Lindsay Drinking Water System

2024 Annual Water Report

Drinking Water System Number: 220000175

Drinking Water System Operating Authority: City of Kawartha Lakes

Drinking Water System Category: Large Municipal Residential

Reporting Period: January 1 – December 31, 2024

Annual Drinking Water Report
City of Kawartha Lakes

Kawartha Lakes
Jump In

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2024 Annual Drinking Water System Summary Report

General Information

The City of Kawartha Lakes prepares a report summarizing system operation and water quality for every municipal drinking water system annually. This report has been prepared to satisfy the annual reporting requirements in O. Reg. 170/03 Section 11 and Schedule 22. The annual reports will be available to residents at the City of Kawartha Lakes Public Works Administration Office by appointment and the City's website. Notification that the 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 West in Lindsay, Ontario.

This system serves more than 10,000 residences.

Drinking Water System Number: 220000175
Drinking Water System Name: Lindsay Drinking Water System
Drinking Water System Owner: City of Kawartha Lakes
Drinking Water System Category: Large Municipal Residential
Reporting Period: January 1, 2024 – December 31, 2024

Compliance Summary

Table 1. Drinking Water Compliance Summary

	Number of Events	Date	Details
Ministry (MECP) Inspections	1	July 5, 2024	Announced – Focused Drinking Water Inspection – Final Inspection Rating – 100%
Adverse Water Quality Incidents (AWQIs)	7	January 16, 2024 April 5, 2024	THM Running Annual Average of 108.00 µg/L THM Running Annual Average of 113.00 µg/L

	Number of Events	Date	Details
		July 10, 2024 October 22, 2024	HAA Running Annual Average of 84.75 µg/L THM Running Annual Average of 115.25 µg/L HAA Running Annual Average of 86.30 µg/L THM Running Annual Average of 113.25 µg/L HAA Running Annual Average of 88.85 µg/L
Non-Compliances	0		
Boil Water Advisories	0		

Drinking Water System Description

The Lindsay drinking water system is a large municipal residential drinking water system that serves the Town of Lindsay and the Village of Oakwood, Ontario. The drinking water system is classified as a Class IV Water Treatment and Class II Water Distribution subsystems under O. Reg. 128/04. The drinking water system consists of: a treatment plant, an elevated storage tank and re-chlorination facility (Verulam Tower), two in-ground, off-site reservoirs and re-chlorination facilities (Oakwood Reservoir and Thornhill Reservoir), and the additional infrastructure associated with the distribution system.

Source Water

The water supply for the system comes from the Scugog River, which is a surface water source.

Water Treatment Facility

The treatment system contains: two (2) ballasted floc/clarification units, two (2) sedimentation tanks and five (5) dual media (granular activated carbon and sand) filters. Two (2) in-ground clearwells store treated water and provide contact time for primary disinfection.

The drinking water treatment plant uses sodium hypochlorite for primary and secondary disinfection. Carbon dioxide gas is used to adjust the pH of the raw water and sodium hydroxide is used to adjust the pH of the filtered water. A flow paced polyaluminum chloride coagulant storage and feed system is used for coagulation. A polymer feed system is used as a coagulant aid. A diesel generator is onsite to provide standby power to the water treatment facility in the event of a power failure.

The drinking water system includes a SCADA system to facilitate control, monitoring, alarming, trending and reporting of operational functions of the system.

Waste backwash water from cleaning the filters is directed into one (1) equalization tank for storage. The equalization tank has an emergency overflow to the outfall sewer. Two (2) submersible pumps located in the equalization tank pump the waste backwash water to the sludge thickener with thickened sludge is discharged to the sanitary sewer with the supernatant discharged to the Scugog River.

Storage Facilities

The Lindsay drinking water system has two (2) in-ground storage reservoirs with re-chlorination facilities and one (1) elevated storage tank with re-chlorination facility. The Thornhill Reservoir has two (2) cells with a total volume of 9000 m^3. There are four (4) booster pumps, and sodium hypochlorite feed system for re-chlorination. There is also a diesel generator to provide standby power in the event of a power outage. The Oakwood Reservoir located approximately ten (10) kilometres West of Lindsay, has a total storage volume of 232 m^3 between two (2) cells. There are three (3) booster pumps and a sodium hypochlorite feed system for re-chlorination. The reservoir is also equipped with an aeration system to help with THM formation reduction. There is also a diesel generator to provide standby power in the event of a power outage. The Verulam Tower is an elevated storage tank with a storage volume of 2,650 m^3 and provides pressure to the Lindsay Distribution System. There is a sodium hypochlorite feed system for re-chlorination. There is a natural gas powered generator to provide standby power in the event of a power outage.

