Beachburg Drinking Water System

Waterworks # 220003449
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The Township of Whitewater Region

Reporting Period of January 1st – December 31st 2020

Issued: February 19th, 2021

Operating Authority:

OCWA
ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

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 Township of Whitewater Region's Municipal Office. Notification will be at the Municipal Office and copies provided free of charge if requested. The Township of Whitewater Region's Municipal Office is located at, 44 Main Street, Cobden, Ontario.

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	1 Inspection on November 12, 2020 --Report has not yet been received--
Ministry of Labour Inspections	N/A
QEMS External Audit	Completed on January 21, 2020 by SAI Global. No major or minor non-conformances were identified.
AWQI's/BWA	N/A
Non-Compliance	1 – Exceedance of the PTTW and MDWL rated capacity on July 9, 2020. Increased water usage in the summer months showed flows over the PTTW limit. The flow total was shown to artificially high due to scale accumulation inside the raw flow meter.
Community Complaints	1 - Complaint related to low water pressure.
Spills	N/A
Watermain Breaks	N/A

System Process Description

Raw Source

The Beachburg DWS consists of one dug well and one drilled well. Both wells are considered Groundwater Under the Direct Influence of surface water (GUDI).

The principal water source is a 3.6 m diameter, 7.6 m deep dug well with galvanized steel casing. The well is located within a cinder block construction pump house, approx. 20 m south of the treatment plant. The well is beneath a concrete floor in the pump house and is equipped with four centrifugal low lift pumps, each with a rated capacity of 5.7 L/s (342 L/min). Water entry holes are constructed in the casing at various levels and are reported to be at depths of 3.8m, 3.5m, 3.2m, 2.9m and 2.6m below the top of casing. A 150 mm discharge line connects the

dug well to the treatment plant, where a raw water flow meter is installed.

An interlock device between the pumps for the dug well and the drilled backup well ensures that only one well can operate at a time and elapsed running time meters for the well pumps allow for precise records of operating times.

The second well, drilled in 1991, acts as a standby well to provide water in the summer when the demand increases. The drilled well is located on a hill approx. 60 m southwest of the dug well and approx. 35 m north of Jackson Lake. The well is 30.5 m deep, screened in overburden from 27.4 m to 30.5 m below the ground surface, and equipped with one submersible turbine well pump with rated capacity of 11.4 L/s (684 L/min). Raw water from the drilled well travels through a 100 mm diameter discharge line which is connected to the 150 mm diameter discharge header from the dug well.

Treatment

The Beachburg water treatment plant consists of an Ecodyne Package Plant, which provides full conventional treatment at a maximum rate of 973 m3/d. The plant consists of a rapid mix zone, flocculation zone, sedimentation zone, a two-cell dual media filter complete with backwash storage.

The raw water from the dug well or the drilled well is directed into the treatment plant through a common header where sodium hypochlorite (pre-chlorination) and aluminum sulphate are injected prior to the Ecodyne treatment tank. Further sodium hypochlorite addition (post- chlorination) is available; however, it is generally not required as chlorine residuals are maintained without further chemical addition. A static inline mixer is installed at the raw water discharge header just prior to the water treatment plant to improve coagulation. Water then enters the water plant, travelling through a cone-shaped solids contact unit equipped with an existing mixer for coagulation and flocculation. The solids are settled via tube settlers as water levels rise in the clarifier. Clarified water is collected in troughs and distributed to the two-cell dual media (sand/anthracite) gravity filters.

A common underdrain collects filter effluent from both cells, and a continuous online turbidimeter monitor's filter effluent turbidity. Water then enters the three- chambered clearwell with a total storage capacity of 656 m3 which provides sufficient contact time to meet primary disinfection. Four high lift pumps, plus one standby fire pump direct water from the clearwell into the distribution system. Treated flow leaving the clearwell is measured using a flow meter.

The wastewater produced from filter backwashing and clarifier blowdown is discharged to a two-cell storage tank with a total usable capacity of 45.9 m3. This tank provides settling for sludge, which is pumped and hauled to another location. The plant directs the storage tank supernatant from the wastewater storage to Jackson Lake, located south of the plant.

