

Renfrew Drinking Water System

Waterworks # 210001102
System Category – Large Municipal Residential

Annual Water Report

Prepared For: Municipality of the Town of Renfrew

Reporting Period of January 1st – December 31st 2021

Issued: February 25, 2022

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

Table of Contents

Report Availability	1
Compliance Report Card	1
System Process Description	1
Raw Source	1
Treatment	1
Treatment Chemicals used during the reporting year	2
Distribution	2
Summary of Non-Compliance	2
Adverse Water Quality Incidents.....	2
Non-Compliance	2
Spill Incident	3
Non-Compliance Identified in a Ministry Inspection.....	3
Flows	3
Raw Water Flows.....	4
Total Monthly Flows (m ³ /d)	4
Monthly Rated Flows (L/s)	4
Treated Water Flows	5
Monthly Rated Flows	5
Annual Total Flow Comparison	5
Regulatory Sample Results Summary	6
Microbiological Testing.....	6
Operational Testing	6
Laboratory Testing.....	6
Inorganic Parameters	7
Schedule 15 Distribution Sampling:	8
Organic Parameters	8
Additional Legislated Samples	9
Major Maintenance Summary	9
WTRS Data and Submission Confirmation	A

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 th 2021
Municipal Drinking Water Licence Drinking Water Works Permit	Renewal of Licences completed in 2021 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	One (1) AWQI during the reporting period
Non-Compliance	Two (2) 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. Water is drawn from the wet well and discharged into a raw water force main. 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. The powdered activated carbon (PAC) system is currently not in use. The water is directed to the flash mixers and then 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 valving, 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.

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 8000 residents. The system includes a 6820 m³ 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
2021-03-26	153768	Due to a major rain event, the source water of the Bonnechere River was disturbed. Compliance trends indicated that there was an exceedance of 1.00 NTU >15minutes on filters	Reg. 170/03	Process changes including reducing flow rates through the plant, employing filter to waste, adjusting coagulant and polymer. Flushing and validation on the turbidity meters was completed

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure	Corrective Action	Status
MDWL	Monthly Filter Backwash Sample	June 2021	Reviewed Sample Calendar	Closed
MDWL	Monthly Actiflo Supernatant	June 2021	Reviewed Sample Calendar	Closed
MDWL	Annual Total Chlorine for Filter Backwash Sample	2021	Process Optimization	Ongoing

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
Backflow Prevention	There is no backflow prevention program, policy and/or bylaw in place. Although all water meters within the municipality are able to detect backflow, there is no proactive program that requires backflow preventers to be installed at existing facilities or that has an active maintenance, testing and reporting program associated with the devices	2021	<u>RECOMMENDATION:</u> It is recommended that the Municipality develops a program, policy and/or by-law sufficient to address the issues of backflow preventers at high hazard facilities as well as crossconnections with non-potable water sources	Ongoing
MDWL	Missed Monthly Filter Backwash Sample	June 2021	Reviewed Sample Calendar	Closed
MDWL	Missed Monthly Actiflo Supernatant	June 2021	Reviewed Sample Calendar	Closed
MDWL	Annual Total Chlorine for Filter Backwash Sample	2021	Process Optimization	Ongoing
DWWP	A review of records, including copies of the "Watermain Repair Worksheet" completed during the inspection period to track watermain and service connection repairs, confirms all parts of the drinking water system were disinfected in accordance with the DWWP.		<u>RECOMMENDATION:</u> It is recommended that the Owner consider implementing in-house, site specific procedures for the distribution system while ensuring the requirements outlined in Ontario's 2020 Watermain Disinfection Procedure are met.	Ongoing
O. Reg 170/03	All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were not met. Sampling requirements prescribed by schedule 15.1 of O. Reg. 170/03 were not met for the June 15, 2021 to October 15, 2021 sampling period.	Fall 2021	Review of sampling procedures	Closed

