

Brechin and Lagoon City Drinking Water System

Waterworks # 210001273
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The Township of Ramara

Reporting Period of January 1st – December 31st, 2020

Issued: February 26, 2021

Revision: 0

Operating Authority:



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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 Ramara Administration Office and on the Township’s website at www.ramara.ca. Notification that reports are available free of charge will be made on the Township of Ramara website. The Township of Ramara Administration Office is located at 2297 Highway 12, Brechin, ON L0K 1B0.

Compliance Report Card

Drinking Water System Number: 210001273

Drinking Water System Name: Brechin and Lagoon City DWS

Drinking Water System Owner: Township of Ramara

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	November 17, 2020	Announced - Focused Drinking Water Inspection – Final Inspection Rating of 95.91%
AWQI’s	1	August 19, 2020	Treated Water Sodium result of 34.8mg/L; resample result of 31.5mg/L
Number of Non-Compliances	1	February 05, 2021	Found in MECP Inspection, continuous monitoring sample point was not in the correct location for the designed chlorine contact time.
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The Brechin and Lagoon City DWS is supplied with surface water from Lake Simcoe.

Treatment

The treatment system is a dual train conventional filtration package plant consisting of the following:

- Raw water is sourced from Lake Simcoe through an intake well with two (2) removable screens further the low lift pumping station consisting of three (3) low lift pumps
- Inlet line connected to sodium hypochlorite and a coagulant feed line diffuser
- Raw water flow meter and turbidity analyzer
- Carbon Dioxide injection system for adjusting pH to optimize coagulation process with a metering panel equipped with actuated control valve and bypass piping, gas feed flowmeter, filter, carbon dioxide gas pressure regulator and isolating manual ball valves
- Coagulant is added to the raw water intake well at the low lift pumping station
- Four (4) spiral flow flocculation tanks allows for floc to settle
- Two (2) filter-absorber units each consisting of granular activated carbon over sand and gravel with three backwash troughs and two surface water agitators and an underdrain
- Continuously monitoring turbidity analyzers on each filter line
- Waste backwash holding tank with discharge to sanitary sewer
- Chlorine injection system
- Single in-ground clearwell with five (5) highlift pumps
- Chlorine residual and pH analyzers prior to distribution connection
- Water tower
- SCADA computer control system
- Standby power generator

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag
Poly-Aluminum Chloride	Flocculation	Brenntag
Carbon Dioxide	pH Optimization	Praxair

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
August 19, 2020	151441	Treated Water	Sodium result above 20mg/L	Result of 34.8mg/L	O. Reg 170	Resample, result 31.5mg/L

Non-Compliance

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
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
O.Reg 170/03	Drinking water systems that use chlorination for primary disinfection must have continuous monitoring equipment sampling and testing for free chlorine residuals at or near a location where the intended contact time has just been completed in accordance with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario".	November 17, 2020	At the time of the physical inspection, the chlorine residual was being monitored at the beginning of the chlorine contact chamber, a location which is not at the point at which the intended contact time has been completed.	Complete.

Flows

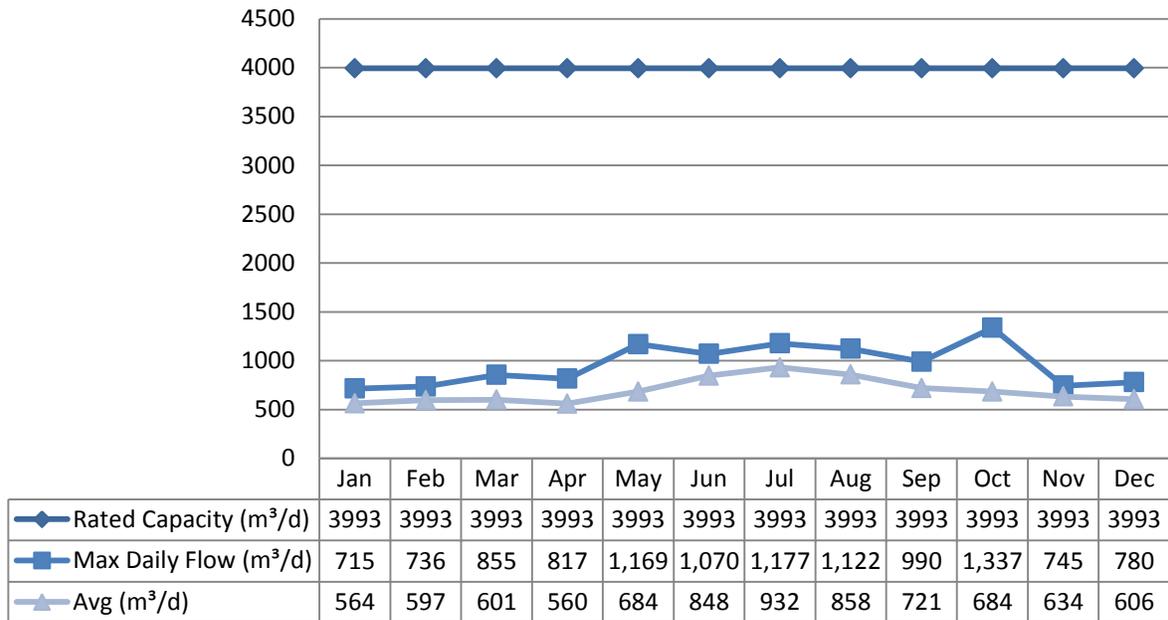
The Brechin and Lagoon City Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2020 Raw Flow Data was submitted to the Ministry electronically under permit #0278-AQ4LYS. The confirmation and a copy of the data that was submitted are attached in Appendix A.

