King's Bay Drinking Water System

2024 Annual Water Report

Drinking Water System Number: 260002954

Drinking Water System Operating Authorities: City of Kawartha Lakes and Ontario Clean Water Agency

Drinking Water System Category: Large Municipal Residential

Reporting Period: January 1 – December 31, 2024

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Annual Drinking Water Report
City of Kawartha Lakes

Kawartha Lakes
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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 does not serve more than 10,000 residences.

Drinking Water System Number: 260002954
Drinking Water System Name: King's Bay 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	2	January 17, 2024 October 28, 2024	Announced Focused Drinking Water Inspection – Final Inspection Rating of 96.94% Announced Focused Drinking Water Inspection – Final Inspection Rating of 100%
Adverse Water Quality Incidents (AWQIs)	0		

	Number of Events	Date	Details
Non-Compliances	1	Various dates in 2023	Failed to meet the requirement to examining continuous monitoring test results within 72 hours of the test.
Boil Water Advisories	0		
Health and Safety	0		

Drinking Water System Description

The King's Bay drinking water system is a large municipal residential drinking water system that serves the King's Bay subdivision, located in Seagrave, Ontario. The drinking water system is classified as a Class II Water Distribution and Supply subsystem under O. Reg. 128/04

Source Water

The water supply for the system comes from three groundwater wells: Well #2, Well #3 and Well #4. The wells are designated as non-GUDI (groundwater under the direct influence).

Water Treatment Facility

The treatment system consists of the following: a chlorination system that uses sodium hypochlorite consisting of three (3) metering pumps and one (1) solution tank, two (2) celled interconnected in ground concrete reservoir to provide chlorine contact time and three (3) submersible high lift pumps.

A diesel generator is onsite to provide standby power to the water treatment facility and the sewage treatment facility in the event of a power failure.

Distribution System

The distribution system has approximately 1.6 kilometers of watermains and is not rated for fire protection. The watermains in the King's Bay Distribution System are all PVC. There is no storage, chlorine boosting, secondary disinfection or pressure boosting capabilities within the control of the distribution system. There are two in-ground storage tanks connected to the distribution system and controlled by valves and protected by an air gap that are kept full for pumper trucks to draw water off for firefighting purposes.

Table 2. Treatment Chemicals Used

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Jutzi Water Technologies

Summary of Non-Compliance

Adverse Water Quality Incidents

There were no adverse water quality incidents reported during the reporting period.

Non-Compliance

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

Non-Compliance Identified in a Ministry Inspection

Table 3. Non-Compliance Identified in a Ministry Inspection

Legislation	Requirement(s) System Failed to Meet	Duration of Failure (Dates)	Corrective Action	Status
SDWA, O. Reg. 170/03, 6-5 (1) 1-4	Failed to meet the requirement to examining continuous monitoring test results within 72 hours of the test	-March 29, 2023 at 08:50 and then April 3, 2023 at 09:07 -May 17, 2023 at 13:25 and then May 21, 2023 at 12:07 -May 26, 2023 at 10:06 and then May 29, 2023 at 14:00 -July 14, 2023 at 08:00 and then July 17, 2023 at 13:18 -August 10, 2023 at 07:18 and then August 14, 2023 at 07:41	The 72-hour review of monitoring test results was completed, however the documentation failed to prove it was completed on time. Update 72 hour spreadsheet to format date consistently, update 72 hour SOP, training staff on the updates and requirements of the regulation	Completed

Legislation	Requirement(s) System Failed to Meet	Duration of Failure (Dates)	Corrective Action	Status
		-December 1, 2023 at 09:00 and then December 4, 2023 at 09:30		

