

# Deep River Drinking Water System

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Waterworks # 220000923  
System Category – Large Municipal Residential

## Annual Water Report

Prepared For: Town of Deep River

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

Issued: Feb 27, 2023

Revision: 1

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 Towns of Deep River Municipal Office. Notification will be at the Municipal Office and copies provided free of charge, if requested. The Town of Deep River office is located at 100 Deep River Road in Deep River, ON.

## Compliance Report Card

Compliance Event	# of Events
Ministry of the Environment, Parks and Conservation (MECP) Inspections	Jan 25, 2022 – received 95.71% (2021-2022 Inspection Period)
Ministry of Labour Inspections	There were no inspections during the reporting period
QEMS External Audit	Surveillance System Audit – (S1 Off-Site) held this year <ul style="list-style-type: none"> <li>Oct 24, 2022 - One (1) OFI identified</li> </ul>
AWQI's	Five (5)
Non-Compliance	There were no Non-Compliances reported during this reporting period
Community Complaints	Fifteen (15) Community Complaints <ul style="list-style-type: none"> <li>All discoloured water issues</li> </ul>
Spills	There were no spills reported during the reporting period
Water Main Breaks	Four (4)

## System Process Description

### Raw Source

Raw water source for the Deep River Drinking Water System is the Ottawa River. The water is drawn from the river, using low lift pumps, and transferred to the water treatment plant, uphill from the low lift station.

### Treatment

The Deep River Water Treatment Plant is a surface water plant utilizing the Actiflo process. The plant has three Actiflo units that provide coagulation, flocculation and sedimentation. Coagulant and polymer are added in the Actiflo process. Filtration is provided by the dual media filters. Post disinfection is provided using chlorine gas. pH is adjusted both before the Actiflo process, and as the treated water enters the distribution system.

**Treatment Chemicals used during the reporting year:**

Chemical Name	Use	Supplier
PAX-XL6	Coagulant	Kemira
Fluoride	Fluoridation	Brenntag
Chlorine Gas	Disinfection	Brenntag
Caustic Soda	pH Adjustment	Sodrox
Magnafloc LT27AG	Polymer – Actiflo's	Solenis
Zetag 8140	Polymer - Lamella Clarifier & Centrifuge Process	Solenis
Silica Sand	Actiflo Process	Veolia

**Distribution**

The distribution system consists of various piping, one (1) tower and one (1) booster pumping station. The system consists of approx. 38 km of water mains, 1865 service connections, 245 fire hydrants, and 21 dead ends. The water mains are constructed mainly of cast iron and polyvinyl chloride (PVC) pipes, ranging from 40 mm (1.5 inches) to 400 mm (16 inches). Consumers are not equipped with individual water meters.

**Summary of Non-Compliance****Adverse Water Quality Incidents:**

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
Jul 28/22	159342	WDS	Loss of Pressure	High Lift Pumps shut down due to hydro issue; Water Tower is out-of-service for maintenance	170/03	Checked residuals in the WDS, Bacti samples taken in WDS and sent to lab for analysis, Raised WDS chlorine residual to be 0.2 mg/L or higher
Sept 6/22	159868	WDS	Loss of Pressure	High Lift Pumps shut down due to hydro issue; Water Tower is out-of-service for maintenance	170/03	Flushed in area where no water pressure was during incident; Bacti samples taken and sent to Lab
Sept 28/22	160173	WDS	Loss of Pressure	High Lift Pumps shut down due to hydro issue; Water Tower is out-of-service for maintenance	170/03	RCDHU declared a Precautionary Boil Water Advisory (BWA) for the town; Bacti samples were taken and sent to the Lab; Disinfection residual was increased in WDS; BWA was rescinded on Oct 3/22
Nov 7/22	160587	WDS	Loss of Pressure	Power issue due to Hydro One working in the area from last storm; Water Tower still out-of-service	170/03	Flushing in affected WDS; Bacti samples taken and sent to Lab, Chlorine residual increased

Nov 21/22	160746	WDS	Loss of Pressure	High Lift Pumps shut down due to hydro issue; Water Tower is out-of-service for maintenance	170/03	Flushing mains in affected area of WDS, Bacti samples taken and sent to Lab, Disinfection residual increased
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**Non-Compliance:**

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no Non-Compliances reported during this reporting period.				

