

Buckhorn Lake Estates Drinking Water System

Waterworks # 220006437
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The Municipality of Trent Lakes

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

Issued: February 22, 2024

Revision: 0

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 does not serve more than 10,000 residence and the annual reports will be available to residents at The Municipality of Trent Lakes Office and copies will provided free of charge if requested. The Municipality of Trent Lakes Office is located at 760 Peterborough County Road 36 Trent Lakes Ontario, KOM 1AO. A copy of the annual report is also available on the Municipality of Trent Lakes www.trentlakes.ca.

Compliance Report Card

Drinking Water System Number: 220006437

Drinking Water System Name: Buckhorn Lake Estates WTP

Drinking Water System Owner: Municipality of Trent 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	1	October 25, 2023	Announced, Focused MECP Inspection 100% rating.
AWQI's	2	January 10, 2023	AWQI # 161125 – Treated water sodium
		November 26, 2023	AWQI # 164121 - High lift pump failure causing low pressure
Number of Non-Compliances	0		
Number of Boil Water Advisories	1	November 26 – 30, 2023	A result of AWQI #164121, rescinded on November 30, 2023.

System Process Description

Raw Source

The Buckhorn Lake Estates Water Treatment Plant is supplied by one GUDI well.

Treatment

The treatment system consists of the following:

- One groundwater production well with pump

- Sodium hypochlorite feed system with metering pumps
- Sodium permanganate feed system with metering pumps (if required)
- Polymer (SternPAC) feed system with metering pumps
- Four oxidation retention tanks for manganese removal
- Two continuous treated water free chlorine residual analyzers
- Two continuous filter turbidity analyzers
- Dual media granular filters in parallel
- Two 15.9 m³ inter connected backwash wastewater settling tanks
- Clearwell consisting of two 35 m³ interconnected underground tanks
- Two flow meters: raw and treated water
- Two High Lift Centrifugal Pumps
- Four Hydropneumatic Pressure Vessels
- Standby power generator

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Jutzi
SternPAC	Coagulant	Kemira
Sodium Permanganate	Iron Sequestering	System not in use during reporting period

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI#	Location	Problem	Details	Legislation	Corrective Action Taken
Jan 10, 2023	161125	Treated Water	Sodium exceedance	The sodium in the treated water exceeded 20 mg/l	O.Reg 170/03	Resample of treated water. Notification of residents. .
Nov 26, 2023	164121	Discharge	High lift pump did not cycle resulting in loss of pressure	Faulty pressure switch failed to activate high lift pump.	O. Reg 170/03	Restored distribution pressure. Flushed watermains. Collect two sets of distribution bacti, 48 hours apart.

Non-Compliances

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliance issues identified during this period				

Non-Compliances Identified in a Ministry Inspection:

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliance issues identified during this period				

Flows

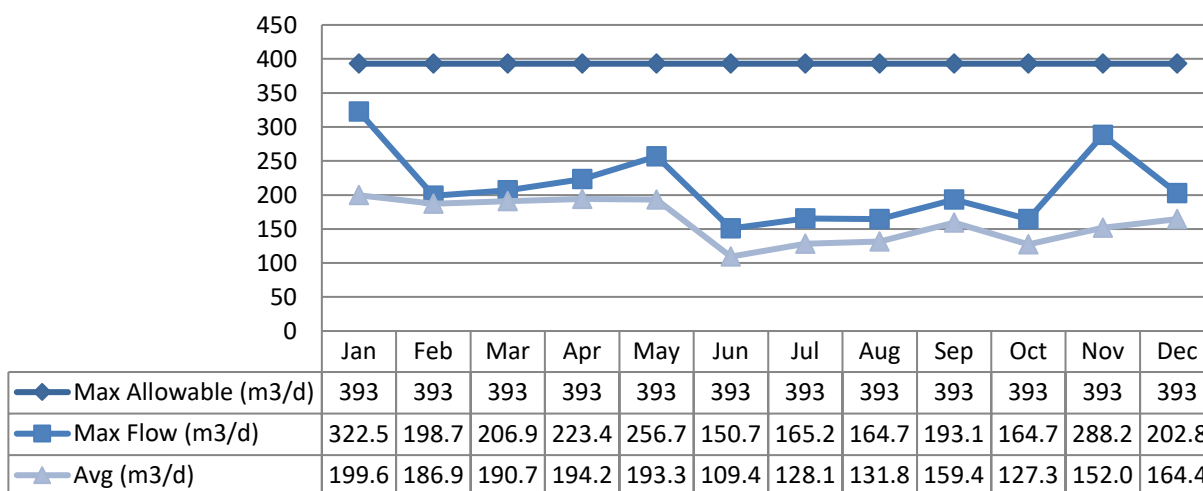
The Buckhorn Lake Estates Drinking Water System is operating below the rated capacity.