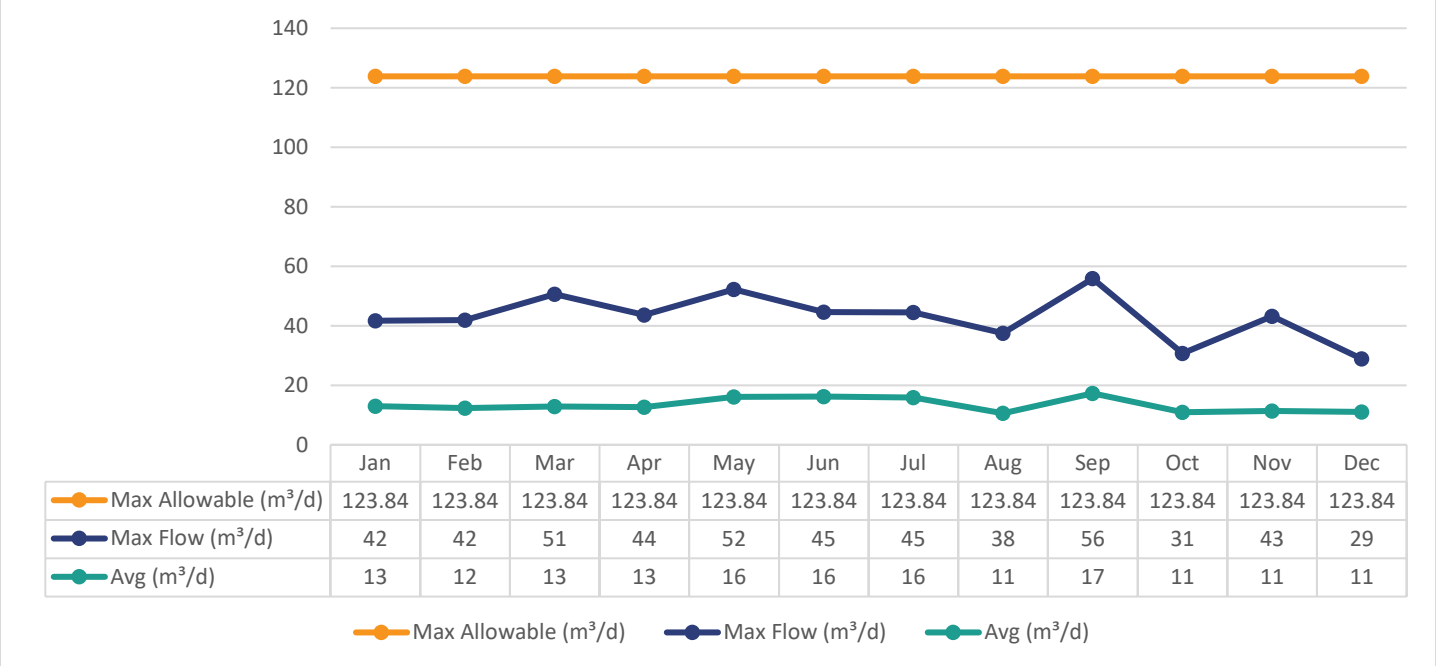
Flows

The King's Bay Drinking Water System is operating on average under half the rated capacity. The rated capacity of the system (treated water flows) is 409 m³/day.

Raw Water Flows

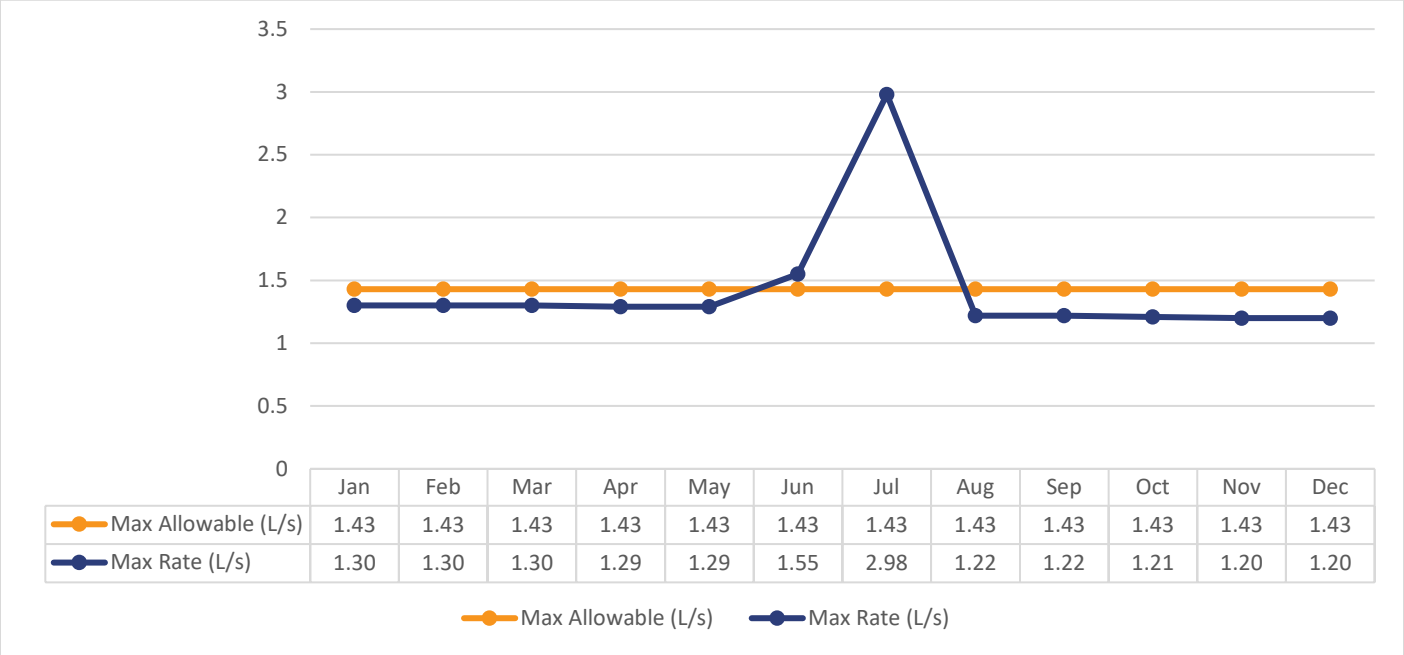
The raw water flows are regulated under the Permit to Take Water. Raw flow data for 2024 was submitted to the Ministry of Environment, Conservation and Parks (MECP) electronically under permit #1087-AYSGRN. The confirmation of the data that was submitted is attached in Appendix A. The Permit to Take Water compliance criteria is in litres per minute (L/min) but for the purposes of this report the flow rate is reported in litres per second (L/sec) based on industry standard for flow monitoring recording.