Distribution System

The Lindsay distribution system has approximately 225 kilometers of watermains, one elevated storage tank and two underground storage reservoirs. The watermains in the distribution system are of various watermain material including PVC, Asbestos Concrete, Cast Iron, Ductile Iron, HDPE, and CPP. The distribution system is classified as a Class III subsystem under O. Reg. 128/04.

Table 2. Treatment Chemicals Used

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	LAVO
Sodium Hydroxide	pH Correction	UBA
Carbon Dioxide	pH Correction	Linde
Polyaluminumchloride (PAC)	Coagulation	Kemira
Norfloc122 Polymer	Coagulation	Northland Chemical

Summary of Non-Compliance

Adverse Water Quality Incidents

Table 3. Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
2024 01 16	N/A	Lindsay Distribution	THM Running Annual Average	108 µg/L	O. Reg. 170/03	N/A
2024 04 05	N/A	Lindsay Distribution	THM Running Annual Average	113 µg/L	O. Reg. 170/03	N/A
2024 04 05	N/A	Lindsay Distribution	HAA Running Annual Average	84.75 µg/L	O. Reg. 170/03	N/A
2024 07 10	N/A	Lindsay Distribution	THM Running Annual Average	115.25 µg/L	O. Reg. 170/03	N/A
2024 07 10	N/A	Lindsay Distribution	HAA Running Annual Average	86.30 µg/L	O. Reg. 170/03	N/A
2024 10 22	N/A	Lindsay Distribution	THM Running Annual Average	113.25 µg/L	O. Reg. 170/03	N/A
2024 10 22	N/A	Lindsay Distribution	HAA Running Annual Average	88.85 µg/L	O. Reg. 170/03	N/A

Non-Compliance

There were no non-compliances reported during the reporting period.

Non-Compliance Identified in a Ministry Inspection

There were no non-compliances identified in a Ministry Inspection during this period.

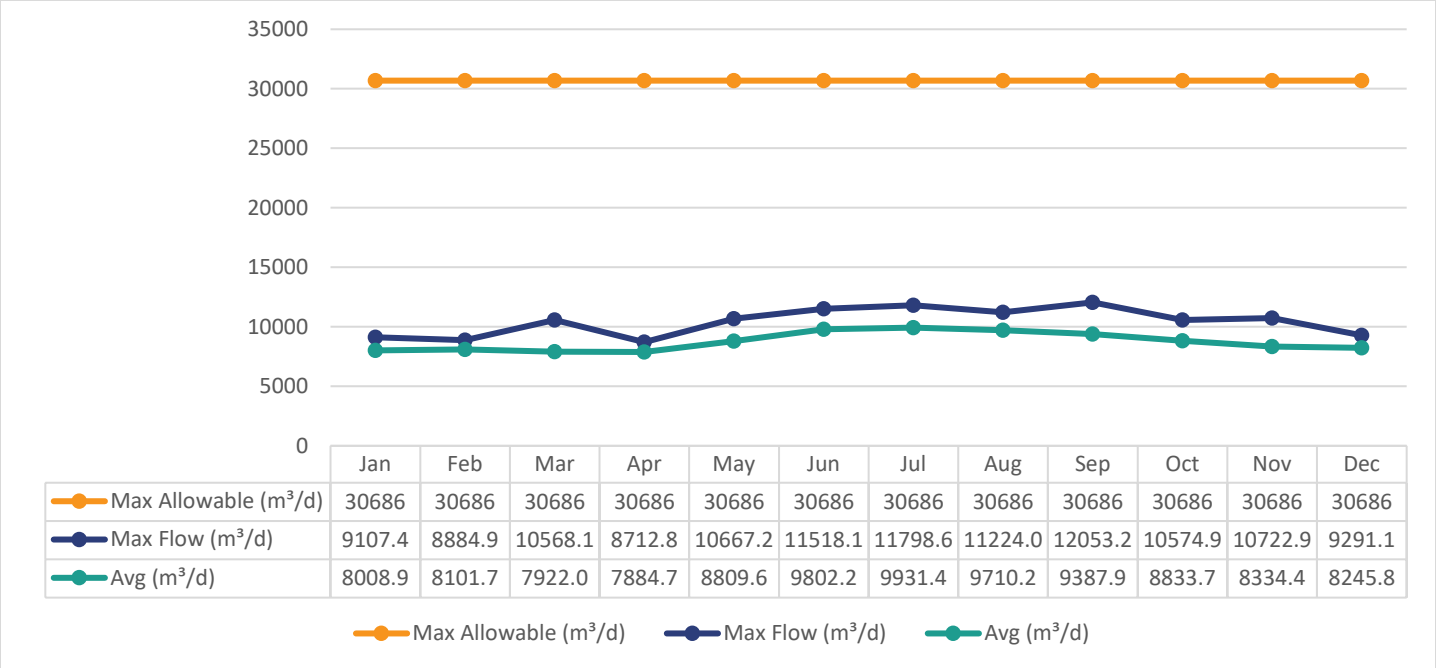
Flows

The Lindsay Drinking Water System is operating on average under half the rated capacity. The rated capacity of the Lindsay system (treated water flows) is 22,730 m³/day with a permitted water taking of 30,685.5 m³/day.