Raw Water Flows

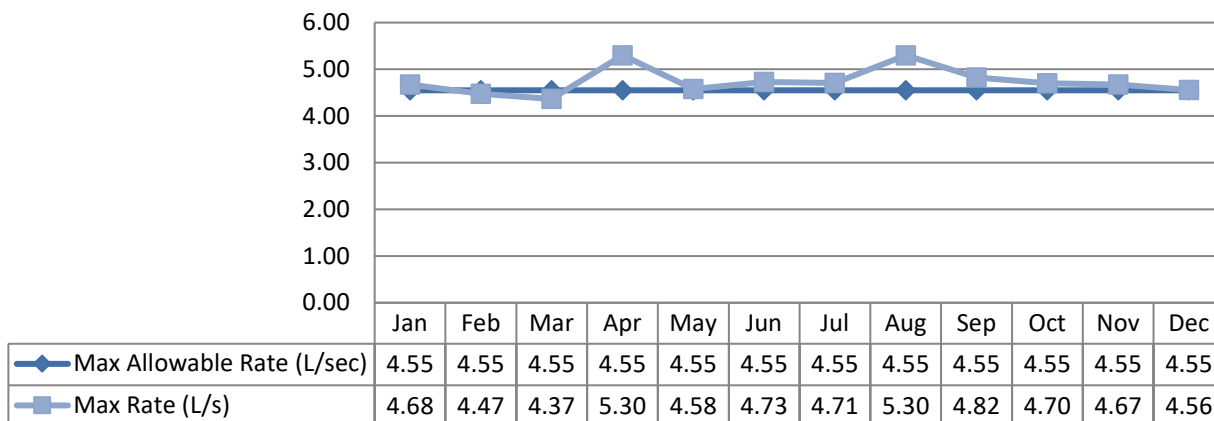
The Raw Water flows are regulated under the Permit to Take Water (PTTW). 2023 Raw Flow Data was submitted to the Ministry of the Environment, Conservation and Parks electronically under permit #5842-94MLZR. The confirmation and a copy of the data that was submitted are attached in Appendix A.

Total Monthly Flows (m3/d)