Graph 1. Total Monthly Flows (m³/d) – Well #2 (Max Allowable PTTW)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m³/d)	123.84	123.84	123.84	123.84	123.84	123.84	123.84	123.84	123.84	123.84	123.84	123.84
Max Flow (m³/d)	42	42	51	44	52	45	45	38	56	31	43	29
Avg (m³/d)	13	12	13	13	16	16	16	11	17	11	11	11

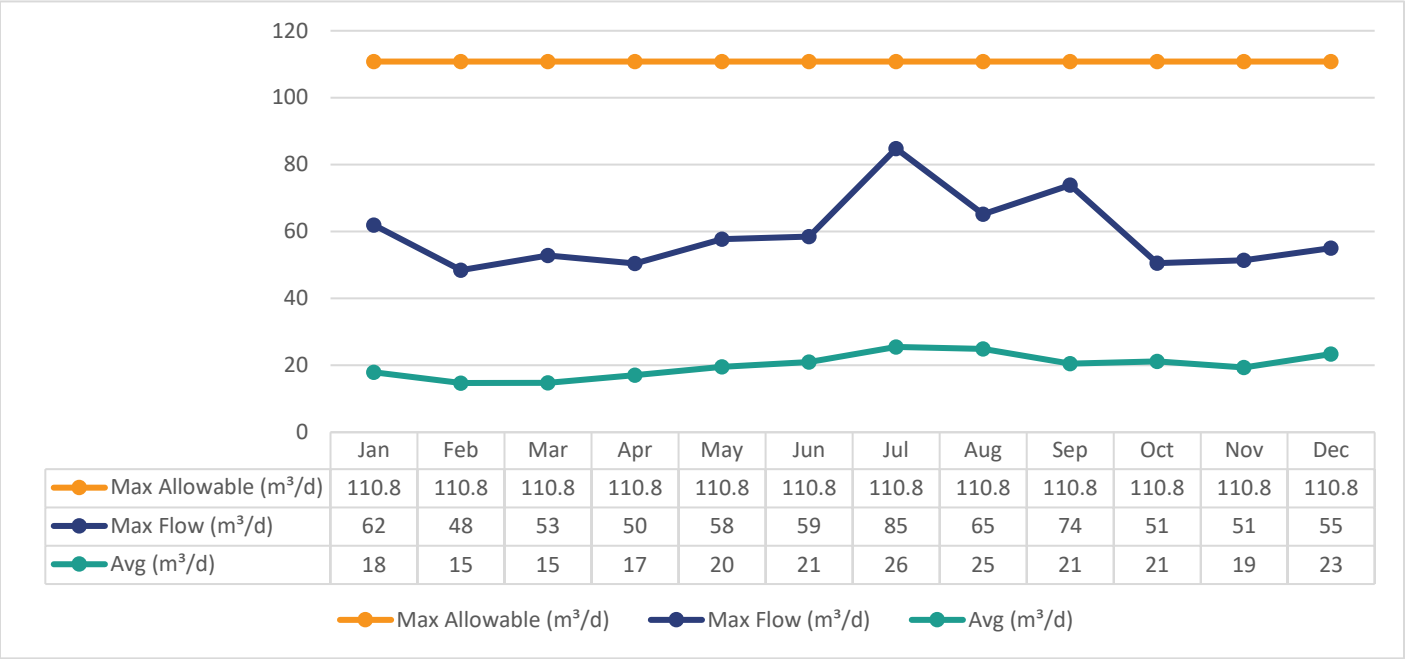
Graph 2. Monthly Rated Flows (L/s) – Well #2 (Max Allowable Rate PTTW)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (L/s)	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
Max Rate (L/s)	1.30	1.30	1.30	1.29	1.29	1.55	2.98	1.22	1.22	1.21	1.20	1.20