Raw Water Flows

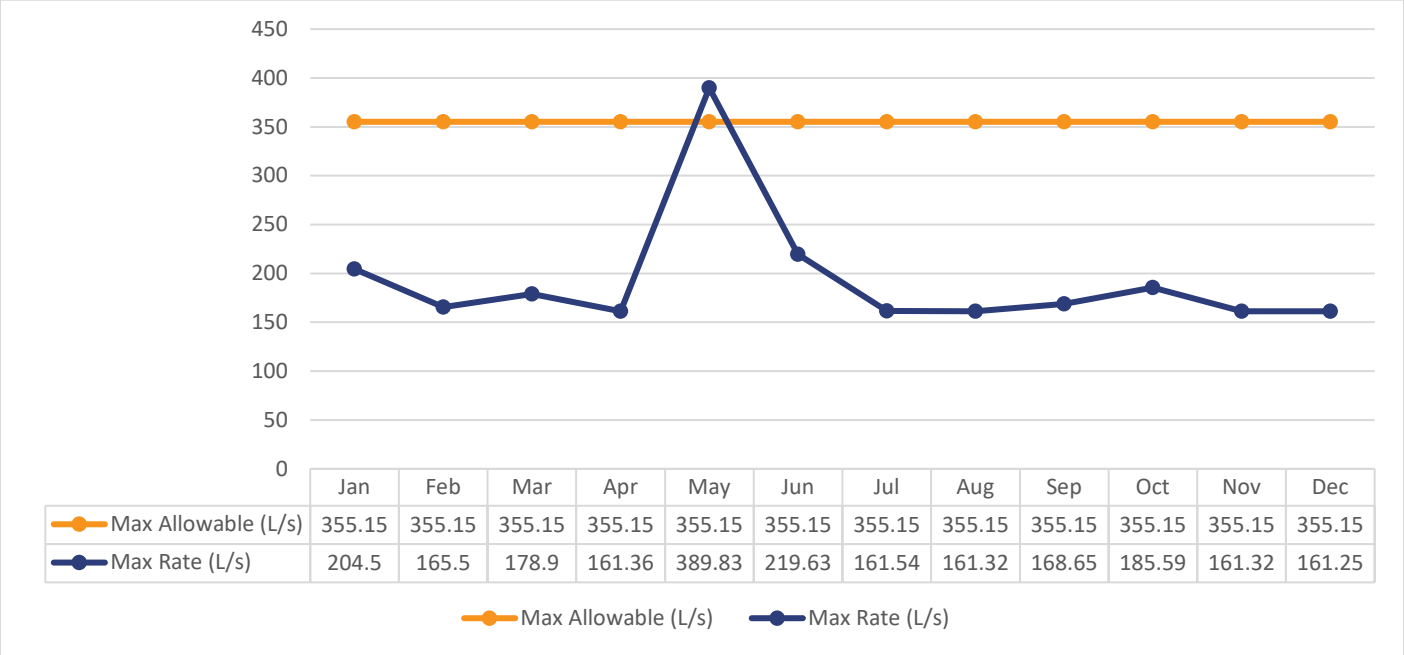
The raw water flows are regulated under the Permit to Take Water. Raw flow data for 2024 was submitted to the Ministry of Environment, Conservation and Parks (MECP) electronically under permit #8160-B3MP6L. The confirmation of the data that was submitted is attached in Appendix A.

Graph 1. Total Monthly Flows (m³/d) – Scugog River (Max Allowable PTTW)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m³/d)	30686	30686	30686	30686	30686	30686	30686	30686	30686	30686	30686	30686
Max Flow (m³/d)	9107.4	8884.9	10568.1	8712.8	10667.2	11518.1	11798.6	11224.0	12053.2	10574.9	10722.9	9291.1
Avg (m³/d)	8008.9	8101.7	7922.0	7884.7	8809.6	9802.2	9931.4	9710.2	9387.9	8833.7	8334.4	8245.8

Graph 2. Monthly Rated Flows (L/s) – Scugog River (Max Allowable Rate PTTW)



