# Deep River Drinking Water System

Waterworks # 220000923
System Category – Large Municipal Residential

# Annual Water Report

Prepared For: Town of Deep River

Reporting Period of January 1st – December 31st, 2021

Issued: Feb 25th, 2022

Revision: 0

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 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 | Nov 18, 2021 – received 100% (2021-2021 Inspection Period). |
| Ministry of Labour Inspections | There were no inspections during the reporting period. |
| QEMS External Audit | Re Accreditation Audit (On-Site Audit)<br>Completed on Oct 18, 2021 – No non-conformances were identified; Five (5) OFI's identified; Accreditation obtained. |
| AWQI's | There were no AWQI's reported during the reporting period. |
| Non-Compliance | There were no non-compliances reported during the reporting period. |
| Community Complaints | One (1) |
| Spills | There were no spills reported during the reporting period. |
| Water Main Breaks | Six (6) |

## 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 lake using low lift pumps and transferred to the water treatment plant, uphill from the low lift station. In November 2019, the distribution line from the Town of Deep River water tower started to send water to the Chalk Nuclear Laboratories (CNL) reservoir on their federal land jurisdiction.

### 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 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, 1 864 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 provided with individual water meters.

## Summary of Non-Compliance

### Adverse Water Quality Incidents

| Date | AWQI # | Location | Problem | Details | Legislation | Corrective Action Taken |
|---|---|---|---|---|---|---|
| There were no AWQI's reported during this reporting period. | | | | | | |

### 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 Identified in a Ministry Inspection:

| Legislation | requirement(s) system failed to meet | duration of the failure (i.e. date(s)) | Corrective Action | Status |
|---|---|---|---|---|
| There were no Non-Compliances received in the 2020-2021 inspection report. The Deep River DWS received a 100% compliance rating for this inspection period. | | | | |

# Flows

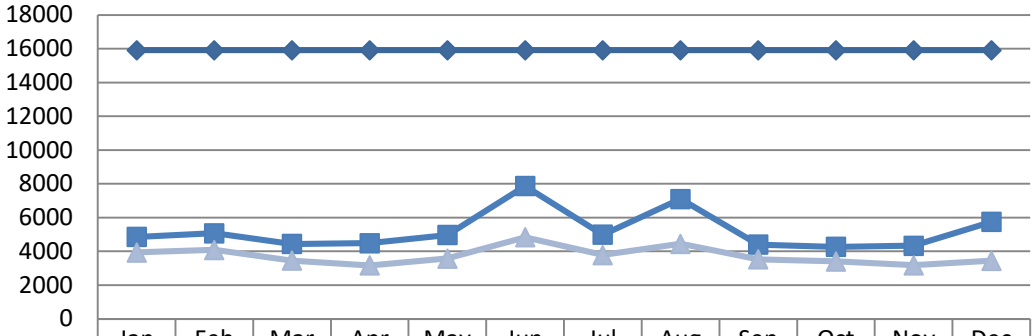
In 2021, the average day flow was at approximately 22.5% of the current plant design for the Deep River Drinking Water System, and the maximum day flow was at approximately 38.6% of the plant design of 13 638 $m^3$/d.

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

*Total Monthly Flows (m3/d)*

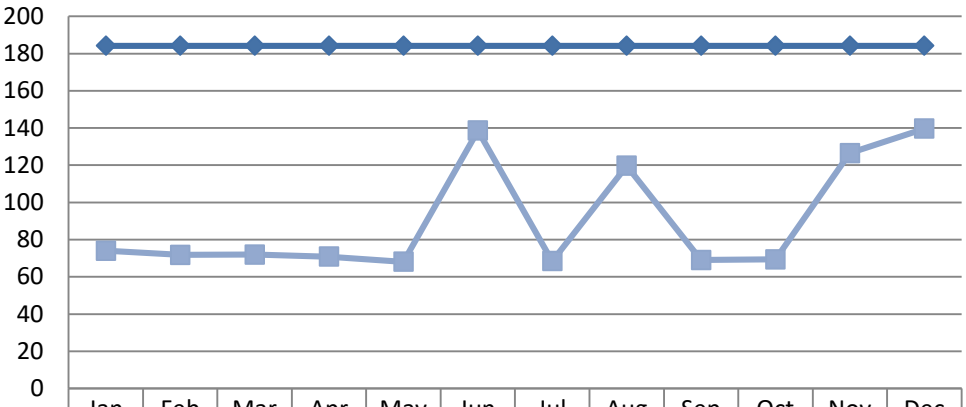
Max Allowable PTTW




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max Allowable (m3/d) | 15911 | 15911 | 15911 | 15911 | 15911 | 15911 | 15911 | 15911 | 15911 | 15911 | 15911 | 15911 |
| Max Flow (m3/d) | 4858 | 5080 | 4436 | 4485 | 4970 | 7874 | 4988 | 7105 | 4399 | 4266 | 4335 | 5749 |
| Avg (m3/d) | 3940 | 4092 | 3456 | 3167 | 3582 | 4837 | 3790 | 4453 | 3528 | 3407 | 3178 | 3449 |