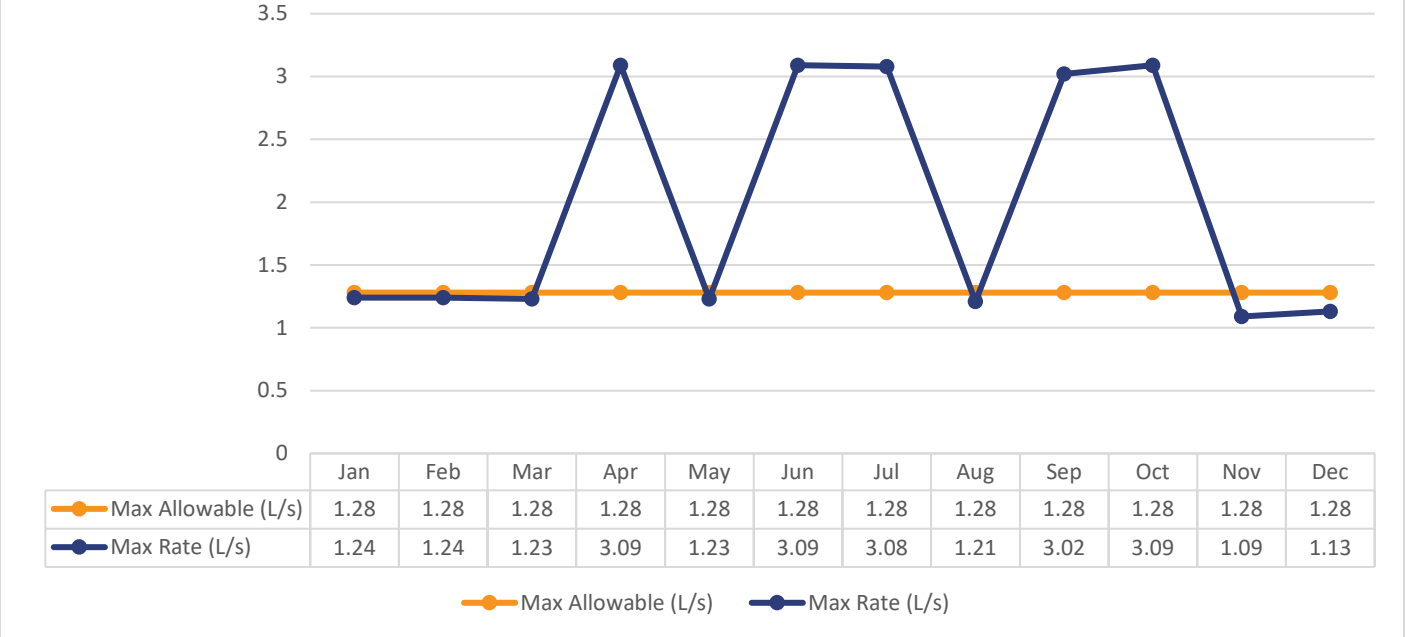
Note: Certain operational circumstances could cause results to be temporarily outside of the allowable rates. In June 2024, the allowable rate was momentarily surpassed as a result of annual calibration of the flow meter and did not indicate a true exceedance. In July 2024, the allowable rate was momentarily surpassed as a result of power outages and did not indicate a true exceedance. All spikes are reviewed for compliance with O. Reg. 170/03, any true exceedance would be documented within this report.

Graph 3. Total Monthly Flows (m³/d) – Well #3 (Max Allowable PTTW)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m³/d)	110.8	110.8	110.8	110.8	110.8	110.8	110.8	110.8	110.8	110.8	110.8	110.8
Max Flow (m³/d)	62	48	53	50	58	59	85	65	74	51	51	55
Avg (m³/d)	18	15	15	17	20	21	26	25	21	21	19	23

Graph 4. Monthly Rated Flows (L/s) – Well #3 (Max Allowable Rate PTTW)