Max Allowable PTTW



Monthly Rated Flows (L/s) Max allowable rate – PTTW



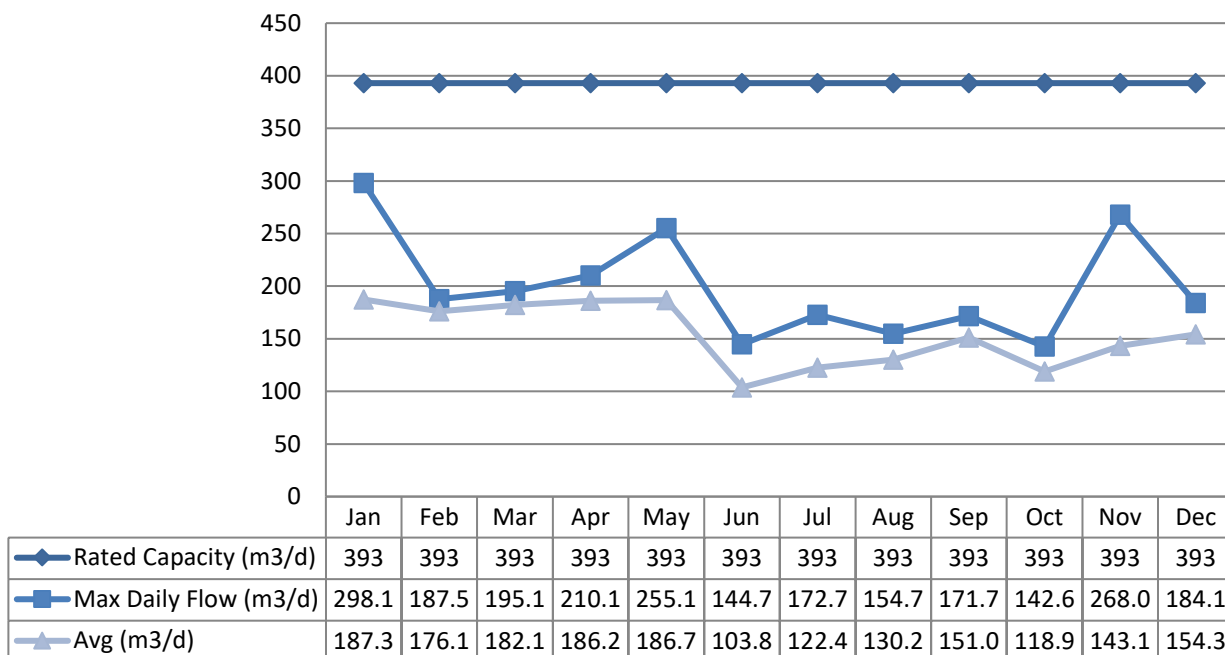
Note: The above table shows there were exceedances in instantaneous peak flow rate (L/s) caused by maintenance activities. Spikes were brief and reviewed for compliance. The scheduled Flow Meter calibration was in April.

Treated Water Flows

The Treated Water flows are regulated under the Municipal Drinking Water Licence (MDWL).

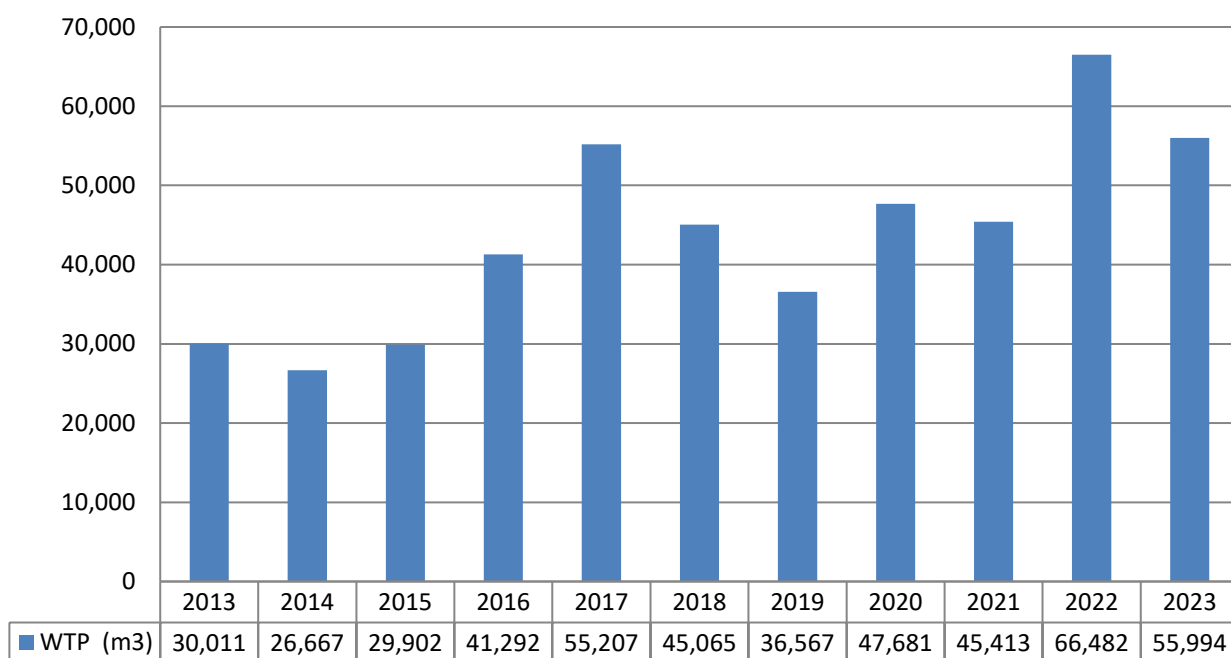
Monthly Rated Flows

Rated Capacity – MDWL



Annual Total Flow Comparison

Total Annual m³



Regulatory Sample Results Summary

Microbiological Testing

	No. of Samples Collected	Range of E.Coli Results		Range of Total Coliform Results		Range of HPC Results	
		Min	Max	Min	Max	Min	Max
Raw	54	0	2	0	9		
Treated	52	0	0	0	0	0	380
Distribution	162	0	0	0	0	0	53

