

# Renfrew Drinking Water System

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Waterworks # 210001102  
System Category – Large Municipal Residential

## Annual Water Report

Prepared For: Municipality of the Town of Renfrew

Reporting Period of January 1<sup>st</sup> – December 31<sup>st</sup> 2022

Issued: February 28th, 2023

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 Town of Renfrew Municipal Office. Notification will be at the Municipal Office and copies provided free of charge if requested. The Town of Renfrew Municipal Office is located at 127 Raglan St. S., Renfrew, ON K7V 1P8.

## Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	Ministry Inspections on December 8 <sup>th</sup> 2021
Municipal Drinking Water Licence Drinking Water Works Permit	New Expiry Date 2026-03-29
Ministry of Labour Inspections	No Inspections during the reporting period
QEMS External Audit	One (1) External On-Site Audit was completed
AWQI's	Two (2) AWQI during the reporting period
Non-Compliance	No Non-Compliance during the reporting period
Spills	No spills during the reporting period

## System Process Description

### Raw Source

The source water for the Renfrew Drinking Water System (DWS) is the Bonnechere River. The low lift pumping station was constructed over the wet well, and is situated next to the Bonnechere River, across the street from the Renfrew DWS. The wet well is equipped with a bar screen. Raw water is drawn from the wet well and discharged into a raw water header and conveyed to the plant for treatment. Turbidity, pH and temperature meters have been installed at this point to collect raw water data.

### Treatment

Raw water is treated with coagulant and a coagulant aid (polymer). The powdered activated carbon (PAC) system is currently not in use. The raw water is directed to the flash mixers and proceeds through the Actiflo treatment system, which consists of coagulation, flocculation and sedimentation assisted by tube settlers.

Water is directed to three dual media (sand/anthracite) high-rate gravity filters. All three filters are connected to a common backwash system that includes filter-to-waste valves, backwash troughs and underdrain systems. The filters are equipped with one positive displacement air scour blower.

Filtered water is treated with chlorine gas (for disinfection), hydrated lime (for pH adjustments) and Hydrofluorosilicic acid (fluoride) just prior to being directed to the Clearwells. Two baffled Clearwells are in use to provide treated water storage and the treated water is pumped from the Clearwells to the distribution system.

There are two wastewater generating processes; filter backwashing and waste residuals from the Actiflo treatment system. Filter backwash effluent is directed to two settling tanks. The supernatant from the settling tank is discharged to the Bonnechere River via the municipal storm sewer and the sludge from the settling tank is pumped to the municipal sanitary sewer system.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
PAS-8	Primary Coagulation	Kemira
Polymer	Coagulant Aid	BASF
Hydrated Lime	pH Adjustment	M & R Feeds (Sylvite)
Chlorine Gas	Disinfection	Brenntag
Hydrofluorosilic Acid	Fluoridation	Brenntag
Micro-Sand	Process	Veolia

**Distribution**

The distribution for the Town of Renfrew serves a population of approximately 8,000 residents. The system includes a 6,820 m<sup>3</sup> capacity standpipe, complete with water remixing, located on O'Brian Road. The standpipe is operated by the OCWA.

## Summary of Non-Compliance

### Adverse Water Quality Incidents

Date	AWQI #	Details	Legislation	Corrective Action Taken
February 3 2022	157763	1 total coliform count on a distribution sample	O.Reg. 170/03	Sampled upstream and downstream as per the MECP requirements
October – December 2022 Q4	161077	Rolling annual average for Trihalomethane (THM)	O.Reg. 170/03	Pre-chlorination is now turned off and only used for seasonal operational challenges

### Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure	Corrective Action	Status
No non-compliances during the reporting period				

### Spill Incident

Date	Location	Details	Corrective Action
No spills 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
Ministry Inspections on December 8th 2021. No MECP Inspection in 2022				