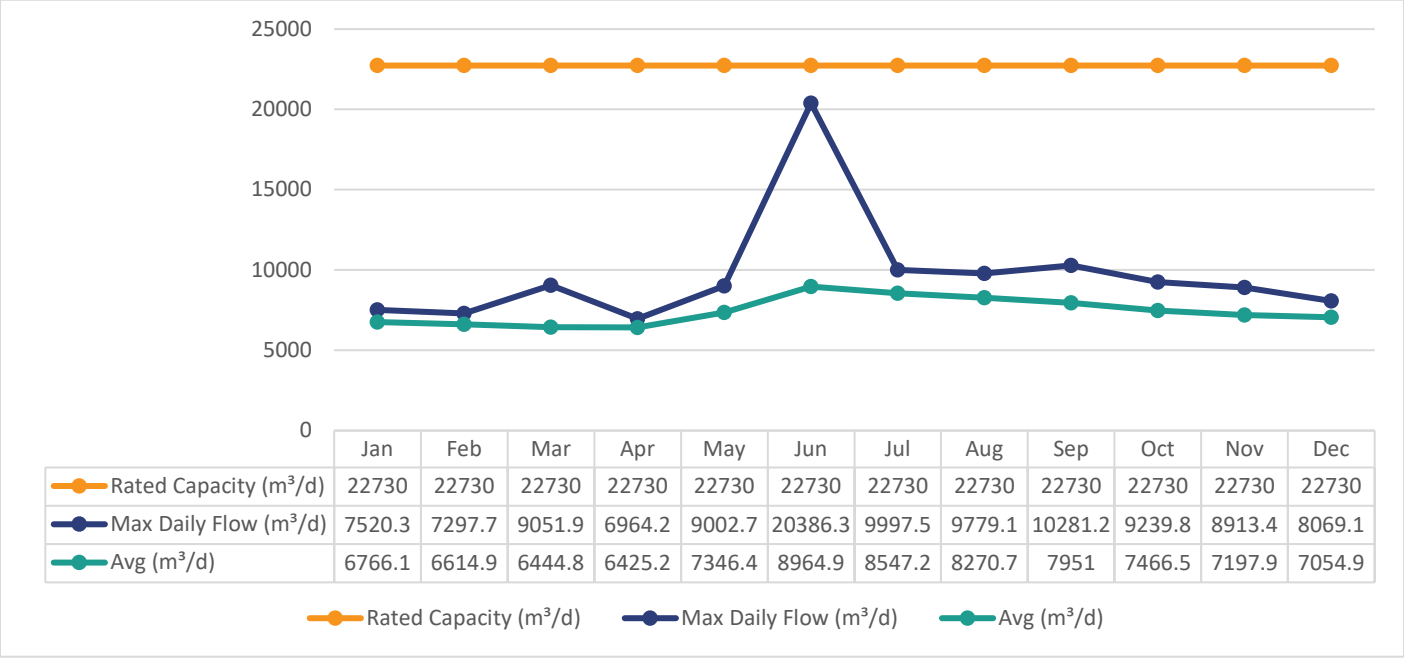
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (L/s)	355.15	355.15	355.15	355.15	355.15	355.15	355.15	355.15	355.15	355.15	355.15	355.15
Max Rate (L/s)	204.5	165.5	178.9	161.36	389.83	219.63	161.54	161.32	168.65	185.59	161.32	161.25

Note: Maximum flow rate exceeded May 21, 2024 for 12.49 seconds. The equipment was in calibration during this time. An alarm is only received if the exceedance lasts for more than 2 minutes.

