King's Bay Drinking Water System

Waterworks # 260002954
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The City of Kawartha Lakes

Reporting Period of January 1st – December 31st, 2023

Issued: February 21, 2024

Revision: 0

Operating Authorities:

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 does not serve more than 10,000 residences. The annual reports will be available to residents at the City of Kawartha Lakes Public Works Administration Office and on the City's website at www.kawarthalakes.ca. 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 West in Lindsay, Ontario.

Compliance Report Card

Drinking Water System Number: 260002954
Drinking Water System Name: King's Bay DWS
Drinking Water System Owner: City of Kawartha Lakes
Drinking Water System Category: Large Municipal Residential
Period Being Reported: January 1, 2023 - December 31, 2023

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	0		MECP initiated annual drinking water inspection on January 17, 2024 for the 2023/2024 inspection cycle
AWQI's	0		
Number of Non-Compliances identified during MECP Inspection	1	Various dates in 2023	Failed to meet the requirement to examining continuous monitoring test results within 72 hours of the test
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The water supply for the DWS comes from three (3) groundwater wells that are considered to be non-GUDI (groundwater under direct influence).

Treatment

The treatment system consists of the following:

- a sodium hypochlorite disinfection system
- reservoir

- high lift pumping station
- Stand-by diesel generator on-site

Treatment Chemicals used during the reporting year:

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 identified during the reporting period.

Non-Compliance

There were no non-compliance issues reported during the reporting period.

Non-Compliance Identified in a Ministry Inspection

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	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 at 08:50 and then April 3, 2023 at 09:07, May 17 at 13:25 and then May 21, 2023 at 12:07, May 26 at 10:06 and then May 29, 2023 at 14:00, July 14 at 08:00 and then July 17, 2023 at 13:18, August 10 at 07:18 and then August 14, 2023 at 07:41, and December 1 at 09:00 and then December 4, 2023 at 09:30.	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	In progress, due by March 31, 2024

Flows

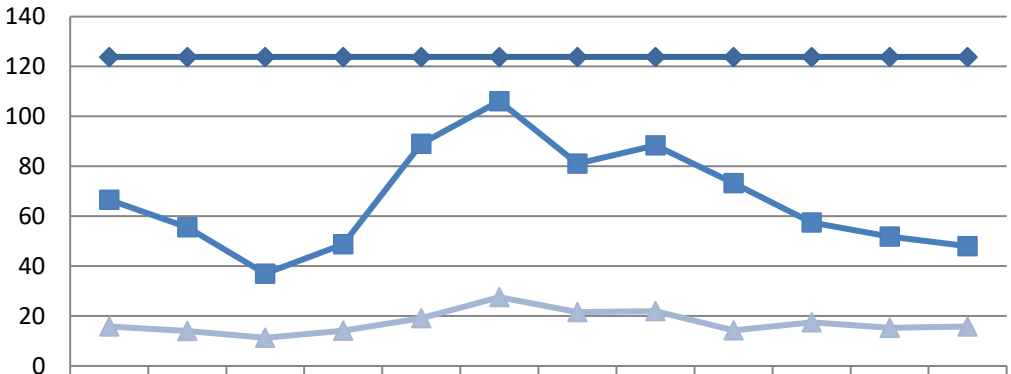
The King's Bay Drinking Water System is operating on average under half the rated capacity.

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 permits #1087-AYSGRN. A copy of the confirmation is included in Appendix A. The Permit to Take Water compliance