Flows

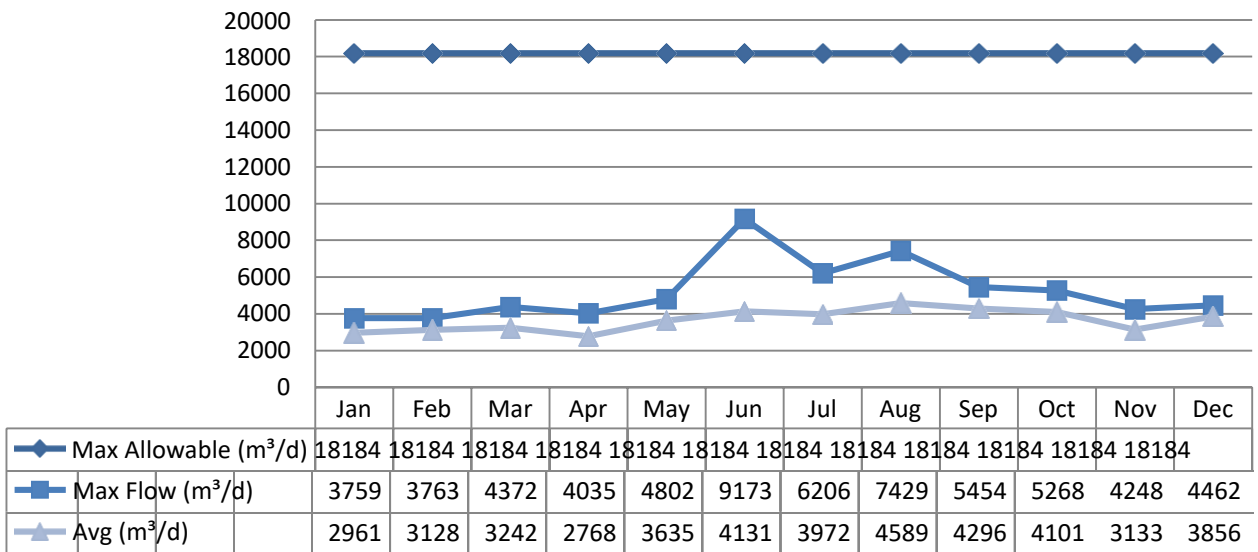
The Renfrew Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2021 Raw Flow Data was submitted to the Ministry electronically under permit #8088-9AXJ6C. The confirmation is attached in Appendix A.

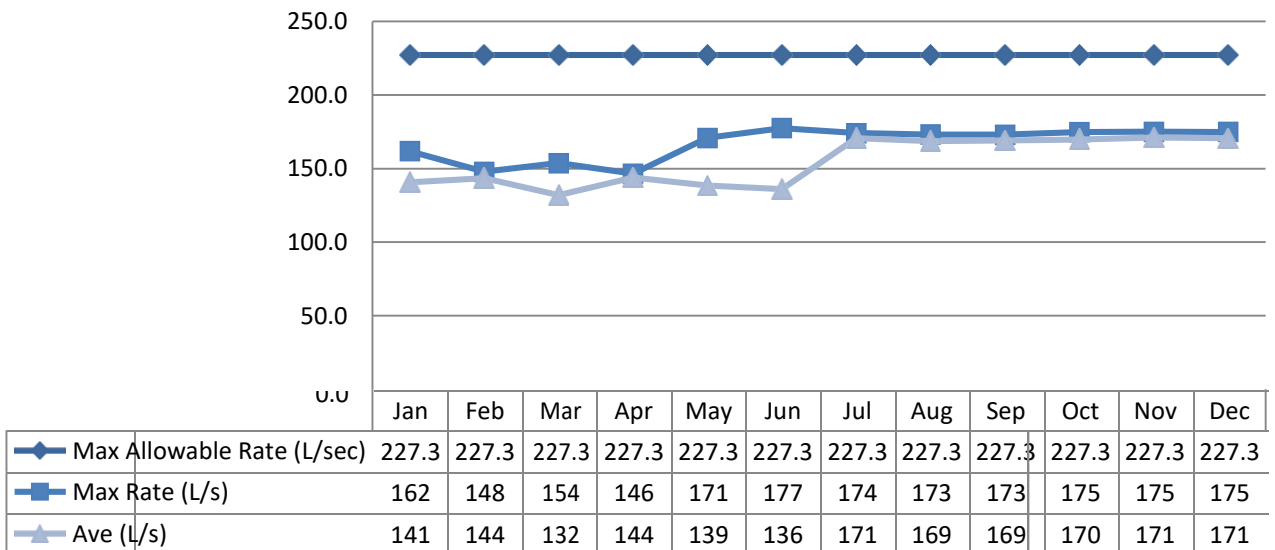
Total Monthly Flows (m³/d)