One standby diesel generator rated at 150 kW with a fuel storage tank is provided.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
PAS8	Coagulant	Kemira Canada Inc.
Sodium Hypochlorite	Disinfection	Brenntag Canada Inc.

Distribution

The distribution system for Beachburg serves approx. 900 residents, and consists of approximately 10km of watermains. A combination of ductile iron, cast and galvanized iron watermains were originally installed in 1955. Part of the galvanized iron watermains were replaced with cast iron in the mid 1980's. In addition, there is a plastic PVC main line in Beachburg.

The distribution system does not include any reservoirs, booster stations or re-chlorination stations. Four dry wells are available on Passe Road, Anderson Drive, Beachburg Road and Robertson Drive to facilitate line flushing, distribution sampling and provide adequate chlorine residuals in the distributed water.

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
There were no adverse water quality incidents reported during the reporting period.						

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
PTTW and MDWL	Rated Capacity	July 9, 2020	Raw flow meter was cleaned to remove debris from the inside wall of the meter which was artificially increasing the flow	Complete

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

Flows

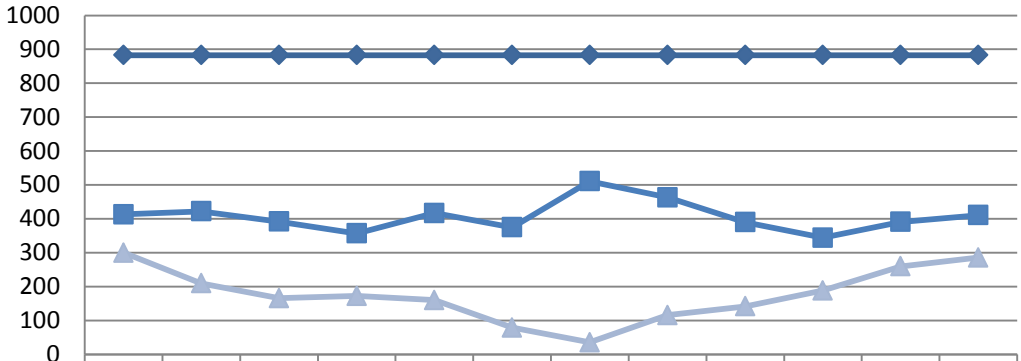
Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2020 Raw Flow Data was submitted to the Ministry electronically under permit # 3055-8W5KCG. The confirmation and a copy of

the data that was submitted are attached in Appendix A.

Dug Well Total Monthly Flows (m3/d)

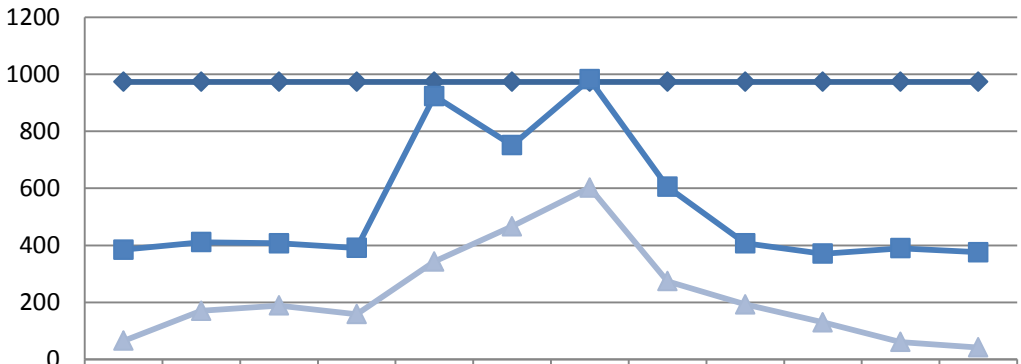
Max Allowable PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	882.7	882.7	882.7	882.7	882.7	882.7	882.7	882.7	882.7	882.7	882.7	882.7
Max Flow (m3/d)	413	422	392	357	417	375	511	463	390	344	391	411
Avg (m3/d)	300	210	166	172	160	79	36	116	142	189	260	286