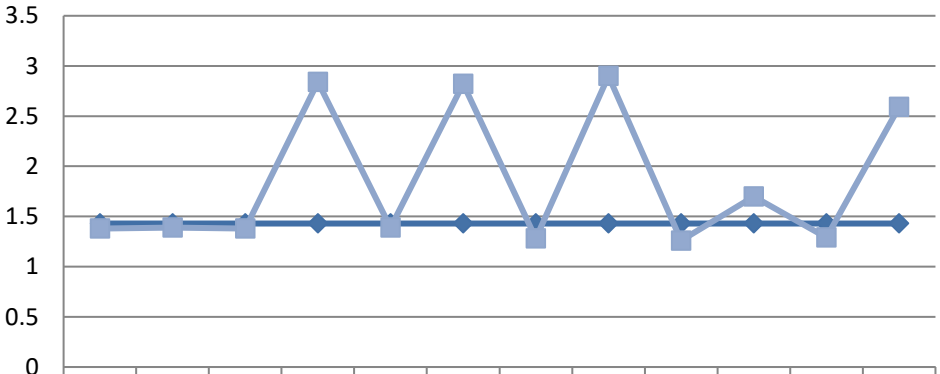
criteria is in litres per minute (L/min) but for the purposes of this report the flow rate is reported in litres per second (L/sec) based on industry standard for flow monitoring recording.

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



	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)	67	56	37	49	89	106	81	88	73	57	52	48
Avg (m³/d)	16	14	11	14	19	28	22	22	14	17	15	16

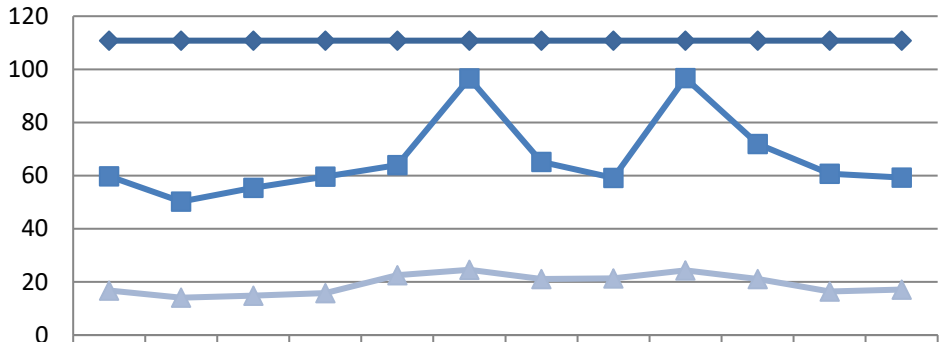
Monthly Rated Flows (L/s)
Max Allowable Rate – PTTW – Well #2



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	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)	1.38	1.39	1.38	2.84	1.39	2.82	1.28	2.90	1.26	1.70	1.29	2.59

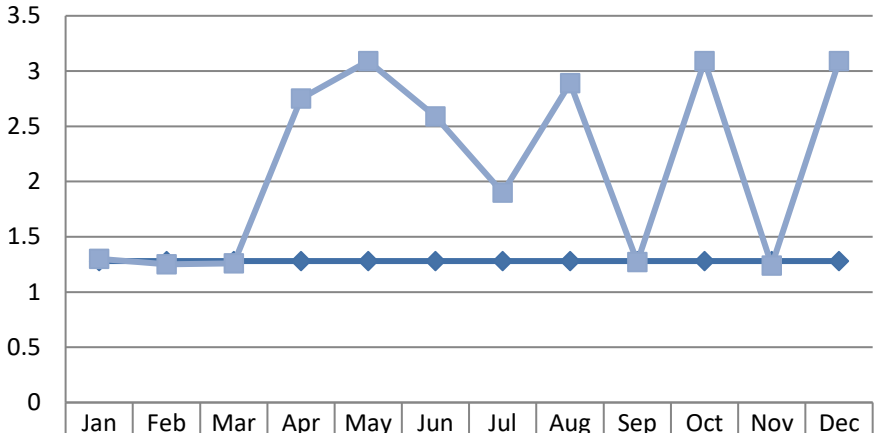
Note: Certain operational circumstances could cause results to be temporarily outside of the allowable rates. In June 2023, the allowable rate was momentarily surpassed as a result of annual calibration of the flow meter and did not indicate a true exceedance. In April, August, October and December 2023, the allowable rate was momentarily surpassed as a result of power outages and did not indicate a true exceedance. A true exceedance would be documented within this report.