Treated Water Flows

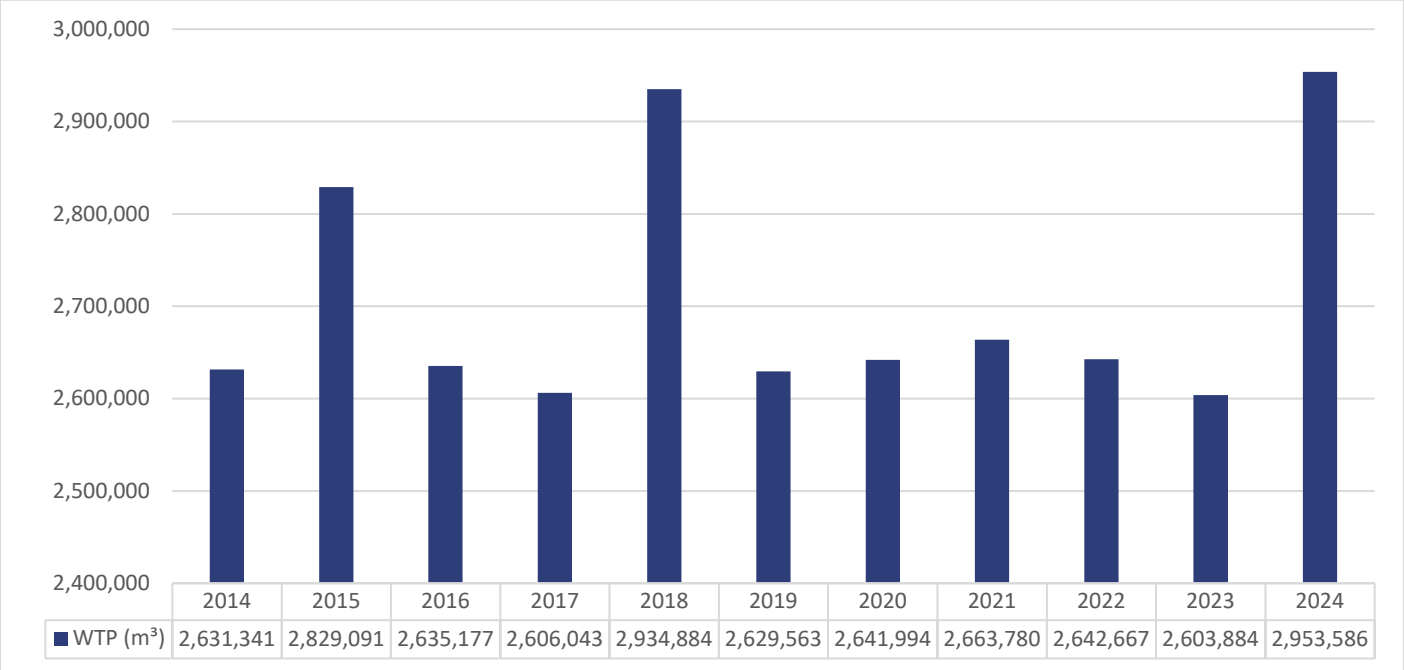
The Treated Water flows are regulated under the Municipal Drinking Water Licence 141-120.

Graph 3. Monthly Rated Flows (m³/d) – Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m³/d)	22730	22730	22730	22730	22730	22730	22730	22730	22730	22730	22730	22730
Max Daily Flow (m³/d)	7520.3	7297.7	9051.9	6964.2	9002.7	20386.3	9997.5	9779.1	10281.2	9239.8	8913.4	8069.1
Avg (m³/d)	6766.1	6614.9	6444.8	6425.2	7346.4	8964.9	8547.2	8270.7	7951	7466.5	7197.9	7054.9

Graph 4. Annual Total Flow Comparison (m³)



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
WTP (m³)	2,631,341	2,829,091	2,635,177	2,606,043	2,934,884	2,629,563	2,641,994	2,663,780	2,642,667	2,603,884	2,953,586

Regulatory Sample Results Summary

Microbiological Testing

Table 4. Microbiological Test Results

	No. of Samples Collected	Range of E. Coli Results	Range of E. Coli Results	Range of Total Coliform Results	Range of Total Coliform Results	Range of HPC Results	Range of HPC Results
		Min	Max	Min	Max	Min	Max
Raw	52	2	OG or 1200	97	11600	N/A	N/A
Treated	52	0	0	0	0	0	25
Distribution	618	0	0	0	0	0	19

HPC = Heterotrophic Plate Count
OG = Overgrowth

Operational Testing

Table 5. Operational Test Results

Parameter	Number of Samples Collected	Range of Results Minimum	Range of Results Maximum
Raw Turbidity (NTU)	8760	0.84	50.40
Turbidity Filter 1 (NTU)	8760	0.010	1.997
Turbidity Filter 2 (NTU)	8760	0.003	0.675
Turbidity Filter 3 (NTU)	8760	0.002	0.886
Turbidity Filter 4 (NTU)	8760	0.004	2.034
Turbidity Filter 5 (NTU)	8760	0.010	1.043
Chlorine (CT Analyzer)	8760	0	2.85
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

Note: Record the unit of measurement if it is **not** milligrams per litre.
Note: For continuous monitors 8760 is used as the number of samples. Spikes recorded by online 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 five years. Nitrate and Nitrate are tested quarterly and the metals are tested annually as required under O. Reg. 170/03. In the event any of the parameters listed in Schedule 23 or 24 of O. Reg. 170/03 exceed half of the maximum allowable concentration the parameter is required to be samples quarterly. Based on the latest test results no additional testing is required.

