

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, 2020

Issued: February 24, 2021

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, 2020 - December 31, 2020

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	1	July 22, 2020	Announced, Focused MECP Inspection. 100% rating.
AWQI's	1	February 3, 2020	Filter turbidity exceedance
Number of Non-Compliances	0		
Number of Boil Water Advisories	0		

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	Brenntag
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
February 03, 2020	149526	Filter Effluent	Filter turbidity spikes on startup. Plant recovering from significant leak in	Filter 1 NTU over 1.0 from 1218-1219 and again from 1224-1237.	O. Reg 170/03 Schedule 16 Section 6	Clean NTU analyzer, backwash filters, collect bacti samples from raw, treated and

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
			distribution system.			distribution water.

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-compliances identified in a Ministry Inspection during this period.				

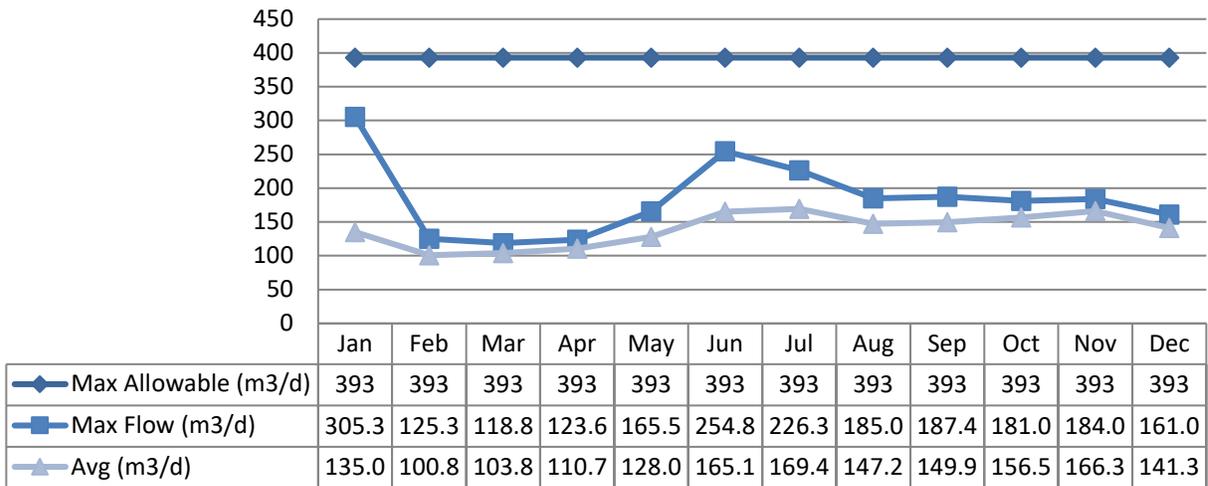
Flows

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

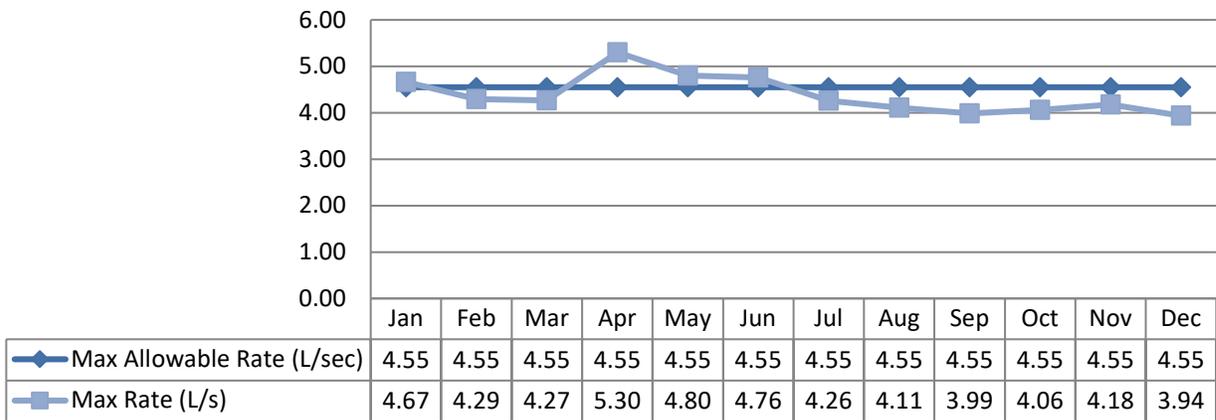
Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water (PTTW). 2020 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- Well