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



	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)	60	50	55	60	64	97	65	59	97	72	61	59
Avg (m³/d)	17	14	15	16	23	25	21	21	24	21	16	17

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

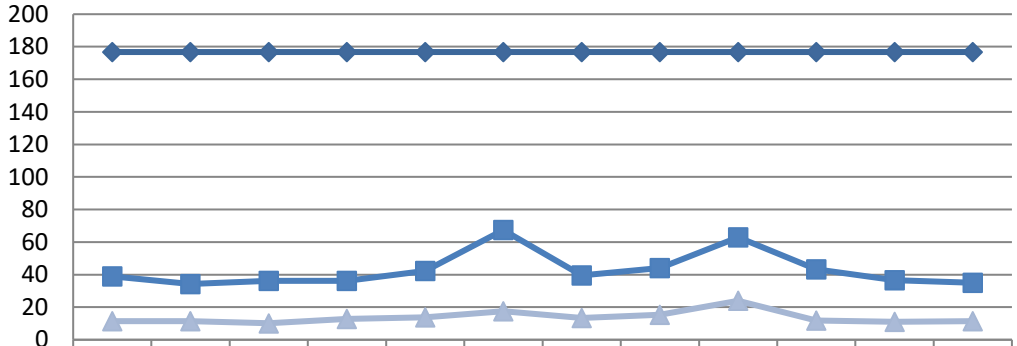


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
Max Rate (L/s)	1.30	1.25	1.26	2.75	3.09	2.59	1.90	2.89	1.27	3.09	1.24	3.09

Note: Certain operational circumstances could cause results to be temporarily outside of the allowable rates. In June 2023, the allowable rate was momentarily surpassed as a result of annual calibration of the flow meter and did not indicate a true exceedance. In April, May, July, August, October, and December 2023, the allowable rate was momentarily surpassed as a result of pump start-up after power outages and did not indicate a true exceedance. A true exceedance would be documented within this report.

Total Monthly Flows (m³/d)

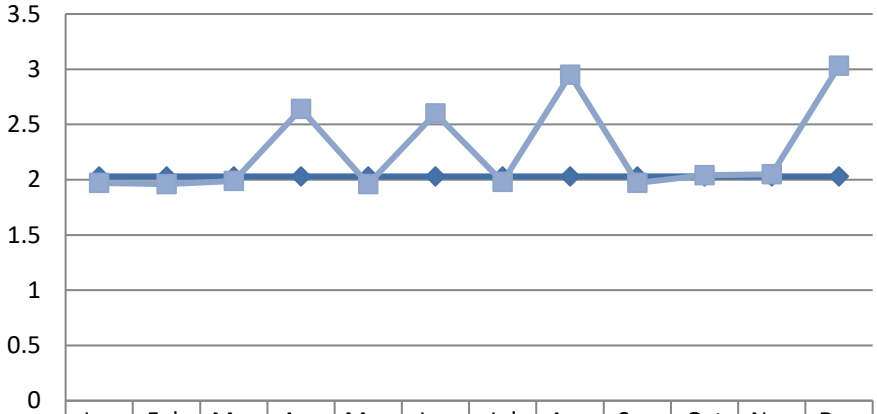
Max Allowable PTTW – Well #4



	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)	39	34	36	36	42	67	40	44	63	43	37	35
Avg (m³/d)	12	11	10	13	14	18	13	15	24	12	11	11

Monthly Rated Flows (L/s)

Max Allowable Rate – PTTW – Well #4



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	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)	1.97	1.96	1.99	2.64	1.96	2.60	1.98	2.95	1.97	2.04	2.05	3.03