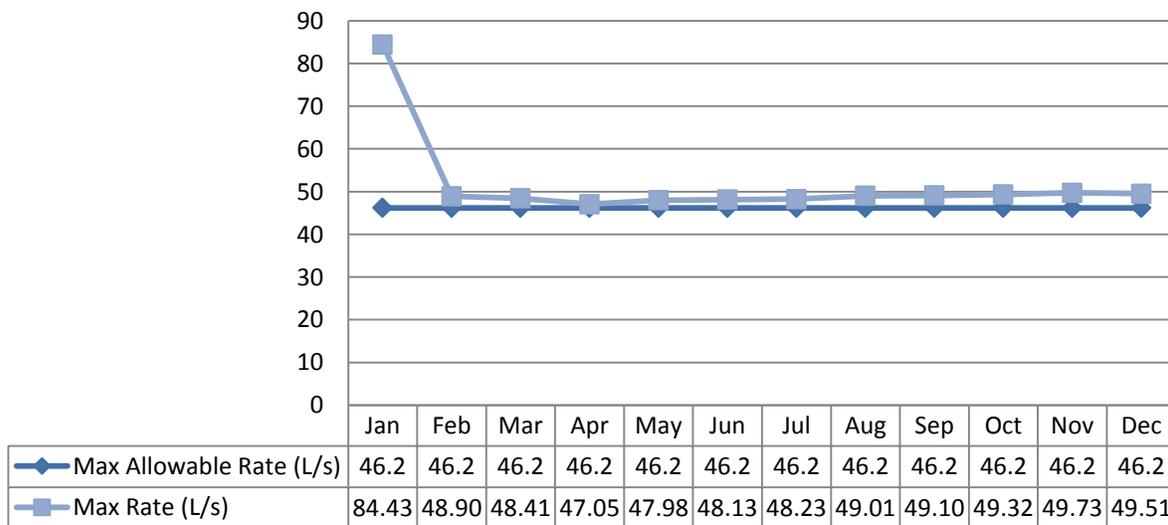
Total Monthly Flows (m³/d)

Max Allowable PTTW –Raw



Monthly Rated Flows (L/s)