## Flows

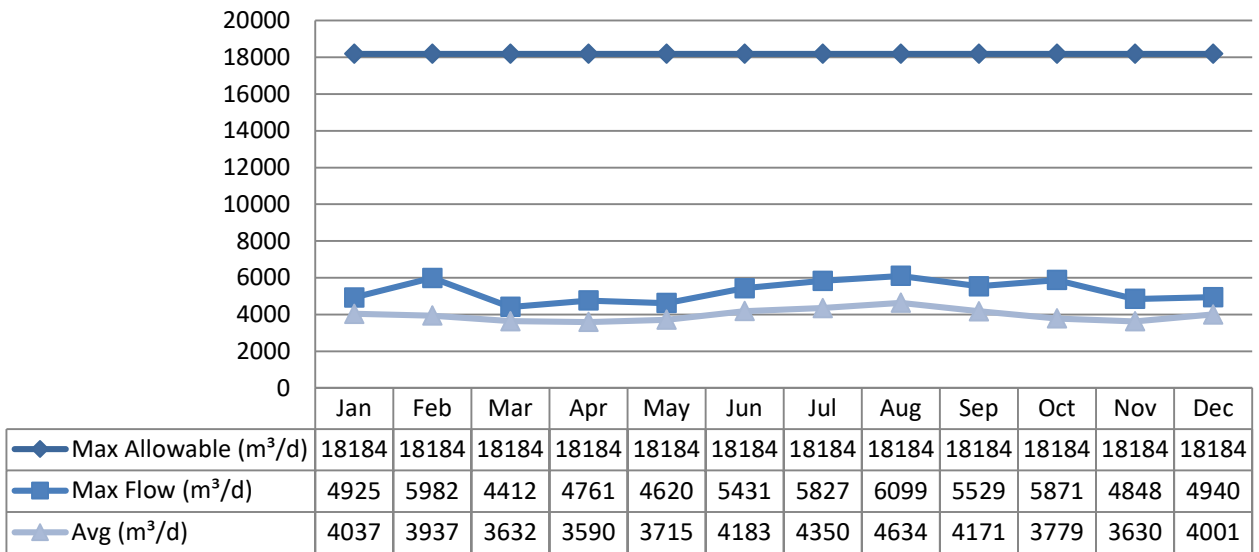
The Renfrew Drinking Water System is operating on average under half the rated capacity.

### Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2022 Raw Flow Data was submitted to the Ministry electronically under permit #8088-9AXJ6C. The confirmation is attached in Appendix A.

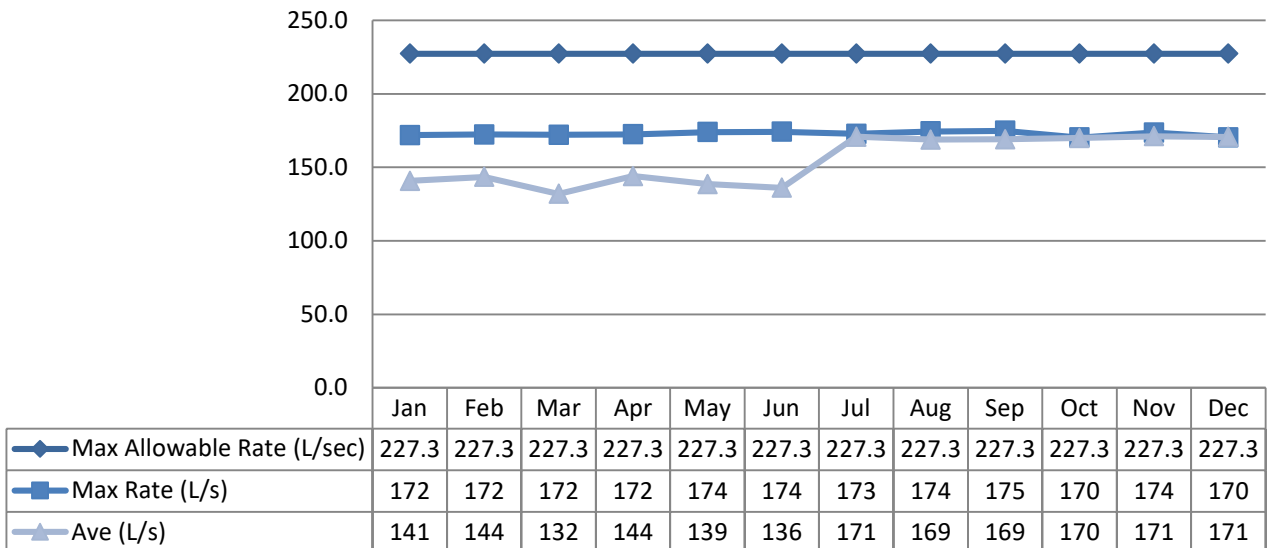
#### Total Monthly Flows (m<sup>3</sup>/d)