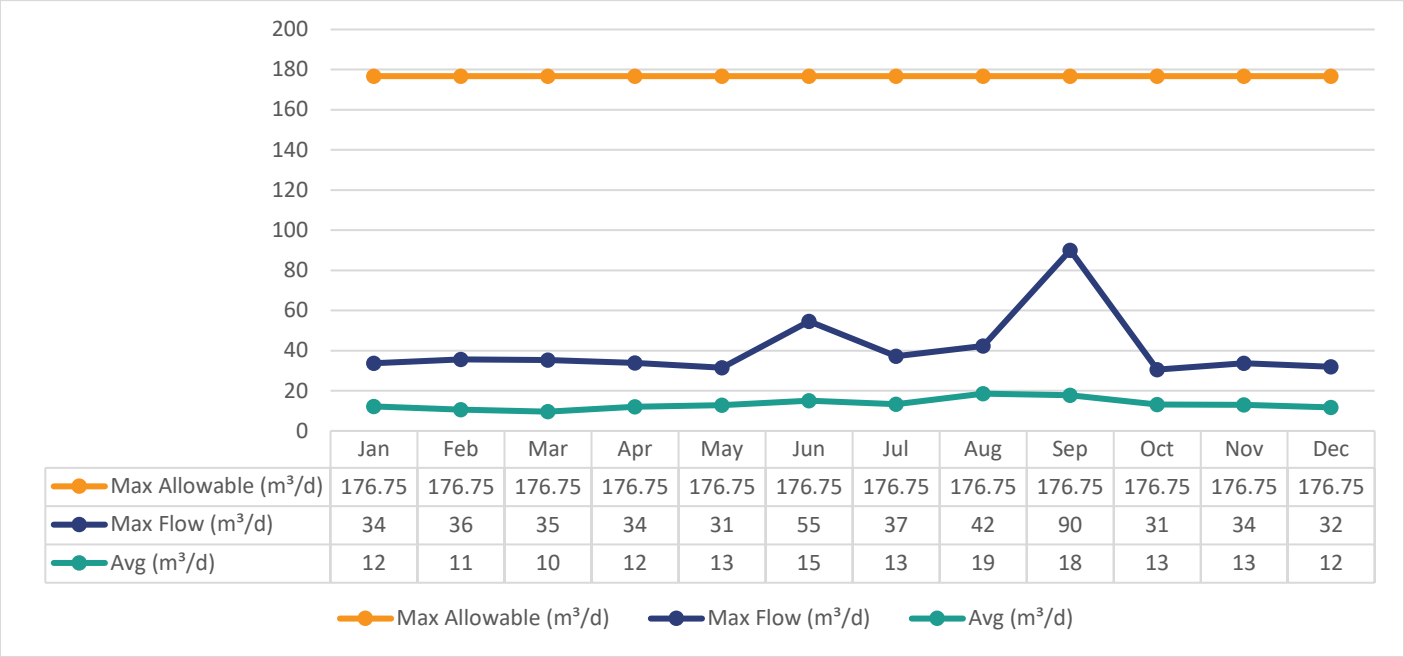


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (L/s)	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
Max Rate (L/s)	1.24	1.24	1.23	3.09	1.23	3.09	3.08	1.21	3.02	3.09	1.09	1.13

Note: Certain operational circumstances could cause results to be temporarily outside of the allowable rates. In April, July, September, October, and December 2024, the allowable rate was momentarily surpassed as a result of pump start-up after power outages and did not indicate a true exceedance. The significant spike in June was due to scheduled flow meter calibration, and

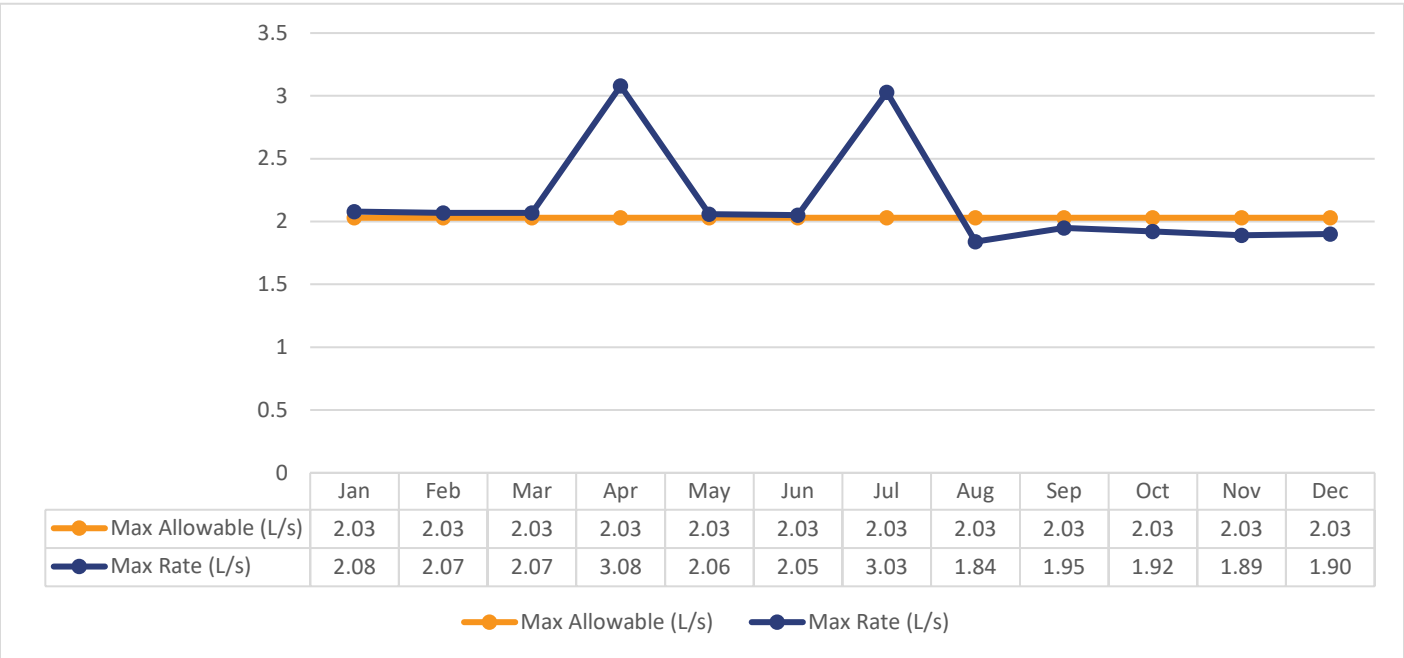
did not indicate a true exceedance. All spikes are reviewed for compliance with O. Reg. 170/03, any true exceedance would be documented in this report.