Max Allowable PTTW



Monthly Rated Flows (L/s)

Max allowable rate - PTTW

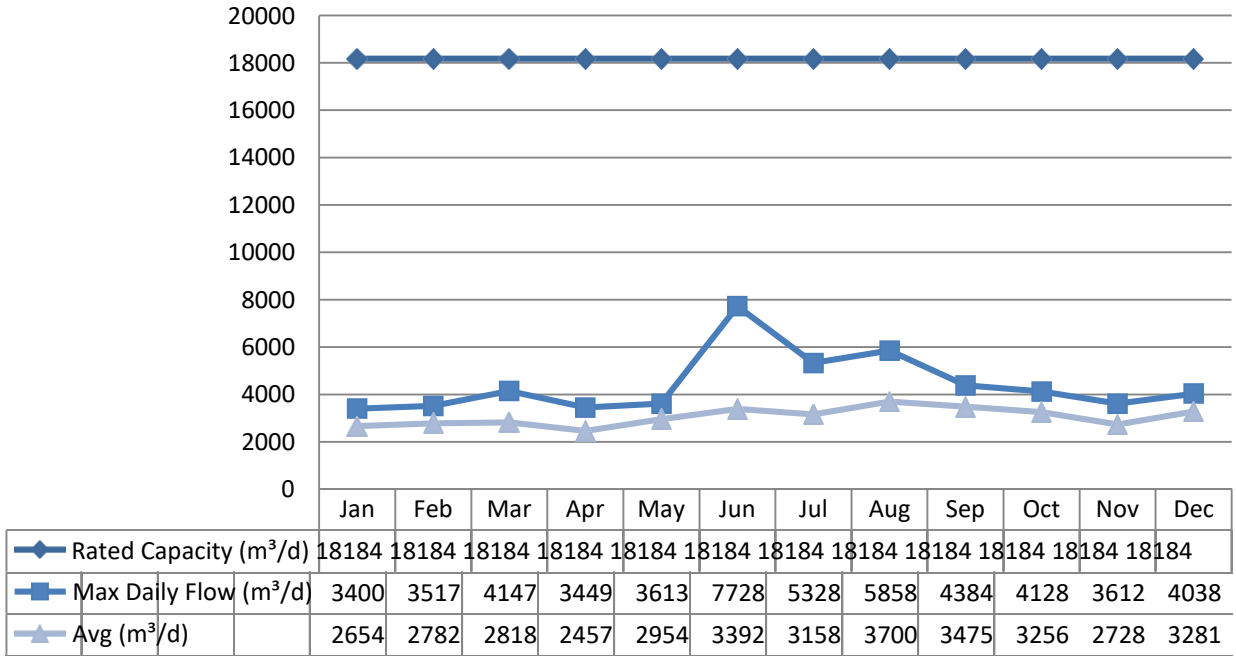


Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

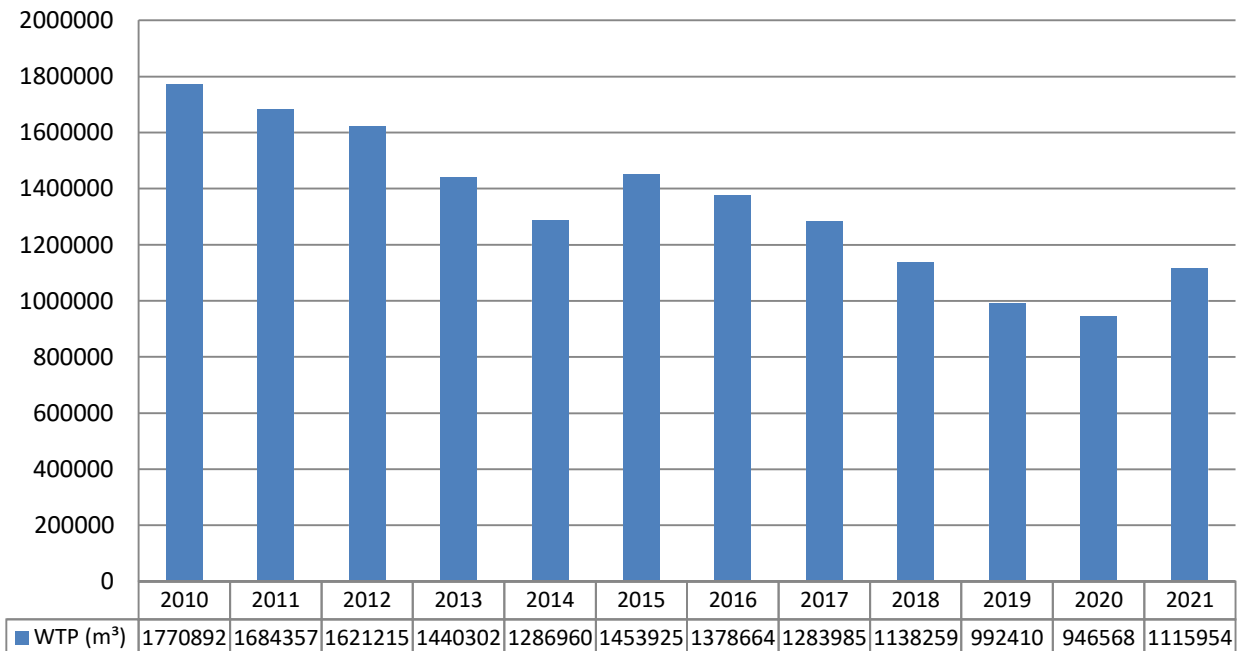
Monthly Rated Flows

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	52	0	140	10	690			
Treated Water	54	0	0	0	0	54	2	80
Distribution Water	208	0	0	0	0	104	2	32

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	112	1.45	50
Turbidity, In-House (NTU) - TW	111	0.10	1.00
Turbidity, On-Line (NTU) - Filt1	8760	0.009	1.061
Turbidity, On-Line (NTU) - Filt2	8760	0.002	1.62
Turbidity, On-Line (NTU) - Filt3	8760	0.00	0.88
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.71	3.05
Free Chlorine Residual, In-House (mg/L) - TW	318	1.21	2.40
Free Chlorine Residual, TW Field (mg/L) Lab Upload - TW	54	1.22	2.19
Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.00	3.88
Free Chlorine Residual, DW Field (mg/L) Lab Upload - DW	208	0.14	1.99
Fluoride Residual, On-Line (mg/L) - TW	8760	0.00	2.00
Fluoride Residual, In-House (mg/L) - TW	94	0.00	0.87
Fluoride Residual, Lab Upload (mg/L) -TW	12	0.1	0.8

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 #)
Raw Water		
Alkalinity	12	52 - 94 mg/l
Colour	12	2 - 22 TCU
Dissolved Organic Carbon (DOC)	12	2.7 – 9.7 mg/L
Fluoride	12	0.1 mg/L
Iron	12	0.063 - 0.188 mg/L
Manganese	12	0.004 - 0.054
pH	12	7.02 - 8.05
Treated Water		
Alkalinity	12	45 - 82 mg/L
Aluminum	12	50 - 150