Max Allowable PTTW



#### Monthly Rated Flows (L/s)

Max allowable rate - PTTW

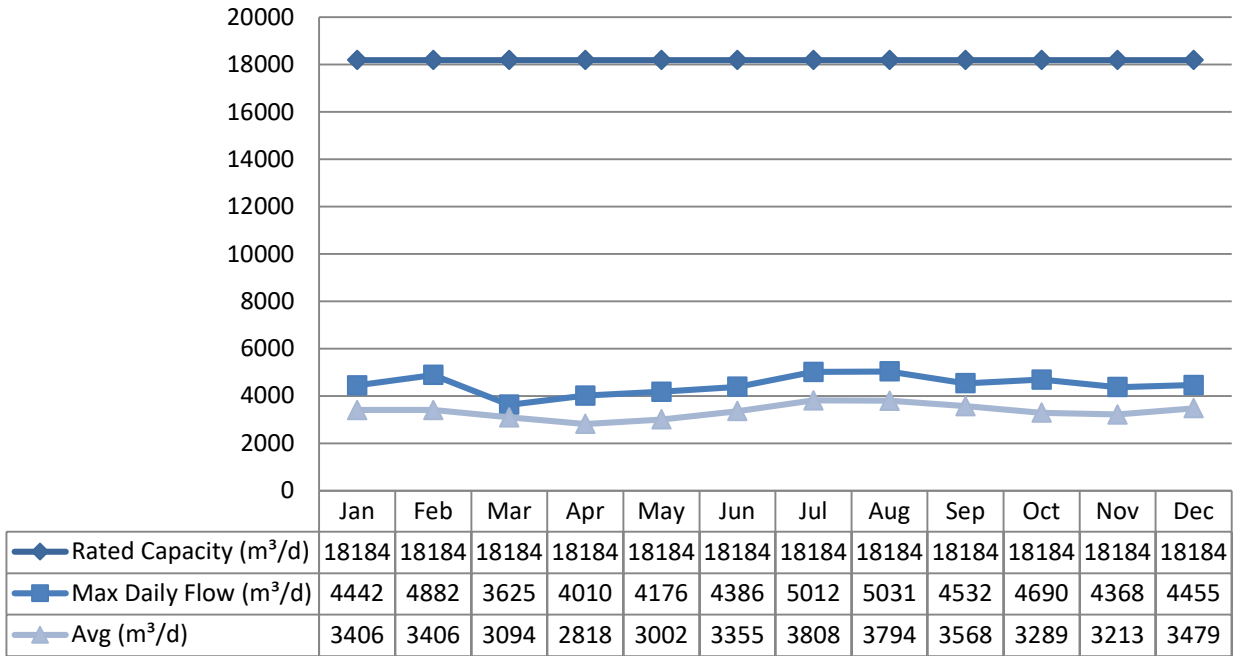


## Treated Water Flows

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

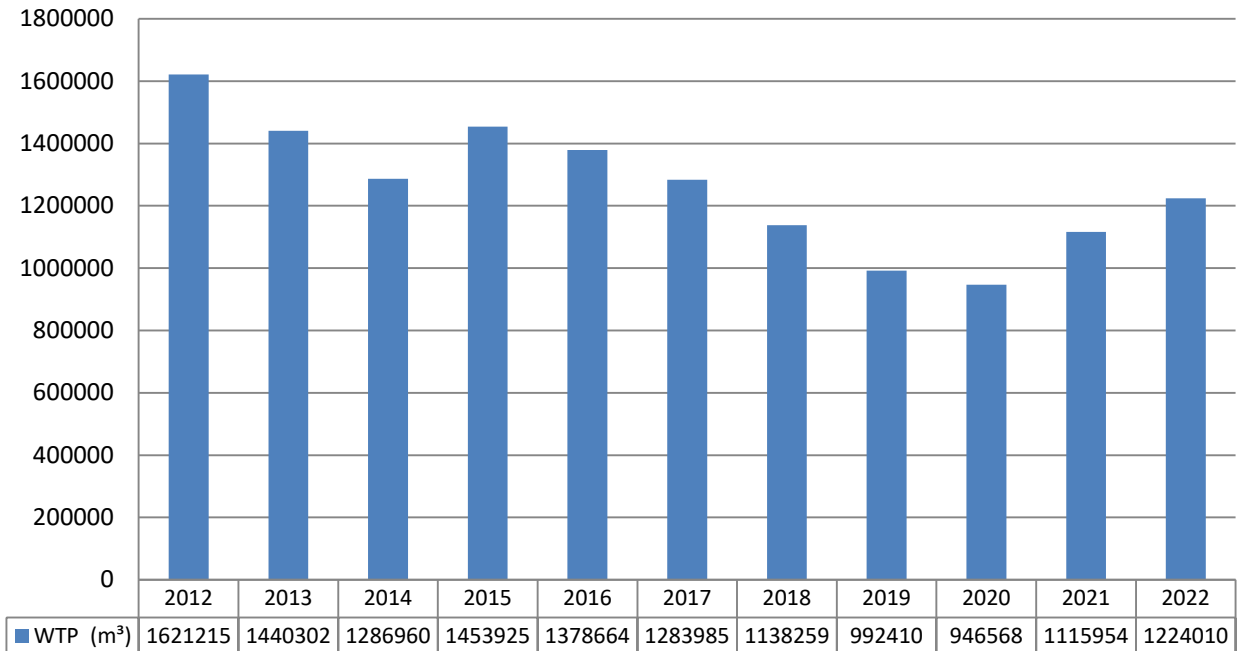
### Monthly Rated Flows

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		# of HPC Samples Collected	Range of HPC Results	
		Min	Max	Min	Max		Min	Max
Raw Water	51	0	200	2	970			
Treated Water	51	0	0	0	0	51	2	4
Distribution Water	208	0	0	0	8	104	2	32

### Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	113	1.27	276
Turbidity, In-House (NTU) - TW	111	0.11	1.26
Turbidity, On-Line (NTU) - Filt1	8760	0.0	1.28
Turbidity, On-Line (NTU) - Filt2	8760	0.0	0.86
Turbidity, On-Line (NTU) - Filt3	8760	0.0	0.91
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.46	3.48
Free Chlorine Residual, In-House (mg/L) - TW	340	0.76	3.30
Free Chlorine Residual, TW Field (mg/L) Lab Upload - TW	51	1.14	2.50
Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.16	2.57
Free Chlorine Residual, DW Field (mg/L) Lab Upload - DW	208	0.17	1.98
Fluoride Residual, On-Line (mg/L) - TW	8760	0.171	1.02
Fluoride Residual, In-House (mg/L) - TW	106	0.085	1.35
Fluoride Residual, Lab Upload (mg/L) -TW	12	0.4	0.7

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

### Laboratory Testing

Parameter	# of grab samples taken	Range of Results (min # - max #)
<b>Raw Water</b>		
Alkalinity	12	53 - 147 mg/l
Colour	12	14 - 38 TCU
Dissolved Organic Carbon (DOC)	12	6.1 – 11.8 mg/L
Fluoride	12	0.1 mg/L
Iron	12	0.013 - 0.226 mg/L
Manganese	12	0.012 - 0.526
pH	12	6.69 - 8.00
<b>Treated Water</b>		
Alkalinity	12	16 - 140 mg/L