Table 6. Inorganic Parameters Test Results

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Treated Water					
Antimony	2024 01 02	<MDL 0.06	µg/L	6.0	No
Arsenic	2024 01 02	0.2	µg/L	10.0	No
Barium	2024 01 02	30.4	µg/L	1000.0	No
Boron	2024 01 02	10	µg/L	5000.0	No
Cadmium	2024 01 02	<MDL 0.003	µg/L	5.0	No
Chromium	2024 01 02	0.16	µg/L	50.0	No
Mercury	2024 01 02	<MDL 0.01	µg/L	1.0	No
Selenium	2024 01 02	0.16	µg/L	50.0	No
Uranium	2024 01 02	0.065	µg/L	20.0	No
Additional Organics					
Fluoride	2023 12 11	0.11	mg/L	1.5	No
Nitrite	2024 01 02	<MDL 0.003	mg/L	1.0	No
Nitrite	2024 04 01	<MDL 0.003	mg/L	1.0	No
Nitrite	2024 07 02	<MDL 0.003	mg/L	1.0	No
Nitrite	2024 10 07	<MDL 0.003	mg/L	1.0	No
Nitrate	2024 01 02	3.67	mg/L	10.0	No
Nitrate	2024 04 01	2.25	mg/L	10.0	No
Nitrate	2024 07 02	1.76	mg/L	10.0	No
Nitrate	2024 10 07	0.105	mg/L	10.0	No
Sodium	2021 07 12	38.2	mg/L	20*	Yes

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

MDL = Method Detection Limit
*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. Sodium results exceeding 20 mg/L are to be reported to the Medical Officer of Health as per Schedule 16-3 (8) of O. Reg. 170/03.

Schedule 15 Sampling (Lead)

The Schedule 15 sampling is required under O. Reg. 170/03. This system is under reduced sampling. Only distribution samples were collected, and no plumbing samples were collected.

Table 7. Schedule 15 Test Results (Lead)

	Number of Sampling Points	Number of Samples	Range of Results Minimum	Range of Results Maximum	MAC (µg/L)	Number of Exceedances
Alkalinity (mg/L)	5	10	133	209	N/A	N/A
pH	5	10	7.08	7.54	N/A	N/A
Lead (µg/L)	1	1	0	0.02	10	0

Organic Parameters

These parameters are tested as a requirement under O. Reg. 170/03. In the event any of the parameters listed in Schedule 23 or 24 of O. Reg. 170/03 exceed half of the maximum allowable concentration the parameter is required to be samples quarterly. Based on the latest test results no additional testing is required.

Table 8. Organic Parameters Test Results

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Treated Water					
Alachlor	2024 01 02	<MDL 0.02	µg/L	5.0	No
Atrazine + N-dealkylated metabolites	2024 01 02	<MDL 0.01	µg/L	5.0	No
Azinphos-methyl	2024 01 02	<MDL 0.05	µg/L	20.0	No
Benzene	2024 01 02	<MDL 0.32	µg/L	1.0	No
Benzo(a)pyrene	2024 01 02	<MDL 0.004	µg/L	0.01	No
Bromoxynil	2024 01 02	<MDL 0.33	µg/L	5.0	No
Carbaryl	2024 01 02	<MDL 0.05	µg/L	90.0	No
Carbofuran	2024 01 02	<MDL 0.01	µg/L	90.0	No

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Carbon Tetrachloride	2024 01 02	<MDL 0.17	µg/L	2.0	No
Chlorpyrifos	2024 01 02	<MDL 0.02	µg/L	90.0	No
Diazinon	2024 01 02	<MDL 0.02	µg/L	20.0	No
Dicamba	2024 01 02	<MDL 0.2	µg/L	120.0	No
1,2-Dichlorobenzene	2024 01 02	<MDL 0.41	µg/L	200.0	No
1,4-Dichlorobenzene	2024 01 02	<MDL 0.36	µg/L	5.0	No
1,2-Dichloroethane	2024 01 02	<MDL 0.35	µg/L	5.0	No
1,1-Dichloroethylene	2024 01 02	<MDL 0.33	µg/L	14.0	No
Dichloromethane (Methylene Chloride)	2024 01 02	<MDL 0.35	µg/L	50.0	No
2,4-Dichlorophenol	2024 01 02	<MDL 0.15	µg/L	900.0	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2024 01 02	<MDL 0.19	µg/L	100.0	No
Diclofop-methyl	2024 01 02	<MDL 0.4	µg/L	9.0	No
Dimethoate	2024 01 02	<MDL 0.06	µg/L	20.0	No
Diquat	2024 01 02	<MDL 1.0	µg/L	70.0	No
Diuron	2024 01 02	<MDL 0.03	µg/L	150.0	No
Glyphosate	2024 01 02	<MDL 1.0	µg/L	280.0	No
Malathion	2024 01 02	<MDL 0.02	µg/L	190.0	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA)	2024 01 02	<MDL 0.00012	mg/L	0.01	No
Metolachlor	2024 01 02	<MDL 0.01	µg/L	50.0	No
Metribuzin	2024 01 02	<MDL 0.02	µg/L	80.0	No
Monochlorobenzene (Chlorobenzene)	2024 01 02	<MDL 0.3	µg/L	80.0	No
Paraquat	2024 01 02	<MDL 1.0	µg/L	10.0	No
PCB	2024 01 02	<MDL 0.04	µg/L	3.0	No
Pentachlorophenol	2024 01 02	<MDL 0.15	µg/L	60.0	No
Phorate	2024 01 02	<MDL 0.01	µg/L	2.0	No
Picloram	2024 01 02	<MDL 1.0	µg/L	190.0	No
Prometryne	2024 01 02	<MDL 0.03	µg/L	1.0	No
Simazine	2024 01 02	<MDL 0.01	µg/L	10.0	No
Terbufos	2024 01 02	<MDL 0.01	µg/L	1.0	No
Tetrachloroethylene	2024 01 02	<MDL 0.35	µg/L	10.0	No
2,3,4,6-Tetrachlorophenol	2024 01 02	<MDL 0.2	µg/L	100.0	No
Triallate	2024 01 02	<MDL 0.01	µg/L	230.0	No
Trichloroethylene	2024 01 02	<MDL 0.44	µg/L	5.0	No
2,4,6-Trichlorophenol	2024 01 02	<MDL 0.25	µg/L	5.0	No
Trifluralin	2024 01 02	<MDL 0.02	µg/L	45	No
Vinyl Chloride	2024 01 02	<MDL 0.17	µg/L	1.0	No