**Non-Compliance(s) 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, Schedule 16-6	All required notifications of adverse water quality incidents were not immediately provided	Feb 16/21 – Mar 18/21	During the inspection review period, it was determined that the treated water exceeded the prescribed drinking water quality standard values for Fluoride on several occasions. The operating authority reported that no alarms occurred due to an error in programming which caused a 20-minute delay on the alarm page out. Since no alarms were paged out to the operators, no exceedances were reported to SAC. The operating authority made temporary changes to the alarm set points and will had a third-party company, Capital Controls, look into the alarm programming issues, the following week.	Completed

## Flows

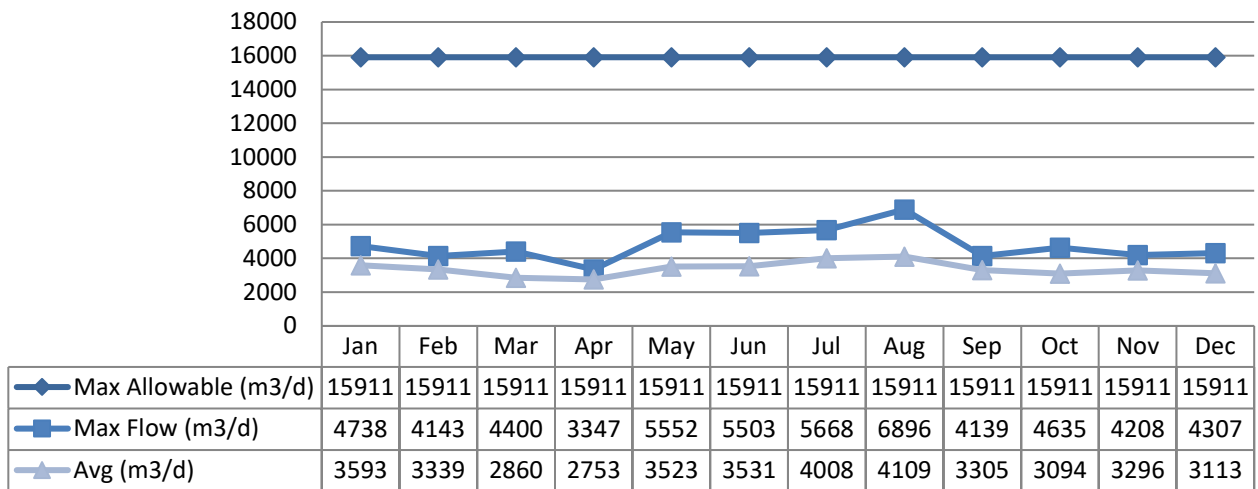
In 2022, the average day flow was at approximately 19.8% of the current plant design for the Deep River Drinking Water System, and the maximum day flow was at approximately 27.0% of the plant design of 13 638 m<sup>3</sup>/d.

### 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 #8528-9ECQPJ. The confirmation and a copy of the data that was submitted are attached in Appendix A.

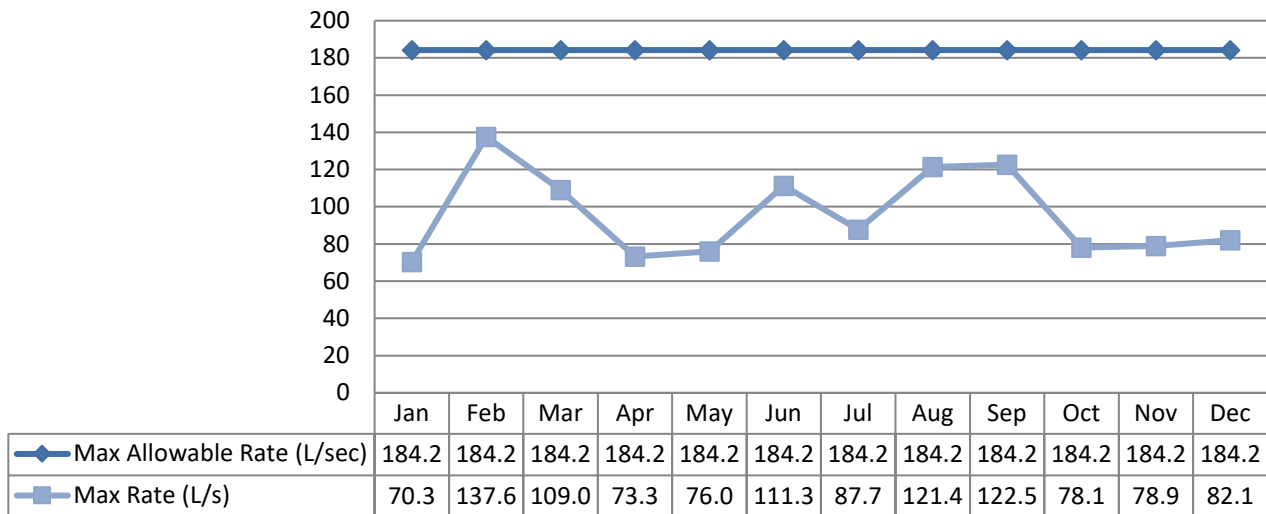
#### Total Monthly Flows (m3/d)