Drilled Well Total Monthly Flows (m3/d)

Max Allowable PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	973	973	973	973	973	973	973	973	973	973	973	973
Max Flow (m3/d)	385	411	407	391	923	751	982	605	407	371	390	376
Avg (m3/d)	65	171	189	159	343	467	602	274	193	130	62	42

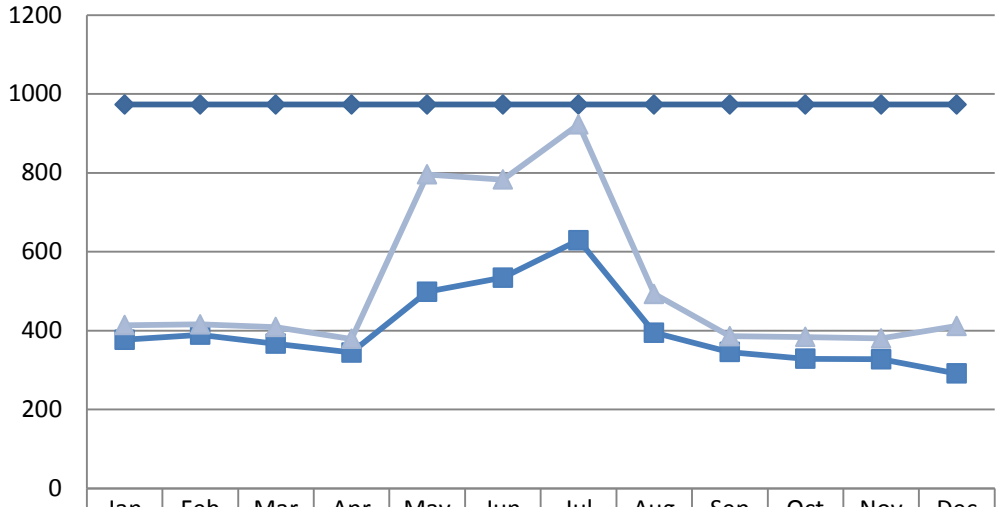
The Beachburg Drinking Water System is operating on average under half the rated capacity. On July 9th, 2020 the drilled well maximum flow rate exceeded the maximum flow. After an investigation of the incident it was found that the raw flow meter was reading an artificially high flow rate due to a scale accumulation on the inside wall of the flow meter. Once the flow meter was cleaned properly the flow rate decreased. The preventative maintenance program has been adjusted to ensure that the accumulation is removed on a regular basis in the future.

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

Monthly Rated Flows

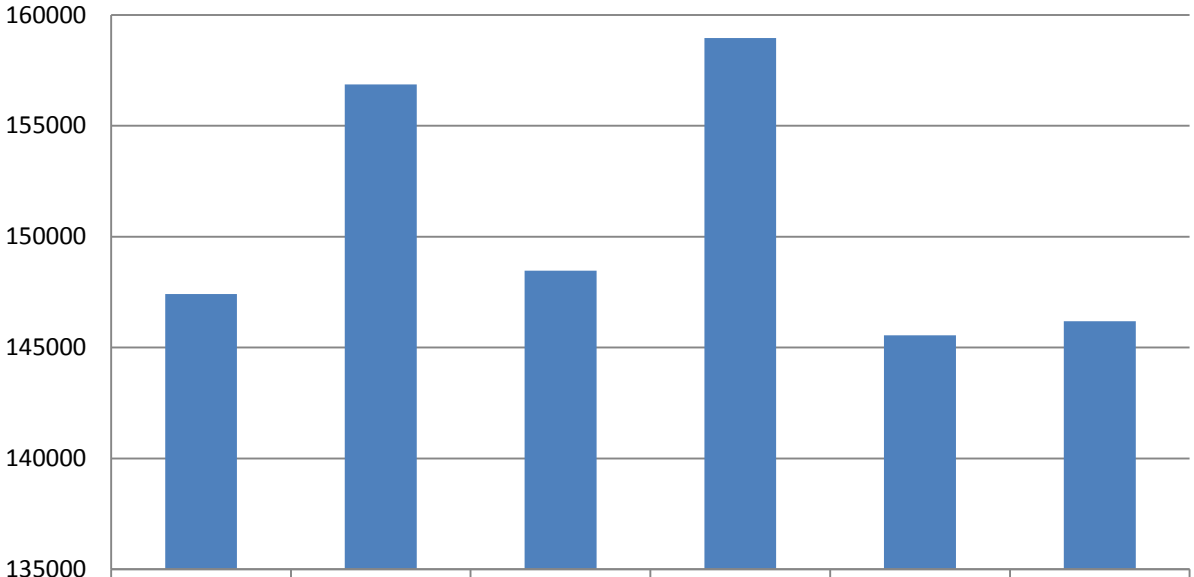
Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	973	973	973	973	973	973	973	973	973	973	973	973
Max Daily Flow (m3/d)	377	389	367	345	499	534	629	395	346	329	328	291
Avg (m3/d)	414	416	409	379	796	783	923	493	386	384	380	412