Graph 5. Total Monthly Flows (m³/d) – Well #4 (Max Allowable PTTW)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m³/d)	176.75	176.75	176.75	176.75	176.75	176.75	176.75	176.75	176.75	176.75	176.75	176.75
Max Flow (m³/d)	34	36	35	34	31	55	37	42	90	31	34	32
Avg (m³/d)	12	11	10	12	13	15	13	19	18	13	13	12

Graph 6. Monthly Rated Flows (L/s) – Well #4 (Max Allowable Rate



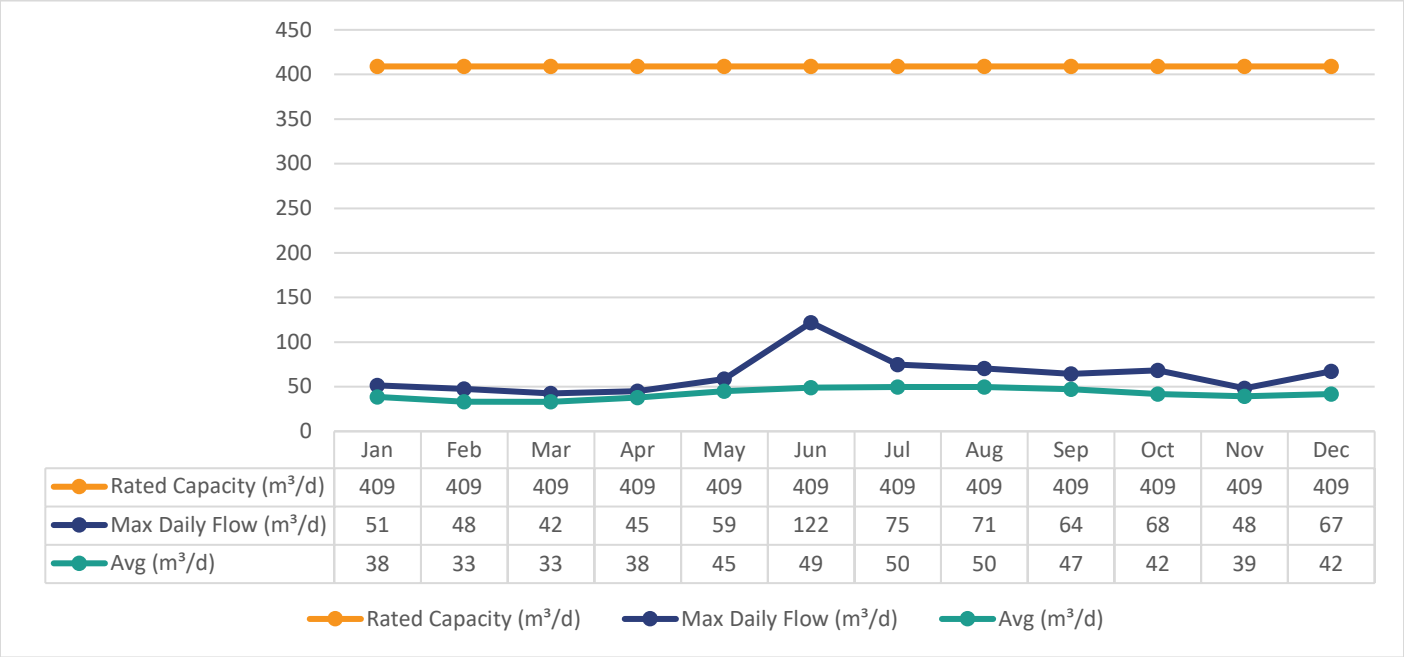
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (L/s)	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Max Rate (L/s)	2.08	2.07	2.07	3.08	2.06	2.05	3.03	1.84	1.95	1.92	1.89	1.90

Note: Certain operational circumstances could cause results to be temporarily outside of the allowable rates. In January, February, March, April, May, July and August 2024, the allowable rate was momentarily surpassed as a result of pump start-up for sampling requirements and after power outages and did not indicate a true exceedance. The significant spike in June was due to scheduled flow meter calibration, and did not indicate a true exceedance. All spikes are reviewed for compliance with O. Reg. 170/03, any true exceedance would be documented in this report.