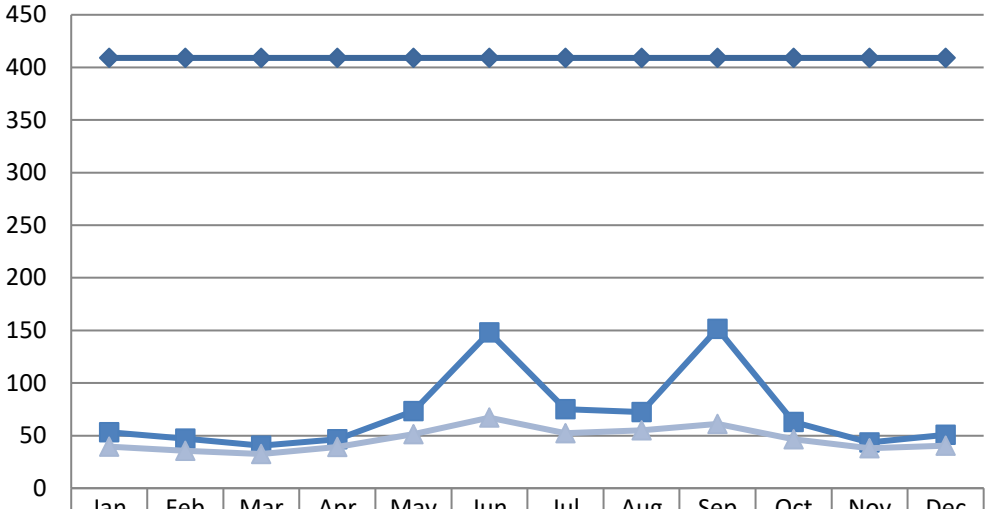
Note: Certain operational circumstances could cause results to be temporarily outside of the allowable rates. In June 2023, the allowable rate was momentarily surpassed as a result of annual calibration of the flow meter and did not indicate a true exceedance. In April, August, October, November and December 2023, the allowable rate was momentarily surpassed as a result of pump start-up after power outages and did not indicate a true exceedance. A true exceedance would be documented within this report.

Treated Water Flows

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

Monthly Rated Flows

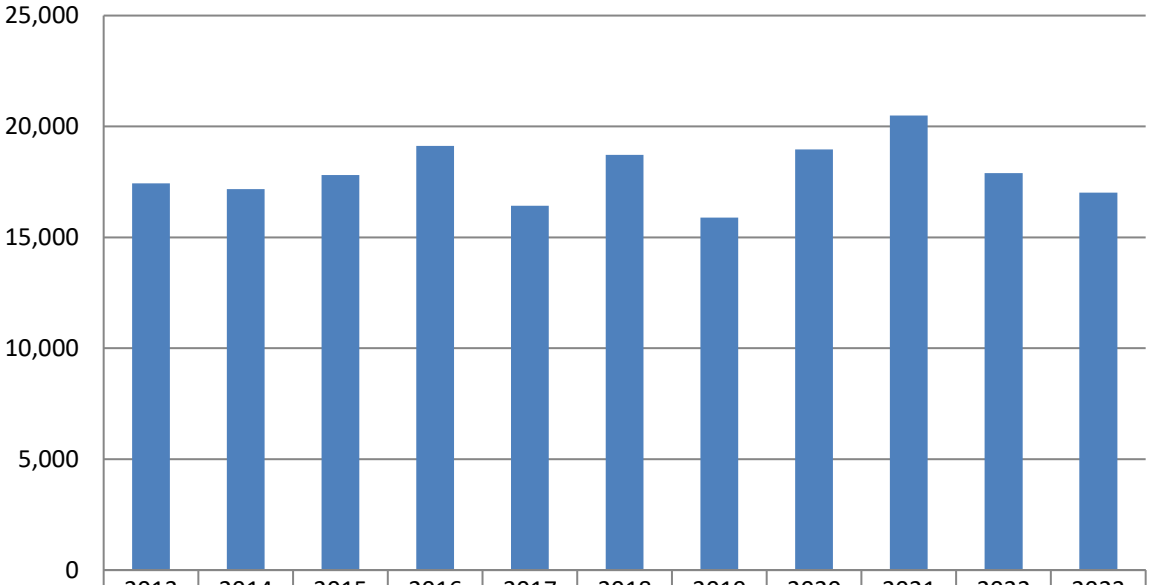
Rated Capacity − MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m^3/d)	409	409	409	409	409	409	409	409	409	409	409	409
Max Daily Flow (m^3/d)	53	47	40	46	73	148	75	72	152	63	43	51
Avg (m^3/d)	40	36	32	39	51	67	52	55	61	47	38	41

Annual Total Flow Comparison

Total Annual m^3



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
TW Total (m^3)	17,439	17,178	17,808	19,125	16,426	18,725	15,896	18,964	20,496	17,902	17,019

Regulatory Sample Results Summary

Microbiological Testing

(completed under Schedule 10, 11 or 12 of Ontario Regulation 170/03, during the reporting period).