Max allowable rate – PTTW –Raw



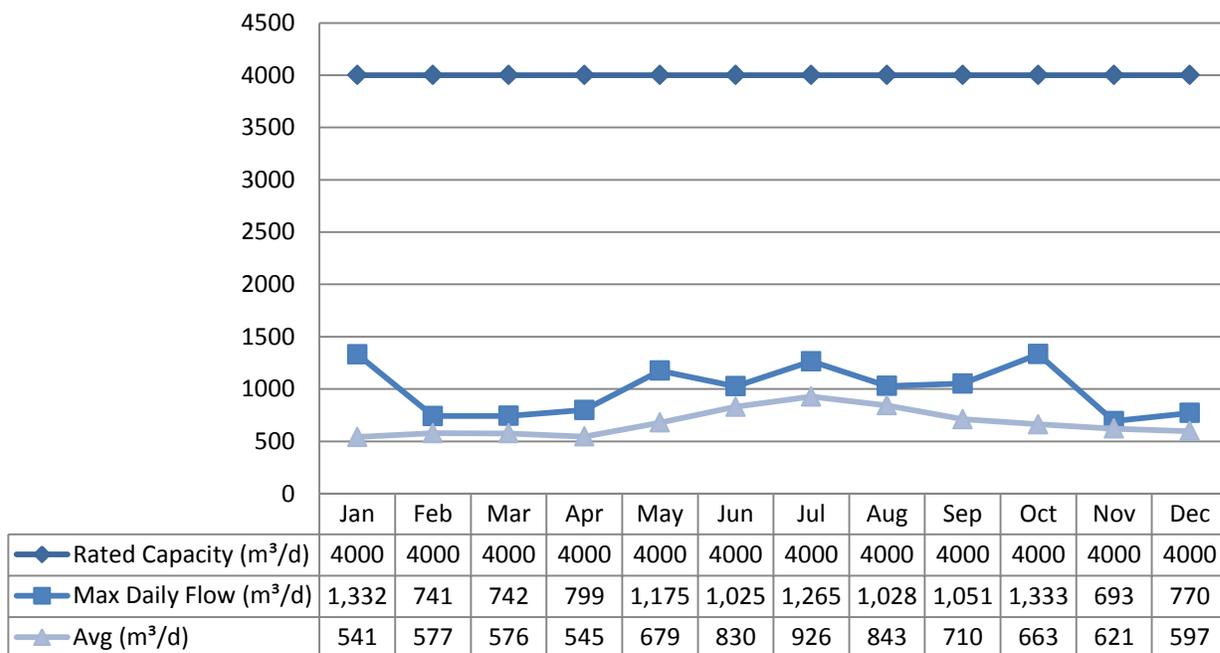
Note: The above table shows there were exceedances in instantaneous peak flow rate (L/s) caused by a communication blip in the local PLC as well as on pump start-up. The spike in January was due to scheduled Flow Meter calibration. All spikes are reviewed for compliance.

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

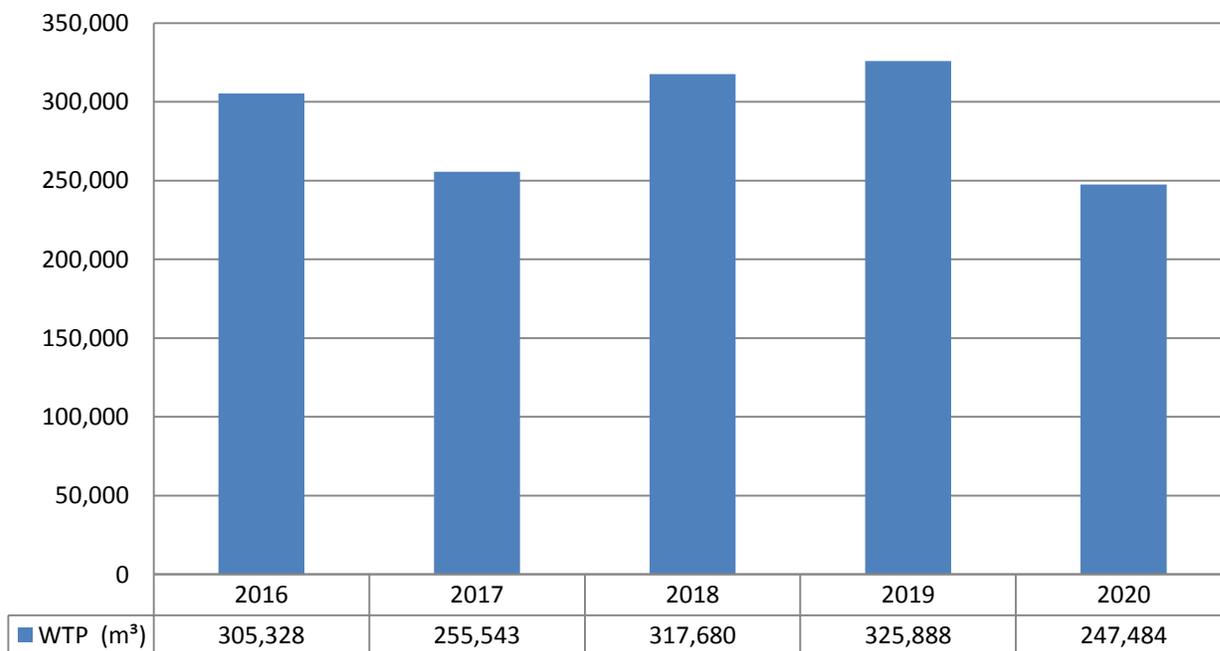
Monthly Rated Flows

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	2	0	400		
Treated	52	0	0	0	0	0	11
Distribution	156	0	0	0	0	0	69

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity – Filter Line 1 (NTU)	8760	0.00	2.00
Turbidity – Filter Line 2 (NTU)	8760	0.00	2.00
Turbidity-Treated (NTU)	8760	0.04	2.00
Treated Water Chlorine (mg/L)	8760	0.00	5.16
Distribution Water Chlorine (mg/L)	366	0.12	2.31
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.