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity Raw	12	0.14	0.34
Turbidity Filter 1 (NTU)	8760	0	2.0
Turbidity Filter 2 (NTU)	8760	0	2.0
Chlorine (mg/L)	8760	0	5.0

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 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 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	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L)	2023/01/05	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L)	2023/01/05	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L)	2023/01/05	123.0	1000.0	No	No
Boron: B (ug/L)	2023/01/05	23.0	5000.0	No	No
Cadmium: Cd (ug/L)	2023/01/05	0.005	5.0	No	No
Chromium: Cr (ug/L)	2023/01/05	0.37	50.0	No	No
Mercury: Hg (ug/L)	2023/01/05	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L)	2023/01/05	0.23	50.0	No	No
Uranium: U (ug/L)	2023/01/05	0.178	20.0	No	No
Additional Inorganics					
Fluoride (mg/L)	2023/01/05	<MDL 0.06	1.5	No	No
Nitrite (mg/L)	2023/01/03	<MDL 0.003	1.0	No	No
Nitrite (mg/L)	2023/04/05	<MDL 0.003	1.0	No	No
Nitrite (mg/L)	2023/07/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L)	2023/10/10	<MDL 0.003	1.0	No	No
Nitrate (mg/L)	2023/01/03	3.97	10.0	No	No
Nitrate (mg/L)	2023/04/05	2.92	10.0	No	No
Nitrate (mg/L)	2023/07/06	1.98	10.0	No	No
Nitrate (mg/L)	2023/10/10	2.37	10.0	No	No
Sodium: Na (mg/L)	2023/01/11	46.8	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 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 and no plumbing samples were collected.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	6	2	279	290		
pH	6	2	6.82	7.19		
Lead (ug/l)	6	2	1.14	2.21	10	0

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

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.

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L)	2023/01/05	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L)	2023/01/05	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L)	2023/01/05	<MDL 0.05	20.0	No	No
Benzene (ug/L)	2023/01/05	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L)	2023/01/05	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L)	2023/01/05	<MDL 0.33	5.0	No	No
Carbaryl (ug/L)	2023/01/05	<MDL 0.05	90.0	No	No
Carbofuran (ug/L)	2023/01/05	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L)	2023/01/05	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L)	2023/01/05	<MDL 0.02	90.0	No	No
Diazinon (ug/L)	2023/01/05	<MDL 0.02	20.0	No	No
Dicamba (ug/L)	2023/01/05	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L)	2023/01/05	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L)	2023/01/05	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L)	2023/01/05	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L)	2023/01/05	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L)	2023/01/05	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L)	2023/01/05	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)	2023/01/05	<MDL 0.19	100.0	No	No

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Diclofop-methyl (ug/L)	2023/01/05	<MDL 0.4	9.0	No	No
Dimethoate (ug/L)	2023/01/05	<MDL 0.06	20.0	No	No
Diquat (ug/L)	2023/01/05	<MDL 1.0	70.0	No	No
Diuron (ug/L)	2023/01/05	<MDL 0.03	150.0	No	No
Glyphosate (ug/L)	2023/01/05	<MDL 1.0	280.0	No	No
Malathion (ug/L)	2023/01/05	<MDL 0.02	190.0	No	No
Metolachlor (ug/L)	2023/01/05	<MDL 0.01	50.0	No	No
Metribuzin (ug/L)	2023/01/05	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L)	2023/01/05	<MDL 0.3	80.0	No	No
Paraquat (ug/L)	2023/01/05	<MDL 1.0	10.0	No	No
PCB (ug/L)	2023/01/05	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L)	2023/01/05	<MDL 0.15	60.0	No	No
Phorate (ug/L)	2023/01/05	<MDL 0.01	2.0	No	No
Picloram (ug/L)	2023/01/05	<MDL 1.0	190.0	No	No
Prometryne (ug/L)	2023/01/05	<MDL 0.03	1.0	No	No
Simazine (ug/L)	2023/01/05	<MDL 0.01	10.0	No	No
Terbufos (ug/L)	2023/01/05	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L)	2023/01/05	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L)	2023/01/05	<MDL 0.2	100.0	No	No
Triallate (ug/L)	2023/01/05	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L)	2023/01/05	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L)	2023/01/05	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L)	2023/01/05	<MDL 0.12	100.0	No	No
Trifluralin (ug/L)	2023/01/05	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L)	2023/01/05	<MDL 0.17	1.0	No	No