Max Allowable PTTW



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

Max allowable rate - PTTW

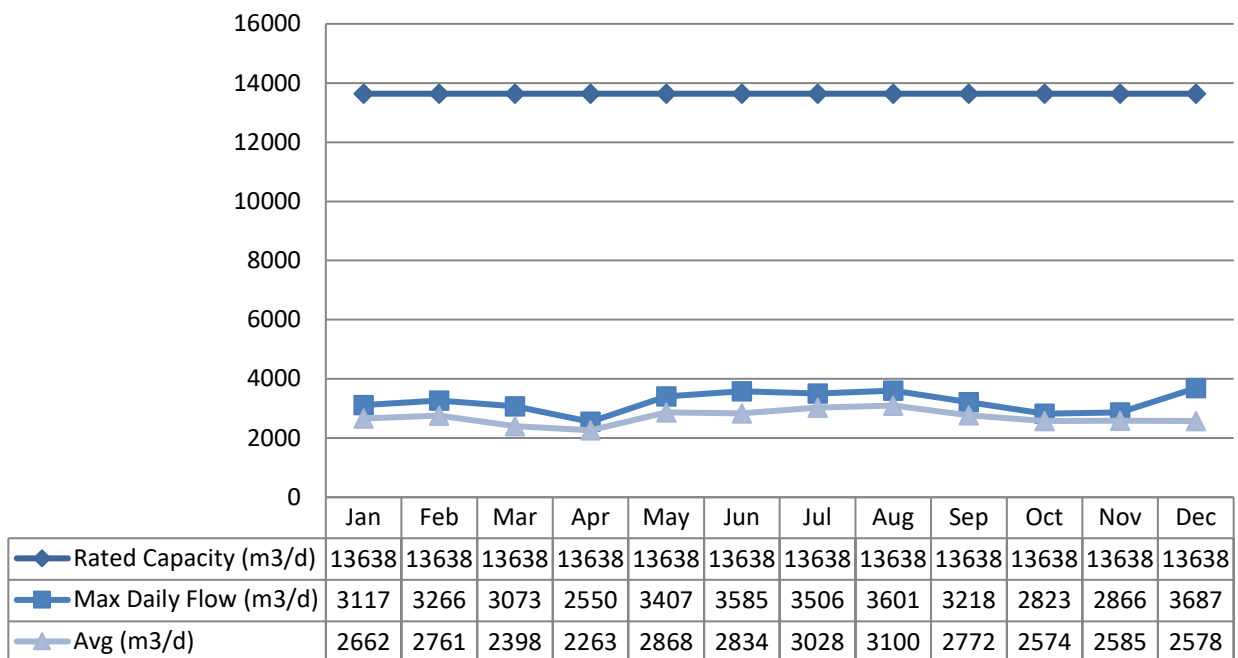


**Treated Water Flows**

The Treated Water flows are regulated under the Municipal Licence.