	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	52	0	0	0	16		
Raw Well 3	53	0	0	0	15		
Raw Well 4	51	0	2	0	104		
Treated	53	0	0	0	0	0	620
Distribution	156	0	0	0	0	0	1420

Operational Testing

(completed under Schedule 7, 8 or 9 of Ontario Regulation 170/03, during the reporting period).

Parameter	Number of Samples Collected	Range of Results Minimum	Range of Results Maximum
Turbidity Well 2 (NTU)	12	0.1	0.58
Turbidity Well 3 (NTU)	12	0.28	0.72
Turbidity Well 4 (NTU)	12	0.1	0.46
Turbidity - TW (NTU)	8760	0	2.01
Chlorine	8760	1.02	3.35
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, did not indicate a true exceedance. A true exceedance would be documented within this report.

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 was tested monthly, while Nitrite was tested quarterly and the metals are tested every three years 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

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Antimony: Sb (ug/L) - TW	2022/01/04	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L) - TW	2022/01/04	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2022/01/04	76.9	1000.0	No	No
Boron: B (ug/L) - TW	2022/01/04	8.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2022/01/04	<MDL 0.003	5.0	No	No
Chromium: Cr (ug/L) - TW	2022/01/04	0.38	50.0	No	No
Mercury: Hg (ug/L) - TW	2022/01/04	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2022/01/04	0.1	50.0	No	No
Uranium: U (ug/L) - TW	2022/01/04	0.94	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2020/01/06	0.09	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	2023/07/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2023/10/02	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2023/01/03	2.66	10.0	No	No
Nitrate (mg/L) - TW	2023/04/03	2.13	10.0	No	No
Nitrate (mg/L) - TW	2023/07/04	2.24	10.0	No	No
Nitrate (mg/L) - TW	2023/10/02	1.61	10.0	No	No
Sodium: Na (mg/L) - TW	2020/01/06	7.06	20*	No	No

*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 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	Number of Sampling Points	Number of Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	1	2	285	295	N/A	N/A
pH	1	2	7.18	7.41	N/A	N/A
Lead (ug/l)	1	2	0.12	0.37	10	No

Organic Parameters

These parameters are tested 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.

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
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) - TW	2023/01/03	<MDL 0.17	2.00	No	No
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 0.2	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 0.4	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 1.0	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 1.0	280.00	No	No
Malathion (ug/L) - TW	2023/01/03	<MDL 0.02	190.00	No	No

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
2-Methyl-4chlorophenoxyacetic Acid (MCPA)	2023/01/03	<MDL 0.12	100.00	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 1.0	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 1.0	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 0.2	100.00	No	No
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 - DW	2023	9.38	100	No	No
HAA Total (ug/L) Annual Average - DW	2023	5.3	80	No	No

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

Additional Legislated Samples

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Jan. 3, 2023	2.66	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Feb. 6, 2023	2.05	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Mar. 6, 2023	2.42	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Apr. 3, 2023	2.13	mg/L

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
MDWL 141-119 (Nov. 10, 2021)	Nitrate	May 1, 2023	2.14	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Jun. 5, 2023	1.84	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Jul. 4, 2023	2.24	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Aug. 8, 2023	2.56	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Sep. 5, 2023	2.12	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Oct. 2, 2023	1.61	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Nov. 6, 2023	2.09	mg/L
MDWL 141-119 (Nov. 10, 2021)	Nitrate	Dec. 4, 2023	2.52	mg/L

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

WO #	Description
2498845	Intake, Level Probe, Replace
2543468	Highlift 02, Replace
3384740	SCADA UPS, Fail
3384741	Well 2 Level Sensor
3387517	LOTO Wall Mount, Install
3621124	SCADA PACK Control/Communication Failure
3704026	Back up Generator, Well Heads, Install

Appendix A

WTRS Submission Confirmation