Inorganic Parameters

These parameters are tested as a requirement under O. Reg. 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 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

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2020/08/12	0.15	6.0	No	No
Arsenic: As (ug/L) - TW	2020/08/12	0.3	10.0	No	No
Barium: Ba (ug/L) - TW	2020/08/12	28.1	1000.0	No	No
Boron: B (ug/L) - TW	2020/08/12	20.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2020/08/12	<MDL 0.003	5.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances	
				MAC	1/2 MAC
Chromium: Cr (ug/L) - TW	2020/08/12	0.16	50.0	No	No
Mercury: Hg (ug/L) - TW	2020/08/12	<0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2020/08/12	0.7	50.0	No	No
Uranium: U (ug/L) - TW	2020/08/12	0.287	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2017/08/15	0.07	1.5	No	No
Nitrite (mg/L) - TW	2020/02/26	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/05/05	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/08/12	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/11/19	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2020/02/26	0.153	10.0	No	No
Nitrate (mg/L) - TW	2020/05/05	0.108	10.0	No	No
Nitrate (mg/L) - TW	2020/08/12	0.044	10.0	No	No
Nitrate (mg/L) - TW	2020/11/19	0.061	10.0	No	No
Sodium: Na (mg/L) - TW	2020/08/12	34.8	20*	Yes	Yes
Sodium: Na (mg/L) - TW	2020/08/24	31.5	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. No plumbing samples were collected.

Distribution System	Number of Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	7	107	121	N/A	N/A
pH	7	7.27	7.67	N/A	N/A
Lead (ug/l)					

Note: Lead samples were last collected in the distribution system in 2019 as they are only required to be sampled every 36 months. Samples shown above are reflective of lead sampling period- from October 2019- October 2020.

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	2020/08/12	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2020/08/12	<MDL 0.02	5.00	No	No
Azinphos-methyl (ug/L) - TW	2020/08/12	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2020/08/12	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2020/08/12	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2020/08/12	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2020/08/12	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2020/08/12	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2020/08/12	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW	2020/08/12	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2020/08/12	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2020/08/12	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2020/08/12	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2020/08/12	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2020/08/12	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2020/08/12	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2020/08/12	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2020/08/12	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4- D) (ug/L) - TW	2020/08/12	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2020/08/12	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2020/08/12	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW	2020/08/12	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2020/08/12	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2020/08/12	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2020/08/12	<MDL 0.02	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA) (ug/L)	2020/08/12	<MDL 0.19	100.00	No	No
Metolachlor (ug/L) - TW	2020/08/12	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2020/08/12	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2020/08/12	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2020/08/12	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2020/08/12	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2020/08/12	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2020/08/12	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2020/08/12	<MDL 1.0	190.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Prometryne (ug/L) - TW	2020/08/12	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2020/08/12	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2020/08/12	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2020/08/12	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2020/08/12	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2020/08/12	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2020/08/12	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2020/08/12	<MDL 0.25	5.00	No	No
Trifluralin (ug/L) - TW	2020/08/12	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2020/08/12	<MDL 0.17	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average - DW	2020 Annual Average	69.6	100	No	Yes
HAA Total (ug/L) Annual Average - DW	2020 Annual Average	49.30	80	No	Yes

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
No additional legislated samples required.				

Inorganic or Organic Parameter Exceedances

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
Trihalomethane: Total (ug/L) Annual Average	69.6	ug/L	2020 Annual Average
HAA Total (ug/L) Annual Average	49.30	ug/L	2020 Annual Average

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

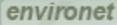
Item Number #	Description
1	Clean lowlift tank and backwash tank.
2	New raw water turbidity supply pump.
3	Replace curb stop 13 Pinetree Crt
4	Replace fall arrest system on water tower.
5	New multifunction valves on chlorine pumps.
6	Install chlorine analyser and new probe at pump station 8 for distribution chlorine monitoring.

Appendix A

WTRS Data Submission Confirmation

Appendix A

WTRS Submission Confirmation



Ministry of the Environment,
Conservation and Parks

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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: 0278-AQ4LYS
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF RAMARA.
Received on: Feb 12, 2021 12:00 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.