Replace gland on Actiflo pump 225
60190	Old Clearwell Cleaning and Inspection
61268	Replace coagulant flow sensor
66031	Replaced Filter 4 Turbidity Analyzer
66132	Replaced soft start Highlift pump #1
	Oakwood Reservoir
	Thornhill Reservoir
	Verulam Tower
No work order – capital	Replaced gate valves, altitude control valve and stainless steel piping.

Appendix A

WTRS Data and Submission Confirmation



Location: [WTRS](#) / [WT DATA](#) / [Input WT Record](#) WTRS-WT-008

Water Taking Data submitted successfully.

Confirmation:

Thank you for submitting your water taking data online.

Permit Number: 8160-B3MP6L
Permit Holder: THE CORPORATION OF THE CITY OF KAWARTHA LAKES.
Received on: Jan 23, 2024 2:49 PM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.

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