Treated Water Flows

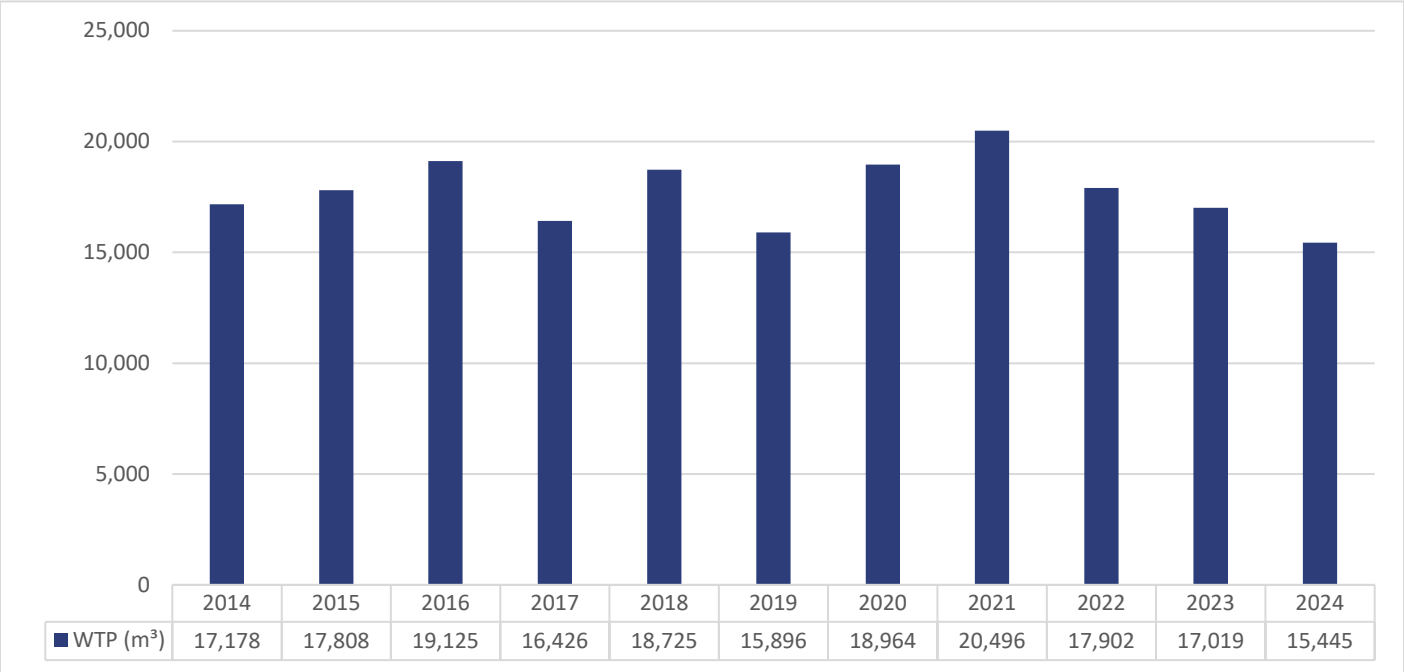
The Treated Water flows are regulated under the Municipal Drinking Water Licence 141-119.

Graph 7. Monthly Rated Flows (m³/d) – Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m³/d)	409	409	409	409	409	409	409	409	409	409	409	409
Max Daily Flow (m³/d)	51	48	42	45	59	122	75	71	64	68	48	67
Avg (m³/d)	38	33	33	38	45	49	50	50	47	42	39	42

Graph 8. Annual Total Flow Comparison (m³)



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 Well 2	55	0	0	0	1	N/A	N/A
Raw Well 3	55	0	0	0	1	N/A	N/A
Raw Well 4	55	0	0	0	19	N/A	N/A
Treated	53	0	0	0	0	0	4
Distribution	159	0	0	0	0	0	5

OG = Overgrowth
HPC = Heterotrophic Plate Count

Operational Testing

Table 5. Operational Test Results

Parameter	Number of Samples Collected	Range of Results Minimum	Range of Results Maximum
Turbidity Well 2 (NTU)	12	0.15	0.98
Turbidity Well 3 (NTU)	12	0.31	0.87
Turbidity Well 4 (NTU)	12	0.11	0.33
Turbidity – TW (NTU)	8760	0.00	2.01
Chlorine	8760	0.00	2.30
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 every three years 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	2022 01 04	<MDL 0.6	µg/L	6.0	No
Arsenic	2022 01 04	<MDL 0.2	µg/L	10.0	No
Barium	2022 01 04	76.9	µg/L	1000.0	No
Boron	2022 01 04	8.0	µg/L	5000.0	No
Cadmium	2022 01 04	<MDL 0.003	µg/L	5.0	No
Chromium	2022 01 04	0.38	µg/L	50.0	No

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Mercury	2022 01 04	<MDL 0.01	µg/L	1.0	No
Selenium	2022 01 04	0.1	µg/L	50.0	No
Uranium	2022 01 04	0.94	µg/L	20.0	No
Additional Organics					
Fluoride	2020 01 06	0.09	mg/L	1.5	No
Nitrite	2024 01 02	<MDL 0.003	mg/L	1.0	No
Nitrite	2024 04 02	<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	2.34	mg/L	10.0	No
Nitrate	2024 04 02	2.30	mg/L	10.0	No
Nitrate	2024 07 02	2.33	mg/L	10.0	No
Nitrate	2024 10 07	2.20	mg/L	10.0	No
Sodium	2020 01 06	7.06	mg/L	20*	No