Aluminum	12	10 - 150



Parameter	# of grab samples taken	Range of Results (min # - max #)
Colour	12	0 – 77 TCU
Conductivity	12	190 - 425
Dissolved Organic Carbon (DOC)	12	2.7 – 6.9 mg/L
Fluoride	12	0.4 – 0.7 mg/L
Iron	12	0.005 - 0.09 mg/L
Manganese	12	0.008 - 0.37
pH	12	6.79 – 7.72
Hardness (as CaCO <sub>3</sub> )	12	72 - 170 mg/L

### Inorganic Parameters

These parameters are tested as a requirement under 170/03. Sodium and Fluoride are required to be tested every five (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
<b>Treated Water</b>					
Antimony: Sb (ug/L) - TW	2022/01/18	<MDL 0.1	6.0	No	No
Arsenic: As (ug/L) - TW	2022/01/18	0.1	10.0	No	No
Barium: Ba (ug/L) - TW	2022/01/18	31.0	1000.0	No	No
Boron: B (ug/L) - TW	2022/01/18	5.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2022/01/18	<MDL 0.02	5.0	No	No
Chromium: Cr (ug/L) - TW	2022/01/18	<MDL 2.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2022/01/18	<MDL 0.02	1.0	No	No
Selenium: Se (ug/L) - TW	2022/01/18	<MDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2022/01/18	<MDL 0.05	20.0	No	No
<b>Additional Inorganics</b>					
Fluoride (mg/L) - TW	2022/12/06	0.6	1.5	No	No
Nitrite (mg/L) - TW	2022/02/14	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/05/17	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/08/23	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/11/15	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2022/02/14	<MDL 0.1	10.0	No	No
Nitrate (mg/L) - TW	2022/05/17	<MDL 0.1	10.0	No	No
Nitrate (mg/L) - TW	2022/08/23	<MDL 0.1	10.0	No	No
Nitrate (mg/L) - TW	2022/11/15	<MDL 0.1	10.0	No	No
Sodium: Na (mg/L) - TW	2021/01/12	8.6	20	No	Yes