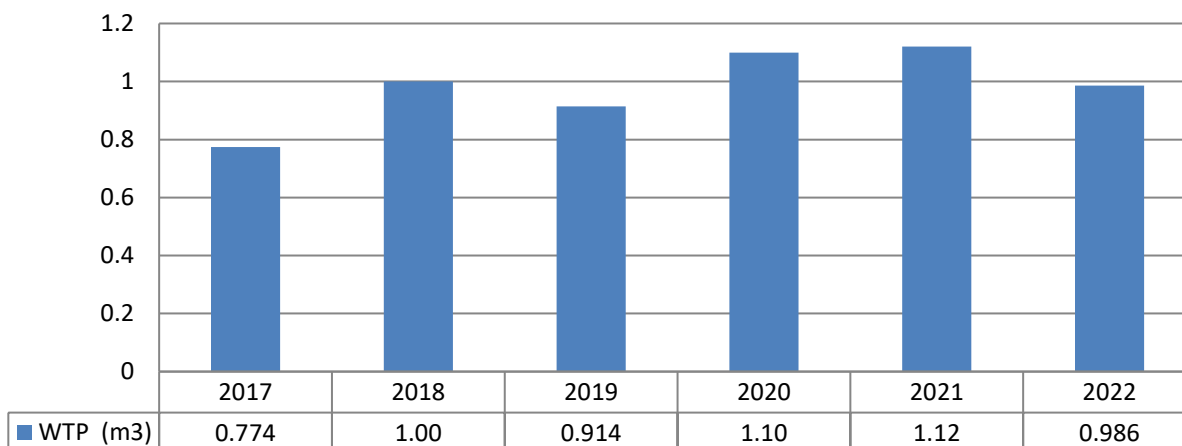
**Monthly Rated Flows**

Rated Capacity – MDWL



**Annual Total Flow Comparison**

Total Annual m3(x 10<sup>6</sup>)



## 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	No. of Samples	Min	Max
Raw Water	54	0	3	0	49			
Treated Water	54	0	0	0	0	54	0	15
Distribution Water	219	0	0	0	0	153	0	500

### Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	52	1.33	5.00
Turbidity, In-House (NTU) - TW	52	0.09	0.19
Turbidity, In-House (NTU) - Filt1	50	0.05	0.31
Turbidity, On-Line (NTU) - Filt1	8760	0	0.55
Turbidity, In-House (NTU) - Filt2	51	0.07	0.28
Turbidity, On-Line (NTU) - Filt2	8760	0.7	0.29
Turbidity, In-House (NTU) - Filt3	51	0.04	0.25
Turbidity, On-Line (NTU) - Filt3	8760	0.17	0.26
Free Chlorine Residual, On-Line (mg/L) - TW	8760	1.03	3.57
Free Chlorine Residual, In-House (mg/L) - TW	247	1.16	2.98
Total Chlorine Residual, In-House (mg/L) - TW	247	1.50	2.65
Free Chlorine Residual, In-House (mg/L) – DW, DW1-DW4, DW7	219	0.06	2.20
Fluoride Residual, In-House (mg/L) - TW	133	0.10	0.75
Fluoride Residual, On-Line (mg/L) - TW	8760	0	2.22

NOTE: Spikes /Drops to zero 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
- 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	2022/01/12	<MDL 0.5	6.0	No	No
Arsenic: As (ug/L) - TW	2022/01/12	<MDL 1.0	10.0	No	No
Barium: Ba (ug/L) - TW	2022/01/12	<MDL 10.0	1000.0	No	No
Boron: B (ug/L) - TW	2022/01/12	<MDL 10.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2022/01/12	<MDL 0.1	5.0	No	No
Chromium: Cr (ug/L) - TW	2022/01/12	<MDL 1.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2022/01/12	<MDL 0.1	1.0	No	No
Selenium: Se (ug/L) - TW	2022/01/12	<MDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2022/01/12	<MDL 1.0	20.0	No	No
<b>Additional Inorganics</b>					
Fluoride (mg/L) - TW	2022	< 0.1 – 0.59**	1.5	No	No
Nitrite (mg/L) - TW	2022/01/11	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/04/12	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/07/05	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/10/04	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2022/01/11	0.22	10.0	No	No
Nitrate (mg/L) - TW	2022/04/12	0.18	10.0	No	No
Nitrate (mg/L) - TW	2022/07/05	0.25	10.0	No	No
Nitrate (mg/L) - TW	2022/10/04	0.29	10.0	No	No
Sodium: Na (mg/L) - TW	2018/03/14	19.0	20*	No	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.

\*\*The MIN/MAX results of fluoride for the 2022 year are provided here, since the water tower was shut down from July-Dec for painting and maintenance. While the water tower project was on, fluoride was not distributed into the town's water system.