Annual Total Flow Comparison

Total Annual m3



	2015	2016	2017	2018	2019	2020
WTP (m3)	147416	156857	148472	158953	145547	146180

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
Drilled Well 2	53	0	0	0	0		
Dug Well 1	53	0	0	0	3		
Treated Water	53	0	0	0	0	0	5
Distribution Water	118	0	0	0	0	0	10

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) – RW2	11	0.36	1.2
Turbidity, In-House (NTU) – RW1	14	0.36	1.5
Turbidity, In-House (NTU) - TW	245	0.02	0.76
Turbidity, Online (NTU) – Filt1	continuous	0	0.65
Free Chlorine Residual, In-House (mg/L) - DW	353	0.21	1.33
Free Chlorine Residual, Online (mg/L) - TW	continuous	0.78	1.69

NOTE: 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
- BDL = Below the laboratory detection level

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2020/01/08	<MDL 0.5	6.0	No	No
Arsenic: As (ug/L) - TW	2020/01/08	<MDL 1.0	10.0	No	No
Barium: Ba (ug/L) - TW	2020/01/08	80.0	1000.0	No	No
Boron: B (ug/L) - TW	2020/01/08	20.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2020/01/08	<MDL 0.1	5.0	No	No
Chromium: Cr (ug/L) - TW	2020/01/08	<MDL 1.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2020/01/08	<MDL 0.1	1.0	No	No
Selenium: Se (ug/L) - TW	2020/01/08	<MDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2020/01/08	<MDL 1.0	20.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Additional Inorganics					
Fluoride (mg/L) - TW	2019/01/03	<MDL 0.1	1.5	No	No
Nitrite (mg/L) - TW	2020/01/08	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2020/04/15	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/07/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/10/21	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2020/01/08	<MDL 0.1	10.0	No	No
Nitrate (mg/L) - TW	2020/04/15	0.15	10.0	No	No
Nitrate (mg/L) - TW	2020/07/06	0.01	10.0	No	No
Nitrate (mg/L) - TW	2020/10/21	0.026	10.0	No	No
Sodium: Na (mg/L) - TW	2019/01/03	90	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 mg/L 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		MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	2	4	222	228	N/A	0
pH	2	4	7.8	7.9	N/A	0
Lead	Lead samples were collected in 2019 and will be collected again in 2024					

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.