Parameter	# of grab samples taken	Range of Results (min # - max #)
Colour	12	2 - 2 TCU
Conductivity	12	178 - 291
Dissolved Organic Carbon (DOC)	12	2.7 – 5.9 mg/L
Fluoride	12	0.1 - 08 mg/L
Iron	12	0.005 - 0.0180 mg/L
Manganese	12	0.003 - 0.019
pH	12	6.75 – 8.10
Hardness (as CaCO ₃)	12	68 - 108 mg/L

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	2021/01/19	<MDL 0.1	6.0	No	No
Arsenic: As (ug/L) - TW	2021/01/19	0.1	10.0	No	No
Barium: Ba (ug/L) - TW	2021/01/19	29.0	1000.0	No	No
Boron: B (ug/L) - TW	2021/01/19	6.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2021/01/19	<MDL 0.02	5.0	No	No
Chromium: Cr (ug/L) - TW	2021/01/19	<MDL 2.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2021/01/19	<MDL 0.02	1.0	No	No
Selenium: Se (ug/L) - TW	2021/01/19	<MDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2021/01/19	<MDL 0.05	20.0	No	No
Additional Inorganics	2021/01/19				
Fluoride (mg/L) - TW	2021/01/19	0.8	1.5	No	No
Nitrite (mg/L) - TW	2021/01/28	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2021/05/04	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2021/07/27	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2021/11/02	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2021/01/28	0.1	10.0	No	No
Nitrate (mg/L) - TW	2021/05/04	0.4	10.0	No	No
Nitrate (mg/L) - TW	2021/07/27	<MDL 0.1	10.0	No	No
Nitrate (mg/L) - TW	2021/11/02	0.2	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		
01/26/21	Hydrant	Distribution	0.00107	-	57	5.00
11/29/21	Hydrant	Distribution	-	-	59	7.40
11/29/21	Hydrant	Distribution	-	-	59	7.35
11/29/21	Hydrant	Distribution	-	-	58	7.36