### Schedule 15 Sampling: Lead

The Schedule 15 Sampling is required under O. Reg. 170/03. This system is under the plumbing exemption therefore, hydrant samples only were collected.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results		MAC (mg/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	3	6	21	32	500	0
pH	3	6	8.03	8.83	8.5	3
*Lead (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A

\*Lead will be sampled again in 2024 – every 3 years

### 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	2022/01/12	<MDL 0.5	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2022/01/12	<MDL 1.0	5.00	No	No
Azinphos-methyl (ug/L) - TW	2022/01/12	<MDL 2.0	20.00	No	No
Benzene (ug/L) - TW	2022/01/12	<MDL 0.5	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2022/01/12	<MDL 0.01	0.01	No	Yes*
Bromoxynil (ug/L) - TW	2022/01/12	<MDL 0.5	5.00	No	No
Carbaryl (ug/L) - TW	2022/01/12	<MDL 5.0	90.00	No	No
Carbofuran (ug/L) - TW	2022/01/12	<MDL 5.0	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2022/01/12	<MDL 0.2	2.00	No	No
Chlorpyrifos (ug/L) - TW	2022/01/12	<MDL 1.0	90.00	No	No
Diazinon (ug/L) - TW	2022/01/12	<MDL 1.0	20.00	No	No
Dicamba (ug/L) - TW	2022/01/12	<MDL 1.0	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2022/01/12	<MDL 0.4	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2022/01/12	<MDL 0.4	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2022/01/12	<MDL 0.2	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2022/01/12	<MDL 0.5	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2022/01/12	<MDL 4.0	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2022/01/12	<MDL 1.0	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2022/01/12	<MDL 1.0	100.00	No	No
Diclofop-methyl (ug/L) - TW	2022/01/12	<MDL 0.9	9.00	No	No
Dimethoate (ug/L) - TW	2022/01/12	<MDL 2.5	20.00	No	No
Diquat (ug/L) - TW	2022/01/12	<MDL 5.0	70.00	No	No
Diuron (ug/L) - TW	2022/01/12	<MDL 10.0	150.00	No	No
Glyphosate (ug/L) - TW	2022/01/12	<MDL 10.0	280.00	No	No
Malathion (ug/L) - TW	2022/01/12	<MDL 0.5	190.00	No	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2022/01/12	<MDL 10.0	100.00	No	No
Metolachlor (ug/L) - TW	2022/01/12	<MDL 1.0	50.00	No	No
Metribuzin (ug/L) - TW	2022/01/12	<MDL 5.0	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2022/01/12	<MDL 0.5	80.00	No	No
Paraquat (ug/L) - TW	2022/01/12	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2022/01/12	<MDL 0.1	3.0	No	No
Pentachlorophenol (ug/L) - TW	2022/01/12	<MDL 1.0	60.0	No	No
Phorate (ug/L) - TW	2022/01/12	<MDL 0.5	2.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Picloram (ug/L) - TW	2022/01/12	<MDL 5.0	190.00	No	No
Prometryne (ug/L) - TW	2022/01/12	<MDL 0.25	1.00	No	No
Simazine (ug/L) - TW	2022/01/12	<MDL 1.0	10.00	No	No
Terbufos (ug/L) - TW	2022/01/12	<MDL 0.4	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2022/01/12	<MDL 0.3	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022/01/12	<MDL 1.0	100.00	No	No
Triallate (ug/L) - TW	2022/01/12	<MDL 1.0	230.00	No	No
Trichloroethylene (ug/L) - TW	2022/01/12	<MDL 0.3	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2022/01/12	<MDL 0.7	5.00	No	No
Trifluralin (ug/L) - TW	2022/01/12	<MDL 1.0	45.00	No	No
Vinyl Chloride (ug/L) - TW	2022/01/12	<MDL 0.2	1.00	No	No
<b>Distribution Water</b>					
Trihalomethane: Total (ug/L) Running Annual Average (RAA) - DW	2022	85.8	100.00	No	Yes
HAA: Total (ug/L) Running Annual Average (RAA) - DW	2022	49.3	80.0	No	Yes

MAC = Maximum Allowable Concentration as per O. Reg. 169/03

\*BDL = Below the laboratory detection level

### Additional Legislated Samples

Legislation	Sample	Parameter	Date	Range Results	MAC
MDWL	Backwash Effluent	Suspended Solids	2022	< 2 mg/L - 12 mg/L	
			Annual Average	< 3.25 mg/L	25 mg/L

### Major Maintenance Summary (Capital)

WO #	Description
2679605	Installation of outdoor condensing air conditioning unit and two ductless split units.
2962022	Replacement of dual hot water boiler for plant.
2679603	Repair to gas heater #3 and replacement to gas heater #10.
2638593	Installation of monitor module for the gas detection system.
2919280	Purchase of the transportation cart for the 68 kg chlorine cylinders.
2635056	Purchase and installation of an actiflo polymer pump.
3016118	Annual flow meter calibrations for actiflo's.
2722265	Costs associated with performing an audit of the water plant processes, especially the actiflo process, due to age of the system.
2634620	Miscellaneous plant general capital purchases.