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Distribution Water					
Trihalomethane Total Annual Average Q1	2024 01 02	108.0	µg/L	100.0	Yes
Trihalomethane Total Annual Average Q2	2024 04 01	113.0	µg/L	100.0	Yes
Trihalomethane Total Annual Average Q3	2024 07 02	115.25	µg/L	100.0	Yes
Trihalomethane Total Annual Average Q4	2024 10 07	113.25	µg/L	100.0	Yes
HAA Total Annual Average Q1	2024 01 02	79.26	µg/L	80.0	No
HAA Total Annual Average Q2	2024 04 01	84.75	µg/L	80.0	Yes
HAA Total Annual Average Q3	2024 07 02	86.30	µg/L	80.0	Yes
HAA Total Annual Average Q4	2024 10 07	88.85	µg/L	80.0	Yes

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

Additional Legislated Samples

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

Table 9. Total Suspended Solids Test Results

Date Legal Instrument Issued	Parameter	Date Sampled	Result	Unit of Measure
Nov 10, 2021	TSS	2024 01 08	5	mg/L
Nov 10, 2021	TSS	2024 02 05	4	mg/L
Nov 10, 2021	TSS	2024 03 24	4	mg/L
Nov 10, 2021	TSS	2024 04 08	4	mg/L
Nov 10, 2021	TSS	2024 05 06	2	mg/L
Nov 10, 2021	TSS	2024 06 03	3	mg/L
Nov 10, 2021	TSS	2024 07 02	2	mg/L
Nov 10, 2021	TSS	2024 08 06	3	mg/L
Nov 10, 2021	TSS	2024 09 09	3	mg/L
Nov 10, 2021	TSS	2024 10 07	3	mg/L
Nov 10, 2021	TSS	2024 11 04	4	mg/L

Date Legal Instrument Issued	Parameter	Date Sampled	Result	Unit of Measure
Nov 10, 2021	TSS	2024 12 02	<2	mg/L
Summary	**TSS**	**2024**	**Min: <2 Max: 5 Avg: 2.9 based on 12 numerical results**	**mg/L**

Harmful Algal Blooms monitoring is required as a condition within the Municipal Drinking Water Licence between June and October of each reporting year at a minimum. Treated and Raw samples are collected weekly during this time period and tested for Microcystin, which is an indicator for harmful algal blooms.

Table 10. Microcystin Sample Results

Municipal Drinking Water Licence	Collected Weekly June – Oct	Total Microcystin Raw Results Range (µg/L)	Total Microcystin Treated Water Results Range (µg/L)	Treated Water Total Microcystin Limit 1.5 µg/L Exceeded
Harmful Algal Blooms Monitoring	June	<0.1 - <0.1	<0.1 - <0.1	N
	July	<0.1 - <0.1	<0.1 - <0.1	N
	August	<0.1 – 0.2	<0.1 - <0.1	N
	September	<0.1 - <0.1	<0.1 - <0.1	N
	October	<0.1 - <0.1	<0.1 – 0.2	N

Method Detection Limit is 0.1 µg/L

Major Maintenance Expense (above $10,000)

Under Section 11 of O. Reg. 170/03, a description of any major expenses incurred during this reporting period to install, repair or replace required equipment must be included in the annual report. The details of the major expenses for this drinking water system are as follows:

Lindsay Water Treatment Plant

- Replacement of VFDs on Low Lift Pump #1 and #3 (WO#69530 & WO#76542) - $14,627
- Main Electrical Switchboard Repairs and Electrical Compliance Upgrades (WO#73979) - $45,131

- Replaced Primary Chlorine Analyzer (WO#73481) - $7,123
- Replaced Coagulant Chemical Dosing Pump 3 (WO#75629) - $6,996
- Highlift Pump #1 Rebuild and Detuning Vibration Plates - $50,384
- Highlift Pump #2 Detuning Vibration Plates - $13,503
- SCADA PLC Processor Replacement - $20,416

Oakwood Reservoir

No major maintenance during reporting period.