Schedule 15 Distribution Sampling:

This sampling and reporting is completed by the Town of Renfrew. Results are as follows:

Date Sampled	Sampling Location	Sample Type	Lead Results (mg/L)		Alkalinity Result (mg/L)	pH Result
			1st Litre	2nd Litre if plumbing		
06/27/22	Hydrant – FH -8-1 (Lisgar)	Distribution			89	7.47
06/27/22	Hydrant – FH – 9-10 (Ma-te-Way)	Distribution			94	7.55
06/27/22	Hydrant – FH 9-8 (Vimy)	Distribution			93	7.52
03/15/22	Hydrant – PFH-10-5 (Gibbons)	Distribution			58	7.48
03/15/22	Hydrant – FH-10-1 (Gibbons)	Distribution			59	7.5
03/15/22	Hydrant – PFH-11-15 (Booth)	Distribution			59	7.5
12/15/22	Hydrant – FH-2-21 (Mason)	Distribution			70	7.40
12/15/22	Hydrant – FH-2-30 (Aberdeen)	Distribution			78	7.48
12/15/22	Hydrant – FH-2-25 (Stewart)	Distribution			74	7.44

**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
<b>Treated Water</b>					
Alachlor (ug/L) - TW	2022/01/18	<MDL 0.3	5.00	No	No
Azinphos-methyl (ug/L) - TW	2022/01/18	<MDL 1.0	20.00	No	No
Benzene (ug/L) - TW	2022/01/25	<MDL 0.5	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2022/01/18	<MDL 0.006	0.01	No	No
Bromoxynil (ug/L) - TW	2022/01/18	<MDL 0.5	5.00	No	No
Carbaryl (ug/L) - TW	2022/01/18	<MDL 3.0	90.00	No	No
Carbofuran (ug/L) - TW	2022/01/18	<MDL 1.0	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2022/01/25	<MDL 0.2	2.00	No	No
Chlorpyrifos (ug/L) - TW	2022/01/18	<MDL 0.5	90.00	No	No
Diazinon (ug/L) - TW	2022/01/18	<MDL 1.0	20.00	No	No
Dicamba (ug/L) - TW	2022/01/18	<MDL 1.0	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2022/01/25	<MDL 0.5	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2022/01/25	<MDL 0.5	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2022/01/25	<MDL 0.5	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2022/01/25	<MDL 0.5	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2022/01/25	<MDL 5.0	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2022/01/18	<MDL 0.2	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2022/01/18	<MDL 1.0	100.00	No	No
Diclofop-methyl (ug/L) - TW	2022/01/18	<MDL 0.9	9.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Dimethoate (ug/L) - TW	2022/01/18	<MDL 1.0	20.00	No	No
Diquat (ug/L) - TW	2022/01/18	<MDL 5.0	70.00	No	No
Diuron (ug/L) - TW	2022/01/18	<MDL 5.0	150.00	No	No
Glyphosate (ug/L) - TW	2022/01/18	<MDL 25.0	280.00	No	No
Malathion (ug/L) - TW	2022/01/18	<MDL 5.0	190.00	No	No
Metolachlor (ug/L) - TW	2022/01/18	<MDL 3.0	50.00	No	No
Metribuzin (ug/L) - TW	2022/01/18	<MDL 3.0	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2022/01/25	<MDL 0.5	80.0	No	No
Paraquat (ug/L) - TW	2022/01/18	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2022/01/18	<MDL 0.05	3.00	No	No
Pentachlorophenol (ug/L) - TW	2022/01/18	<MDL 0.2	60.00	No	No
Phorate (ug/L) - TW	2022/01/18	<MDL 0.3	2.00	No	No
Picloram (ug/L) - TW	2022/01/18	<MDL 5.0	190.00	No	No
Prometryne (ug/L) - TW	2022/01/18	<MDL 0.1	1.00	No	No
Simazine (ug/L) - TW	2022/01/18	<MDL 0.5	10.00	No	No
Terbufos (ug/L) - TW	2022/01/18	<MDL 0.5	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2022/01/25	<MDL 0.5	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022/01/18	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2022/01/18	<MDL 10.0	230.00	No	No
Trichloroethylene (ug/L) - TW	2022/01/25	<MDL 0.5	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2022/01/18	<MDL 0.2	5.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA)(ug/L) - TW	2022/01/18	<MDL 10.0	100	No	No
Trifluralin (ug/L) - TW	2022/01/18	<MDL 0.5	45.00	No	No
Vinyl Chloride (ug/L) - TW	2022/01/25	<MDL 0.2	1.00	No	No
<b>Distribution Water</b>					
Trihalomethane: Total (ug/L) Annual Running Average - DW	2022	101.75	100.00	No	No
Haloacetic Acid: HAA (ug/L) Annual Running Average-DW	2022	77.6	80.0	No	No