2777570	Miscellaneous general plant capital purchases, such as: lighting replacements, lumber for office project, electrical supplies, drive belts for actiflo recirculation pump, light for actiflo area, electrical plug, voltmeter, ABS pipe, plant supplies, office chairs, chlorinator cap, valve ball, material for cleaning actiflo filters, wall clock, low lift PLC battery, spec colour standard, DPD chlorine colorimeter, diaphragm kit, bulbs for chlorine room, and other hardware.
2919912	Miscellaneous general capital purchases, such as: service call for SCADA, flood light, door and lock unit, service call for boiler issue, electrical supplies, floor fan, hydrant antifreeze, circulation heater,
2638797	Purchase of chlorine analyzer reagents for CNL equipment.
2724452	Purchases for CNL Section 2 roller assembly with spare tubes and spacer for sample pumps in reservoir.
2917049	Purchase of sodium hypo for booster station and at reservoir.
2917391	Costs associated with service call for booster station PLC fault.
3017687	Costs associated with service call for cell strength at water plant for booster station, master panel, and CNL reservoir.
3017923	Cost transfer for sodium hypo for booster station and CNL reservoir.
3108226	Service call to install temporary programming for distribution pressure losses.
3062640	Service call for tower shut down programming.
2722245	Costs for purchase of materials to construct a lunchroom/training office/office at the water plant.
2823850	Purchase of generator belt tensioner assembly unit.
2639040	Replacement of electric wall heater for the diesel generator building.
2634589	Replacement of generator belt tensioner assembly unit.
2965676	Replacement of anthracite media for all three filters.
2637977	Replacement of Limitorque actuator.
2777373	Service work on the SCADA and PLC.
2776920	Emergency service call after hours for low lift PLC failure.
2776914	Service work on SCADA and PLC for regular programming such as, modifying screens, compliance trending, and alarm delay repairs.
2774671	After hours call to investigate and repair PLC not dialing out plant alarms to Falcon Security.
2635181	Replacement of actuator for lamella sludge valve.

**Distribution Maintenance**

<b>Date</b>	<b>Location Reference</b>	<b>Details</b>
2022	Various Locations	Fifteen (15) Water Turn Off/On for Service Repairs
2022	Various Locations	Seasonal Flushing – Spring was completed between April 11th-May 10th; No Fall Flushing with the water tower out-of-service from July 4th - Dec 9th; Oct 18th – Flushed hydrants past the booster station up to the CNL reservoir
2022	Various Locations	Winterized Hydrants – completed by Nov 16th
2022	Four (4) Locations – 25 Glendale, 32/34 Faraday, 28 Laurier, 74 Beach	Broken Water Mains – Jan 8th, Feb 13th, Mar 18th, Mar 28th
2022	Various Locations	Thirteen (13) Water service seasonal Shut ON/OFFS – Residential/Recreational
2022	Newton Crescent	One (1) Community Complaint – discoloured water
Apr 25	Golf Course	Assisted town with low pressure/flow issue for five years, created by obstruction in curb stop valve
Jun 20	LCBO	Supervised new live tap by town
Aug 24	27 Montcalm	Supervised new service line from main to curb stop by town
Sept 6	Beach	Turned on hydrant (BCH-5) for RGT Lasalle project
Nov 14	Lasalle	Opened isolation valves for completed Lasalle project

# Appendix A

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## WTRS Data and Submission Confirmation

**Water Taking Data submitted successfully.**

**Confirmation:**

Thank you for submitting your water taking data online.

Permit Number: 8528-9ECQPJ

Permit Holder: THE CORPORATION OF THE TOWN OF DEEP RIVER.

Received on: Feb 23, 2023 7:58 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.

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DEEP2 RIVER2 | 2023/02/23

version: v4.5.0.21 (build#: 22)

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