Thornhill Reservoir

- Retaining Wall Replacement - $166,190

Verulam Tower

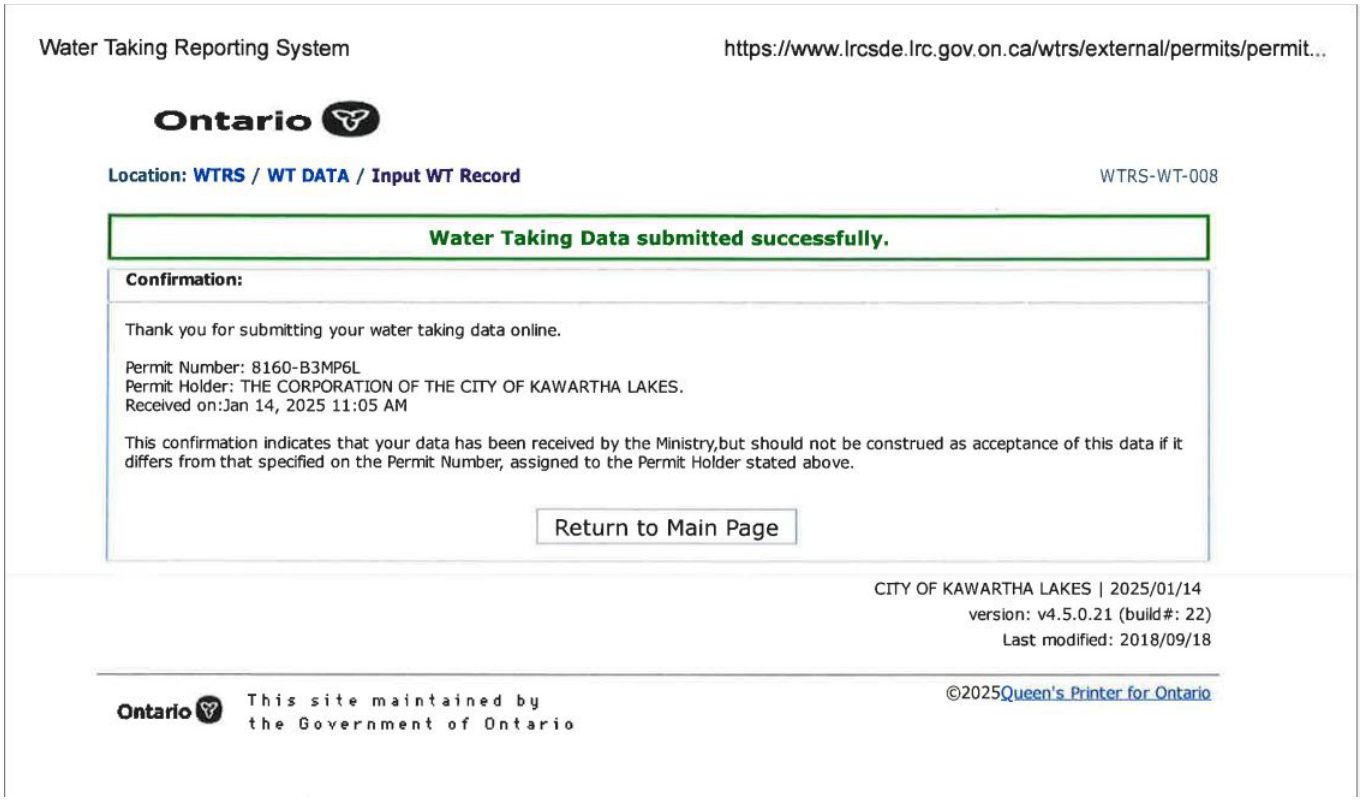
No major maintenance during reporting period.

Lindsay Distribution System

- King Street Reconstruction (Lindsay St. to St. David St.) - $1,377,846
- Lindsay St. Reconstruction (Queen St. to Lindsay St. Bridge) - $148,383
- Caroline St. Reconstruction (Queen St. to King St.) - $105,988
- St. Paul St. Reconstruction (Queen St. to King St.) - $105,988
- Various Fire Hydrant Painting - $12,500

APPENDIX A

WTR Submission Confirmation



Water Taking Reporting System https://www.lrcsde.lrc.gov.on.ca/wtrs/external/permits/permit...

Ontario

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 14, 2025 11:05 AM

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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