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

### Additional Legislated Samples

Legal Document	Date of Issuance	Parameter	Date Sampled	Result	Unit of measure	Limit
Municipal License 183-101 Issue #3	2015-12-16	Actiflo Suspended Solids	Annual Avg.	11.1	mg/L	25.0 mg/L
Municipal License 183-101 Issue #3	2015-12-16	Backwash Effluent Suspended Solids	Annual Avg.	16.1	mg/L	25.0 mg/L



## Major Maintenance Summary

WO #	Description
2638109	Miscellaneous Capital Items < \$200
2638120	Miscellaneous Capital Items < \$200
2916823	Capital Chlorinator Service Repair/Replace
2637948	Capital Replacement Float Switch
2637996	Capital Filter Media Top Off
2638108	Miscellaneous Capital Items < \$200
2638113	Miscellaneous Capital Items < \$200
2639077	Capital Level Sensor Replacements
2639082	Capital Coagulant Tank Level Sensors Replacement
2639087	Capital Milwaukee 1/2" High Torque Impact Wrench
2639556	Capital Control and Power Wire Ran for Actiflo pH Analyzers
2678108	Capital Actiflo pH Probes PLC Integration
2679329	Capital Top Loading Weigh Scale
2679349	Capital Handheld pH Electrode
2721392	Capital Clearwell 2 Level Sensor Replacement
2727044	Capital Treated Water pH Probe
2727045	Capital Pre Reservoir pH Probe Replacement
2774833	Capital PLC ACP-100 Ethernet Switch Replacement
3063351	Capital Hydrostatic Test SCBA Tanks
3063361	Capital Low Lift #3 Replacement
3064512	Capital Boilers Not Starting
3064790	Capital Backup SCADA Computer
3064817	Capital Louver Actuator for Generator Room
3066454	Capital Sand and Sludge Removal
3066635	Capital DWQMS SAI Global External Audit
3068799	Capital Filter 3 Pneumatic Actuator
3105526	Capital Cl <sub>2</sub> , Polymer, Air, Solenoids
3107890	Capital Free and Total Cl <sub>2</sub> SCG Probes

WO #	Description
3109155	Capital Prominent pH Probe Replacement
3145664	Capital Portable Hach pH Probe Replacement
3146231	Capital Cl <sub>2</sub> Gas Detector Replacement
3146234	Capital Cl <sub>2</sub> Gas Detector Installation And Calibration
2819175	Capital Annual Boiler Inspection
2822331	Capital SCADA Update Capital Controls
2822369	Capital Filter Valve Programming Correction By Capital Controls
2871030	Capital Lime Auger Feed Motor and Brushes
2872581	Capital Actiflo 1 pH Probe Replacement
2873762	Capital Repair Leaking Polymer Mixing Water Valves
2916819	Capital Floor Strip And Wax
2965993	Capital Recirculation Pump Rebuild

# Appendix A

## WTRS Data and Submission Confirmation



Ministry of the Environment,  
Conservation and Parks

| [WT DATA](#) | [USER PROFILE](#) | [CONTACT US](#) | [HELP](#) | [HOME](#) | [LOGOUT](#) |

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: 8088-9AXJ6C  
Permit Holder: THE CORPORATION OF THE TOWN OF RENFREW.  
Received on: Feb 15, 2023 1:56 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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