*Monthly Rated Flows (L/s)*

Max allowable rate - PTTW



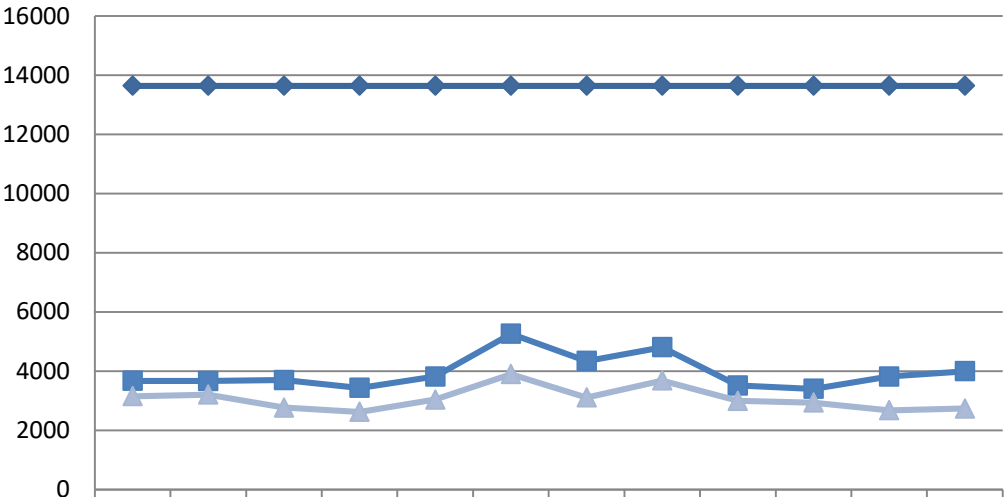

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max Allowable Rate (L/sec) | 184.2 | 184.2 | 184.2 | 184.2 | 184.2 | 184.2 | 184.2 | 184.2 | 184.2 | 184.2 | 184.2 | 184.2 |
| Max Rate (L/s) | 74.0 | 71.8 | 72.0 | 70.8 | 68.1 | 138.6 | 68.4 | 119.7 | 69.1 | 69.4 | 126.5 | 139.6 |

## Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

*Monthly Rated Flows*

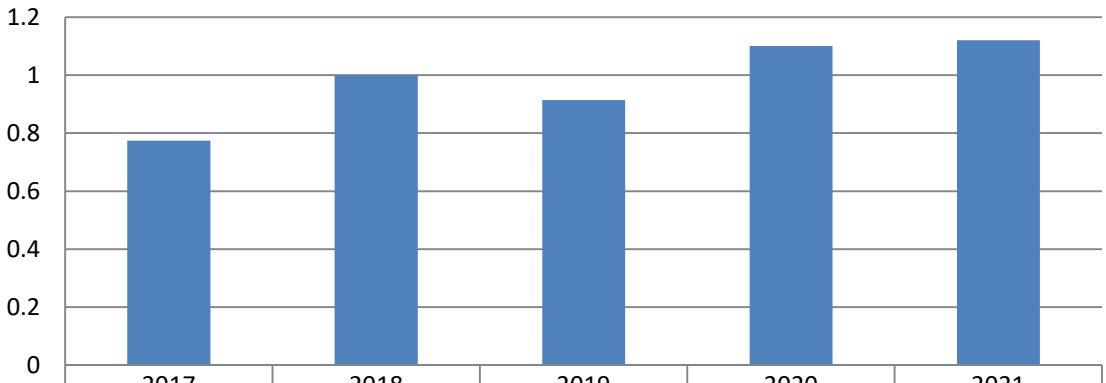
Rated Capacity - MDWL




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated Capacity (m3/d) | 13638 | 13638 | 13638 | 13638 | 13638 | 13638 | 13638 | 13638 | 13638 | 13638 | 13638 | 13638 |
| Max Daily Flow (m3/d) | 3670 | 3664 | 3698 | 3432 | 3817 | 5260 | 4338 | 4802 | 3514 | 3397 | 3817 | 3994 |
| Avg (m3/d) | 3150 | 3204 | 2767 | 2619 | 3035 | 3898 | 3105 | 3680 | 2994 | 2933 | 2674 | 2733 |

*Annual Total Flow Comparison*

Total Annual m3(x $10^6$)




| | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| WTP (m3) | 0.774 | 1.00 | 0.914 | 1.10 | 1.12 |