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	2021/01/19	<MDL 0.3	5.00	No	No
Azinphos-methyl (ug/L) - TW	2021/01/19	<MDL 1.0	20.00	No	No
Benzene (ug/L) - TW	2021/01/19	<MDL 0.5	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2021/01/19	<MDL 0.006	0.01	No	No
Bromoxynil (ug/L) - TW	2021/01/19	<MDL 0.5	5.00	No	No
Carbaryl (ug/L) - TW	2021/01/19	<MDL 3.0	90.00	No	No
Carbofuran (ug/L) - TW	2021/01/19	<MDL 1.0	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2021/01/19	<MDL 0.2	2.00	No	No
Chlorpyrifos (ug/L) - TW	2021/01/19	<MDL 0.5	90.00	No	No
Diazinon (ug/L) - TW	2021/01/19	<MDL 1.0	20.00	No	No
Dicamba (ug/L) - TW	2021/01/19	<MDL 10.0	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2021/01/19	<MDL 0.5	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2021/01/19	<MDL 0.5	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2021/01/19	<MDL 0.5	5.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2021/01/19	<MDL 5.0	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2021/01/19	<MDL 0.2	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2021/01/19	<MDL 10.0	100.00	No	No
Diclofop-methyl (ug/L) - TW	2021/01/19	<MDL 0.9	9.00	No	No
Dimethoate (ug/L) - TW	2021/01/19	<MDL 1.0	20.00	No	No
Diquat (ug/L) - TW	2021/01/19	<MDL 5.0	70.00	No	No
Diuron (ug/L) - TW	2021/01/19	<MDL 5.0	150.00	No	No
Glyphosate (ug/L) - TW	2021/01/19	<MDL 25.0	280.00	No	No
Malathion (ug/L) - TW	2021/01/19	<MDL 5.0	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA)(ug/L) - TW	2021/01/19	<MDL 10.0	100	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Metolachlor (ug/L) - TW	2021/01/19	<MDL 3.0	50.00	No	No
Metribuzin (ug/L) - TW	2021/01/19	<MDL 3.0	80.00	No	No
Paraquat (ug/L) - TW	2021/01/19	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2021/01/19	<MDL 0.05	3.00	No	No
Pentachlorophenol (ug/L) - TW	2021/01/19	<MDL 0.2	60.00	No	No
Phorate (ug/L) - TW	2021/01/19	<MDL 0.3	2.00	No	No
Picloram (ug/L) - TW	2021/01/19	<MDL 15.0	190.00	No	No
Prometryne (ug/L) - TW	2021/01/19	<MDL 0.1	1.00	No	No
Simazine (ug/L) - TW	2021/01/19	<MDL 0.5	10.00	No	No
Terbufos (ug/L) - TW	2021/01/19	<MDL 0.5	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2021/01/19	<MDL 0.5	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2021/01/19	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2021/01/19	<MDL 10.0	230.00	No	No
Trichloroethylene (ug/L) - TW	2021/01/19	<MDL 0.5	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2021/01/19	<MDL 0.2	5.00	No	No
Trifluralin (ug/L) - TW	2021/01/19	<MDL 0.5	45.00	No	No
Vinyl Chloride (ug/L) - TW	2021/01/19	<MDL 0.2	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average - DW	2021	96.8	100.00	No	No
Haloacetic Acid: HAA (ug/L) Annual Average-DW	2021	75.8	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.	10.2	mg/L	25.0 mg/L
Municipal License 183-101 Issue #3	2015-12-16	Backwash Effluent Suspended Solids	Annual Avg.	8.1	mg/L	25.0 mg/L



Major Maintenance Summary

WO #	Description
2175860	Capital Fluoride Analyzer
2175870	Capital pH Analyzer Actiflo 1
2175876	Capital pH Analyzer Actiflo 2
2224077	Capital Clearwell Level Sensor Replacement
2267356	Capital Controls Support Raw water level failure

WO #	Description
2270319	Capital Fire Alarm Upgrade
2270505	Capital Low lift pump failure Fuse replacement
2270829	Capital Filter Turbidimeter Flow Sensors
2313774	Capital Low Lift Motor removal and assessment
2360642	Capital Filter Turbidimeter Alarms Integration
2404050	Capital Flow Meter Insert Replacements
2408281	Capital SAI Global DWQMS audit
2449261	Capital Low Lift motor failure - Emergency
2581473	Capital Free Chlorine Probe Replacement
2582346	Capital Filter Media Testing
2090879	Capital Replace pieces for sand recirculation pumps
2091351	Capital Supernatant Backwash system Pump 1
2092256	Capital Fluoride Pump Replacement
2093498	Capital Replacement of Motor Chemical room exhaust
2173708	Capital Actiflo Train 2
2173710	Capital Actiflo Train 2
2174409	Capital Actiflo Nozzle Replacements
2175879	Capital Raw water pH Analyzer
2223401	Capital Polymer Pump 2 Communication Issue/Raw Water Level Transmitter failed
2265551	Capital Treated Flow meter low level
2266301	Capital Boiler system service
2267361	Capital Filter effluent valves and level sensors
2267367	Capital Main PLC failure - restore of program
2268745	Capital Treated pH probe pre/post Clearwell
2270750	Capital spill containment units
2270831	Capital Lights/Ballast
2312326	Capital Low lift Surge Suppressor

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 16, 2022 10:58 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.

[Print Confirmation](#) [Return to Main Page](#)

TOWN2 RENFREW2 | 2022/02/16
version: v4.5.0.21 (build#: 22)
Last modified: 2018/09/18

 This site maintained by
the Government of Ontario ©2022 [Queen's Printer for Ontario](#)