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



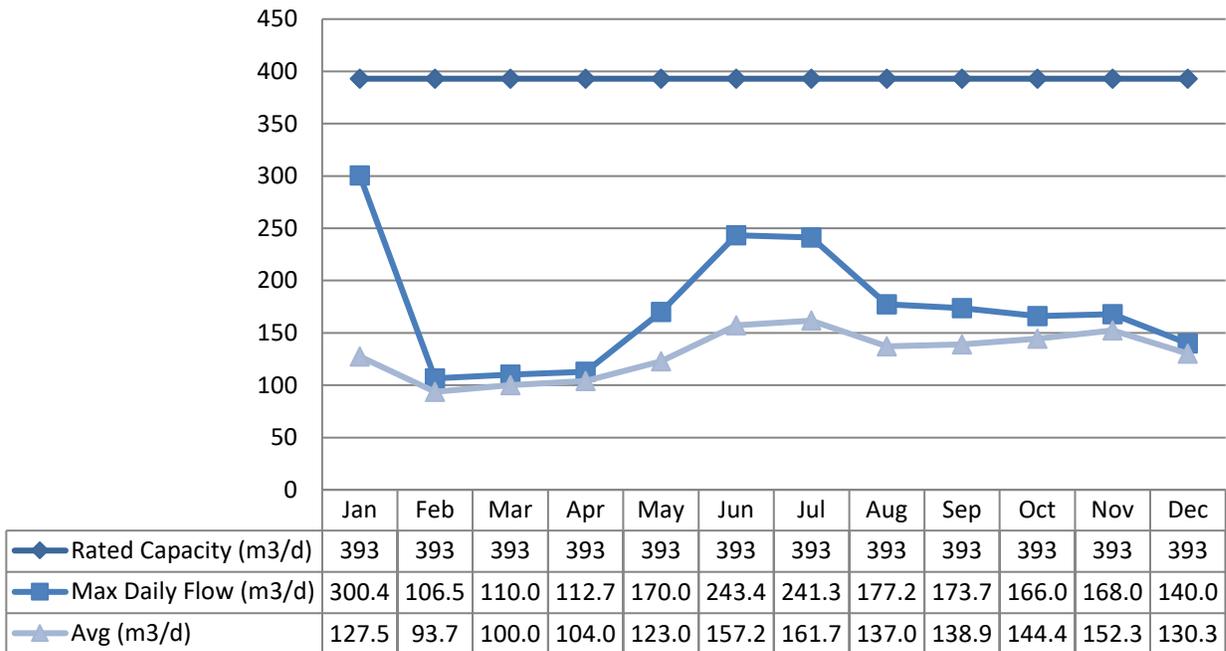
Note: The above table shows there were exceedances in instantaneous peak flow rate (L/s) but these exceedances were short in duration. Spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O.Reg 170/03. The scheduled Flow Meter calibration was completed in April.

Treated Water Flows

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

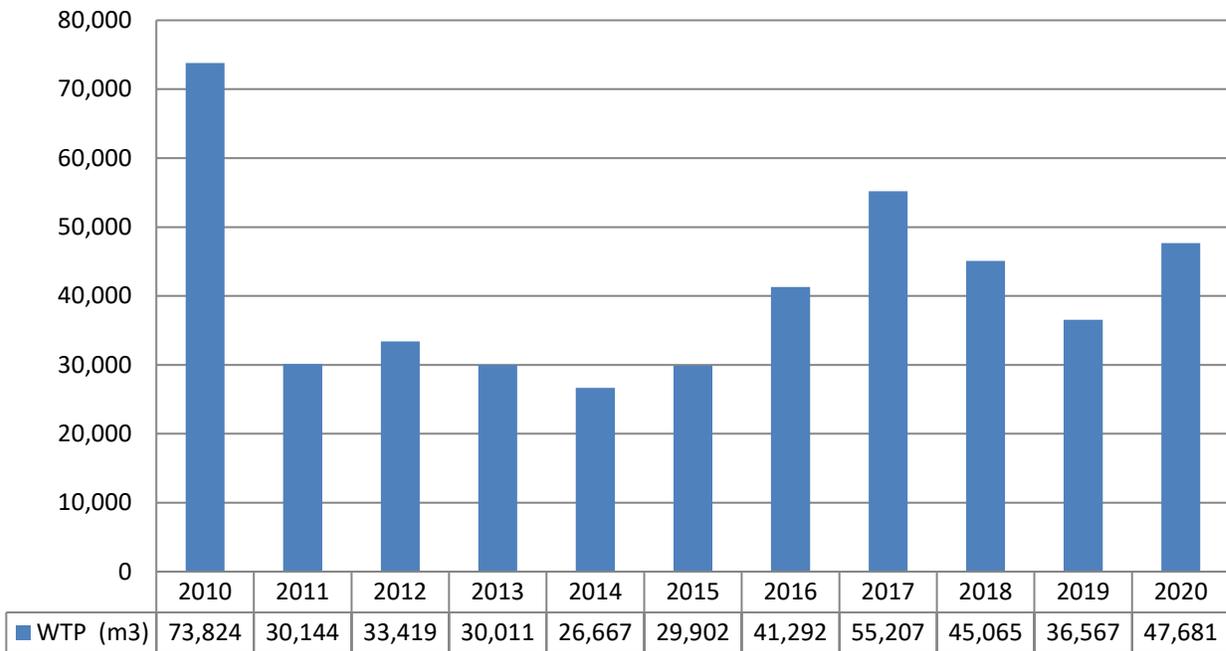
Monthly Rated Flows

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	52	0	0	0	7		
Treated	53	0	0	0	0	0	1900
Distribution	158	0	0	0	0	0	2000