Distribution Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Trihalomethane: Total (ug/L) Annual Average	2023	33.5	100.00	No	No
HAA Total (ug/L) Annual Average	2023	7.08	80.00	No	No

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

Additional Legislated Samples

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. Samples collected weekly. Treated water tested only if Total Microcystins detected in Raw Water.	June	<0.1 – <0.1	-	N
	July	<0.1 - <0.1	-	N
	August	<0.1 - <0.1	-	N
	September	<0.1 - <0.1	-	N
	October	<0.1 – <0.1	-	N

The following additional samples are not required but Iron and Manganese are sampled monthly to provide operational guidance.

Parameter	Location	No. of Samples Collected	Range of Results	
			Minimum	Maximum
Iron (ug/L)	Raw	12	7	262
Iron (ug/L)	Treated	12	>MDL	83
Manganese (ug/L)	Raw	12	1.04	74.9
Manganese (ug/L)	Treated	12	0.13	17.6


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


WO #	Description
3621146	Distribution, Daylighting 38 and 40 Sumcot, Service Repair
3665958	High Lift Pump 1, Repair
3703545	24 & 26 Sumcot Dr, Service Leak, Repair
3705348	Coagulant Pump Foot Valve, Replace

Equipment was maintained in a fit state of repair as per legislation.

Appendix A

WTRS Submission Confirmation





Ministry of the Environment,
Conservation and Parks

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Location: **WTR**

[Change Password](#)

[Submit WT Record](#)

WTRS-WT-008

Water Taking Data submitted successfully.


Confirmation:

Thank you for submitting your water taking data online.

Permit Number: 5482-94MLZR
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF GALWAY-CAVENDISH-HARVEY.
Received on: Feb 1, 2024 12:30 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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TOWNSHIP2 GALWAY-CAVENDISH2 | 2024/02/01
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Last modified: 2018/09/18

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Client Name: THE CORPORATION OF THE MUNICIPALITY OF TRENT LAKES Reporting Year: 2023 Service: PTTW Permit Number: P-300-7202725183 Permit Version: 1.0 New or Updated Submission: NEW