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2020/01/08	<MDL 0.5	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2020/01/08	<MDL 1.0	5.0	No	No
Azinphos-methyl (ug/L) - TW	2020/01/08	<MDL 2.0	20.0	No	No
Benzene (ug/L) - TW	2020/01/08	<MDL 0.5	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2020/01/08	<MDL 0.01	0.01	No	Yes
Bromoxynil (ug/L) - TW	2020/01/08	<MDL 0.5	5.0	No	No
Carbaryl (ug/L) - TW	2020/01/08	<MDL 5.0	90.0	No	No
Carbofuran (ug/L) - TW	2020/01/08	<MDL 5.0	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2020/01/08	<MDL 0.2	2.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Chlorpyrifos (ug/L) - TW	2020/01/08	<MDL 1.0	90.0	No	No
Diazinon (ug/L) - TW	2020/01/08	<MDL 1.0	20.0	No	No
Dicamba (ug/L) - TW	2020/01/08	<MDL 1.0	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2020/01/08	<MDL 0.4	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2020/01/08	<MDL 0.4	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2020/01/08	<MDL 0.2	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2020/01/08	<MDL 0.5	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2020/01/08	<MDL 4.0	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2020/01/08	<MDL 0.2	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2020/01/08	<MDL 1.0	100.0	No	No
Diclofop-methyl (ug/L) - TW	2020/01/08	<MDL 0.9	9.0	No	No
Dimethoate (ug/L) - TW	2020/01/08	<MDL 2.5	20.0	No	No
Diquat (ug/L) - TW	2020/01/08	<MDL 5.0	70.0	No	No
Diuron (ug/L) - TW	2020/01/08	<MDL 10.0	150.0	No	No
Glyphosate (ug/L) - TW	2020/01/08	<MDL 10.0	280.0	No	No
Malathion (ug/L) - TW	2020/01/08	<MDL 0.5	190.0	No	No
Metolachlor (ug/L) - TW	2020/01/08	<MDL 1.0	50.0	No	No
Metribuzin (ug/L) - TW	2020/01/08	<MDL 5.0	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2020/01/08	<MDL 0.5	80.0	No	No
Paraquat (ug/L) - TW	2020/01/08	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2020/01/08	<MDL 0.1	3.0	No	No
Pentachlorophenol (ug/L) - TW	2020/01/08	<MDL 1.0	60.0	No	No
Phorate (ug/L) - TW	2020/01/08	<MDL 0.5	2.0	No	No
Picloram (ug/L) - TW	2020/01/08	<MDL 5.0	190.0	No	No
Prometryne (ug/L) - TW	2020/01/08	<MDL 0.25	1.0	No	No
Simazine (ug/L) - TW	2020/01/08	<MDL 1.0	10.0	No	No
Terbufos (ug/L) - TW	2020/01/08	<MDL 0.4	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2020/01/08	<MDL 0.3	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2020/01/08	<MDL 1.0	100.0	No	No
Triallate (ug/L) - TW	2020/01/08	<MDL 1.0	230.0	No	No
Trichloroethylene (ug/L) - TW	2020/01/08	<MDL 0.3	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2020/01/08	<MDL 1.0	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2020/01/08	<MDL 10.0	100.0	No	No
Trifluralin (ug/L) - TW	2020/01/08	<MDL 1.0	45.0	No	No
Vinyl Chloride (ug/L) - TW	2020/01/08	<MDL 0.2	1.0	No	No
Distribution Water					
Trihalomethane Total (ug/L) Annual Average - DW	2020/01/01	45.175	100.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
HAA Total (ug/L) Annual Average - DW	2020/01/01	32.4	80.0*	No	No

MAC = Maximum Allowable Concentration as per O.Reg 169/03
BDL = Below the laboratory detection level

Additional Legislated Samples

Appendix C has monthly summary data for the Additional Legislated Samples.

Legal Document	Date of Issuance	Parameter	Date Sampled	Result	Unit of measure
Municipal License #203-102	24-Sept-2020	Backwash Effluent Suspended Solids	Annual Avg.	4.00	mg/L

Major Maintenance Summary

WO #	Description
1917585	Backflow preventers
1917590	Exhaust Fan install.
1707164	Portable Analyzer Turbidity and PH Beachburg WTF

Appendix A

WTRS Data and Submission Confirmation

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: 3055-8W5KCG
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF WHITEWATER REGION.
Received on:Jan 13, 2021 10:12 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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