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
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)	2020/01/06	<MDL 0.09	6.0	No	No
Arsenic: As (ug/L)	2020/01/06	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L)	2020/01/06	108.0	1000.0	No	No
Boron: B (ug/L)	2020/01/06	11.0	5000.0	No	No
Cadmium: Cd (ug/L)	2020/01/06	0.005	5.0	No	No
Chromium: Cr (ug/L)	2020/01/06	0.28	50.0	No	No
Mercury: Hg (ug/L)	2020/01/06	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L)	2020/01/06	0.22	50.0	No	No
Uranium: U (ug/L)	2020/01/06	0.127	20.0	No	No
Additional Inorganics					
Fluoride (mg/L)	2018/01/08	<MDL 0.06	1.5	No	No
Nitrite (mg/L)	2020/01/06	<MDL 0.003	1.0	No	No

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Nitrite (mg/L)	2020/04/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L)	2020/07/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L)	2020/10/05	<MDL 0.003	1.0	No	No
Nitrate (mg/L)	2020/01/06	2.83	10.0	No	No
Nitrate (mg/L)	2020/04/06	2.25	10.0	No	No
Nitrate (mg/L)	2020/07/06	1.5	10.0	No	No
Nitrate (mg/L)	2020/10/05	2.04	10.0	No	No
Sodium: Na (mg/L)	2018/01/12	40.9	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	6	269	287		
pH	6	6	6.91	7.08		
Lead (ug/l)	6	6	0.46	5.12	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)	2020/01/06	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L)	2020/01/06	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L)	2020/01/06	<MDL 0.05	20.0	No	No
Benzene (ug/L)	2020/01/06	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L)	2020/01/06	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L)	2020/01/06	<MDL 0.33	5.0	No	No
Carbaryl (ug/L)	2020/01/06	<MDL 0.05	90.0	No	No
Carbofuran (ug/L)	2020/01/06	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L)	2020/01/06	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L)	2020/01/06	<MDL 0.02	90.0	No	No
Diazinon (ug/L)	2020/01/06	<MDL 0.02	20.0	No	No
Dicamba (ug/L)	2020/01/06	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L)	2020/01/06	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L)	2020/01/06	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L)	2020/01/06	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L)	2020/01/06	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L)	2020/01/06	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L)	2020/01/06	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)	2020/01/06	<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)	2020/01/06	<MDL 0.4	9.0	No	No
Dimethoate (ug/L)	2020/01/06	<MDL 0.06	20.0	No	No
Diquat (ug/L)	2020/01/06	<MDL 1.0	70.0	No	No
Diuron (ug/L)	2020/01/06	<MDL 0.03	150.0	No	No
Glyphosate (ug/L)	2020/01/06	<MDL 1.0	280.0	No	No
Malathion (ug/L)	2020/01/06	<MDL 0.02	190.0	No	No
Metolachlor (ug/L)	2020/01/06	<MDL 0.01	50.0	No	No
Metribuzin (ug/L)	2020/01/06	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L)	2020/01/06	<MDL 0.3	80.0	No	No
Paraquat (ug/L)	2020/01/06	<MDL 1.0	10.0	No	No
PCB (ug/L)	2020/01/06	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L)	2020/01/06	<MDL 0.15	60.0	No	No
Phorate (ug/L)	2020/01/06	<MDL 0.01	2.0	No	No
Picloram (ug/L)	2020/01/06	<MDL 1.0	190.0	No	No
Prometryne (ug/L)	2020/01/06	<MDL 0.03	1.0	No	No
Simazine (ug/L)	2020/01/06	<MDL 0.01	10.0	No	No
Terbufos (ug/L)	2020/01/06	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L)	2020/01/06	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L)	2020/01/06	<MDL 0.2	100.0	No	No
Triallate (ug/L)	2020/01/06	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L)	2020/01/06	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L)	2020/01/06	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L)	2020/01/06	<MDL 0.12	100.0	No	No
Trifluralin (ug/L)	2020/01/06	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L)	2020/01/06	<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	2020/01/01	24.0	100.00	No	No
HAA Total (ug/L) Annual Average	2020/01/01	10.7	80.00	No	No

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

Additional Legislated Samples

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	163
Iron (ug/L)	Treated	12	>MDL	35
Manganese (ug/L)	Raw	12	0.32	51.9
Manganese (ug/L)	Treated	12	0.02	10.9

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

WO #	Description
1750991	Distribution, Install Sampling Hydrant
1872030	Distribution Install New Service
2036928	6260, Buckhorn Distribution Leak
1621559	6260, Buckhorn WT - Distribution Leak Repair
1663093	Chlorine #1 Injection Point Repair/Replacement
1750973	Chlorine Discharge Piping Repair
1622344	6260, Buckhorn WT Filter Maintenance
1998739	Chlorine Pump 2, Rebuild
1662754	2" Singer Valve Replacement

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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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: Jan 26, 2021 10:33 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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