Site Name: Buckhorn Lake Estates Drinking Water System

Source ID: 500000680455

Source Name: Well 1

Source Type: Well

UTM(Zone/Easting/Northing): 17/704117.0/4929252.0

Method of Determination: Metered

Unit of Measure: Litre

Description: Well 1

Purpose Category: Public administration

Specific Category: Municipal Supply

Activity: Water Supply

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1			179479.0039	193445.0073	222343.0023	105934.9976	104714.9963	128944.0002	184781.9977	164714.9963	117953.0029	202783.0048
2			192789.9933	191367.0044	195953.9948	138016.9983	134921.9971	116227.9968	158839.0045	125633.0032	121856.0028	136235.0006
3			192419.0063	215274.9939	203132.9956	106014.9994	136904.007	114983.0017	175341.9952	123507.0038	114667.9993	141701.9958
4			182496.0022	189621.0022	224195.0073	150684.9976	145916.0004	152104.0039	161608.9935	143505.0049	125538.002	147813.0035
5			191503.006	177621.994	216296.0052	120674.0036	125309.9976	130039.9933	177899.0021	119547.9965	145486.9995	146768.9972
6			195098.0072	189606.9946	237667.9993	125337.9974	137180.9998	140222.0001	148031.9977	138800.9949	129279.007	132904.007
7			170358.0017	178848.0072	225473.0072	106166.0004	140692.0013	116997.0016	123746.0022	135102.005	118525.0015	160889.9994
8			186546.0052	175255.9967	248647.0032	105370.0027	165240.0055	139042.0074	163438.0035	137130.9967	124685.997	138858.9935
9			201425.0031	168304.0009	195990.9973	103199.9969	160190.0024	121384.0027	161337.0056	150634.9945	153177.002	153527.9999
10			186177.002	201162.9944	174223.999	107453.0029	155106.0028	140475.0061	165330.0018	140682.9987	128731.0028	157225.0061
11			188139.9994	203736.9995	185195.0073	95986.0001	115246.0022	137160.9955	151742.0044	118721.0007	138042.9993	162891.0065
12			177815.9943	188647.0032	173917.0074	91927.002	100480.0034	132542.0074	145908.0048	118373.0011	134748.0011	157300.9949
13			206490.9973	196895.9961	191007.0038	98601.9974	102907.9971	135311.9965	137615.0055	128856.0028	132005.0049	146738.0066
14		179072.998	176235.0006	190438.0035	196505.0049	83408.9966	117000.0	130554.0009	130891.9983	118487.999	133815.0024	160429.0009
15		180205.9937	181186.0046	199395.0043	195919.9982	86736.9995	121415.0009	115852.9968	162406.9977	125221.0007	136378.006	159235.9924
16		187656.0059	206186.0046	202483.9935	184925.9949	116763.0005	117980.0034	121814.003	158298.0042	130781.9977	130660.0037	157895.0043
17		195322.998	183804.9927	184294.0063	200669.9982	114098.999	135729.9957	63134.9983	156315.0024	115732.0023	147656.0059	171611.9995
18		177091.9952	189386.0016	187727.005	188975.0061	128968.0023	114177.002	68306.9992	168089.0045	106058.9981	132983.0017	181897.995
19		190042.0074	198516.9983	208399.0021	189408.0048	101300.0031	123834.9991	143365.9973	141427.002	142869.9951	136483.0017	154850.0061
20		198156.9977	198783.0048	189007.0038	175692.0013	116422.9965	138179.0009	151654.9988	165417.9993	111788.002	137093.0023	156684.9976
21		193826.004	187595.0012	186809.0057	192643.0054	113829.0024	105702.0035	147039.0015	175574.0051	117815.0024	121880.9967	177509.9945
22		186876.0071	184123.9929	196662.0026	217018.0054	121449.9969	130789.0015	138550.9949	151082.9926	141059.0057	125661.0031	175238.9984
23		175660.9955	197848.0072	194492.0044	212496.0022	94008.0032	126069.9997	128037.0026	162942.0013	121768.9972	138636.9934	172766.0065
24		189048.996	185408.0048	207218.0023	192490.9973	99123.0011	133673.0042	139789.0015	193111.9995	119742.9962	122661.0031	179744.9951
25		198679.0009	199839.9963	183550.9949	194151.9928	124956.0013	110730.0034	146988.0066	150557.0068	113806.9992	141774.9939	188910.9955
26		184380.0049	195358.0017	193533.9966	174399.0021	114785.0037	115732.0023	155522.995	154740.9973	113981.0028	151102.005	176770.0043
27		194000.0	206195.9991	210865.9973	98164.0015	83767.9977	127579.0024	159302.9938	165294.0063	130757.9956	275901.001	186389.0076
28		177972.0001	189645.0043	193154.007	256680.9998	103793.9987	118023.0026	164660.0037	147587.9974	117845.0012	276442.9932	166587.9974
29			181395.9961	203988.9984	197826.9958	108748.0011	125972.9996	132671.9971	172876.9989	123777.9999	288233.0017	195384.0027
30			206876.0071	223416.0004	110382.0038	114029.9988	137714.9963	142768.0054	169975.9979	133291.0004	278475.0061	170160.9955
31			191973.999		120167.9993		146533.0048	129828.9948		115513.0005		180059.0057

Name of Attester

First Name: Wesley

Last Name: Henneberry

Company: Ontario Clean Water Agency

Date Certified/Submitted(yyyy/mm/dd): 2024/02/12