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)	1	2	287	298	N/A	N/A
pH	1	2	7.44	7.48	N/A	N/A
Lead (µg/L)	N/A	N/A	N/A	N/A	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 03	<MDL 0.02	µg/L	5.0	No
Atrazine + N-dealkylated metabolites	2024 01 03	<MDL 0.01	µg/L	5.0	No
Azinphos-methyl	2024 01 03	<MDL 0.05	µg/L	20.0	No
Benzene	2024 01 03	<MDL 0.32	µg/L	1.0	No
Benzo(a)pyrene	2024 01 03	<MDL 0.004	µg/L	0.01	No
Bromoxynil	2024 01 03	<MDL 0.33	µg/L	5.0	No
Carbaryl	2024 01 03	<MDL 0.05	µg/L	90.0	No
Carbofuran	2024 01 03	<MDL 0.01	µg/L	90.0	No
Carbon Tetrachloride	2024 01 03	<MDL 0.17	µg/L	2.0	No
Chlorpyrifos	2024 01 03	<MDL 0.02	µg/L	90.0	No
Diazinon	2024 01 03	<MDL0.02	µg/L	20.0	No
Dicamba	2024 01 03	<MDL 0.2	µg/L	120.0	No
1,2-Dichlorobenzene	2024 01 03	<MDL 0.41	µg/L	200.0	No
1,4-Dichlorobenzene	2024 01 03	<MDL 0.36	µg/L	5.0	No
1,2-Dichloroethane	2024 01 03	<MDL 0.35	µg/L	5.0	No
1,1-Dichloroethylene	2024 01 03	<MDL 0.33	µg/L	14.0	No
Dichloromethane (Methylene Chloride)	2024 01 03	<MDL0.35	µg/L	50.0	No
2,4-Dichlorophenol	2024 01 03	<MDL 0.15	µg/L	900.0	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2024 01 03	<MDL 0.19	µg/L	100.0	No
Diclofop-methyl	2024 01 03	<MDL 0.4	µg/L	9.0	No
Dimethoate	2024 01 03	<MDL 0.06	µg/L	20.0	No
Diquat	2024 01 03	<MDL 1.0	µg/L	70.0	No
Diuron	2024 01 03	<MDL 0.03	µg/L	150.0	No
Glyphosate	2024 01 03	<MDL 1.0	µg/L	280.0	No
Malathion	2024 01 03	<MDL 0.02	µg/L	190.0	No

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
2-Methyl-4chlorophenoxyacetic Acid (MCPA)	2024 01 03	<MDL 0.12	µg/L	100.0	No
Metolachlor	2024 01 03	<MDL 0.01	µg/L	50.0	No
Metribuzin	2024 01 03	<MDL 0.02	µg/L	80.0	No
Monochlorobenzene (Chlorobenzene)	2024 01 03	<MDL 0.3	µg/L	80.0	No
Paraquat	2024 01 03	<MDL 1.0	µg/L	10.0	No
PCB	2024 01 03	<MDL 0.04	µg/L	3.0	No
Pentachlorophenol	2024 01 03	<MDL 0.15	µg/L	60.0	No
Phorate	2024 01 03	<MDL 0.01	µg/L	2.0	No
Picloram	2024 01 03	<MDL 1.0	µg/L	190.0	No
Prometryne	2024 01 03	<MDL 0.03	µg/L	1.0	No
Simazine	2024 01 03	<MDL 0.01	µg/L	10.0	No
Terbufos	2024 01 03	<MDL 0.01	µg/L	1.0	No
Tetrachloroethylene	2024 01 03	<MDL 0.35	µg/L	10.0	No
2,3,4,6-Tetrachlorophenol	2024 01 03	<MDL 0.2	µg/L	100.0	No
Triallate	2024 01 03	<MDL 0.01	µg/L	230.0	No
Trichloroethylene	2024 01 03	<MDL 0.44	µg/L	5.0	No
2,4,6-Trichlorophenol	2024 01 03	<MDL0.25	µg/L	5.0	No
Trifluralin	2024 01 03	<MDL 0.02	µg/L	45.0	No
Vinyl Chloride	2024 01 03	<MDL 0.17	µg/L	1.0	No
Distribution Water					
Trihalomethane Total Annual Average Q1	2024 01 08	9.05	µg/L	100.0	No
Trihalomethane Total Annual Average Q2	2024 04 02	9.7	µg/L	100.0	No
Trihalomethane Total Annual Average Q3	2024 07 02	9.95	µg/L	100.0	No
Trihalomethane Total Annual Average Q4	2024 10 07	10.95	µg/L	100.0	No
HAA Total Annual Average Q1	2024 01 08	<MDL 5.3	µg/L	80.0	No
HAA Total Annual Average Q2	2024 04 02	<MDL 5.3	µg/L	80.0	No
HAA Total Annual Average Q3	2024 07 02	<MDL 5.3	µg/L	80.0	No
HAA Total Annual Average Q4	2024 10 07	<MDL 5.3	µg/L	80.0	No

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. Monthly Nitrate Test Results

Date Legal Instrument Issued	Parameter	Date Sampled	Result	Unit of Measure
Nov 10, 2021	Nitrate	2024 01 02	2.34	mg/L
Nov 10, 2021	Nitrate	2024 02 05	2.40	mg/L
Nov 10, 2021	Nitrate	2024 03 04	2.57	mg/L
Nov 10, 2021	Nitrate	2024 04 02	2.30	mg/L
Nov 10, 2021	Nitrate	2024 05 05	1.80	mg/L
Nov 10, 2021	Nitrate	2024 06 03	2.36	mg/L
Nov 10, 2021	Nitrate	2024 07 02	2.33	mg/L
Nov 10, 2021	Nitrate	2024 08 06	2.46	mg/L
Nov 10, 2021	Nitrate	2024 09 03	3.67	mg/L
Nov 10, 2021	Nitrate	2024 10 07	2.20	mg/L
Nov 10, 2021	Nitrate	2024 11 04	2.47	mg/L
Nov 10, 2021	Nitrate	2024 12 02	2.04	mg/L

Minor Maintenance

- Level transducer 2 replacement

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:

Nothing to report for the reporting period.

APPENDIX A

WTR Submission Confirmation