# 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 | 52 | 0 | 5 | 0 | 27 | | | |
| Treated Water | 52 | 0 | 0 | 0 | 0 | 52 | 0 | 2 |
| Distribution Water | 257 | 0 | 0 | 0 | 0 | 141 | 0 | 64 |

## Operational Testing

| | No. of Samples Collected | Range of Results | |
|---|---|---|---|
| | | Minimum | Maximum |
| Turbidity, In-House (NTU) - RW | 52 | 0.91 | 7.89 |
| Turbidity, In-House (NTU) - TW | 53 | 0.11 | 0.29 |
| Turbidity, In-House (NTU) - Filt1 | 47 | 0.10 | 0.34 |
| Turbidity, On-Line (NTU) - Filt1 | 8760 | 0 | 0.99 |
| Turbidity, In-House (NTU) - Filt2 | 47 | 0.10 | 0.34 |
| Turbidity, On-Line (NTU) - Filt2 | 8760 | 0 | 0.29 |
| Turbidity, In-House (NTU) - Filt3 | 45 | 0.09 | 0.28 |
| Turbidity, On-Line (NTU) - Filt3 | 8760 | 0 | 0.26 |
| Free Chlorine Residual, On-Line (mg/L) - TW | 8760 | 0 | 5.0 |
| Free Chlorine Residual, In-House (mg/L) - TW | 243 | 1.36 | 3.59 |
| Total Chlorine Residual, In-House (mg/L) - TW | 243 | 1.62 | 3.78 |
| Free Chlorine Residual, In-House (mg/L) – DW, DW1-DW4 | 349 | 0.08 | 3.29 |
| Fluoride Residual, In-House (mg/L) - TW | 226 | 0.12 | 0.85 |
| Fluoride Residual, On-Line (mg/L) - TW | 8760 | 0 | 1.64 |

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 |
| **Treated Water** | | | | | |
| Antimony: Sb (ug/L) - TW | 2021/01/12 | <MDL 0.5 | 6.0 | No | No |
| Arsenic: As (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 10.0 | No | No |
| Barium: Ba (ug/L) - TW | 2021/01/12 | <MDL 10.0 | 1000.0 | No | No |
| Boron: B (ug/L) - TW | 2021/01/12 | <MDL 10.0 | 5000.0 | No | No |

| | Sample Date (yyyy/mm/dd) | Sample Result | MAC | No. of Exceedances | |
|---|---|---|---|---|---|
| | | | | MAC | 1/2 MAC |
| Cadmium: Cd (ug/L) - TW | 2021/01/12 | <MDL 0.1 | 5.0 | No | No |
| Chromium: Cr (ug/L) - TW | 2021/01/12 | 2.0 | 50.0 | No | No |
| Mercury: Hg (ug/L) - TW | 2021/01/12 | <MDL 0.1 | 1.0 | No | No |
| Selenium: Se (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 50.0 | No | No |
| Uranium: U (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 20.0 | No | No |
| **Additional Inorganics** | | | | | |
| Fluoride (mg/L) - TW | 2021/12/07 | 0.64 | 1.5 | No | No |
| Nitrite (mg/L) - TW | 2021/01/12 | <MDL 0.1 | 1.0 | No | No |
| Nitrite (mg/L) - TW | 2021/04/06 | <MDL 0.1 | 1.0 | No | No |
| Nitrite (mg/L) - TW | 2021/07/13 | <MDL 0.1 | 1.0 | No | No |
| Nitrite (mg/L) - TW | 2021/10/05 | <MDL 0.1 | 1.0 | No | No |
| Nitrate (mg/L) - TW | 2021/01/12 | 0.26 | 10.0 | No | No |
| Nitrate (mg/L) - TW | 2021/04/06 | 0.18 | 10.0 | No | No |
| Nitrate (mg/L) - TW | 2021/07/13 | 0.13 | 10.0 | No | No |
| Nitrate (mg/L) - TW | 2021/10/05 | 0.2 | 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.

*Schedule 15 Sampling:*

The Schedule 15 Sampling is required under O. Reg. 170/03. This system is under the plumbing exemption therefore, hydrant samples only were collected. (*Lead will be sampled again in 2024 – every 3 years)

| 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 | 16 | 26 | 500 | 0 |
| pH | 3 | 6 | 8.26 | 8.97 | 8.5 | 3 |
| Lead (mg/L) | 3 | 6 | <0.001 | <0.001 | 0.01 | 0 |

## 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 | 2021/01/12 | <MDL 0.5 | 5.00 | No | No |
| Atrazine + N-dealkylated metabolites (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 5.00 | No | No |
| Azinphos-methyl (ug/L) - TW | 2021/01/12 | <MDL 2.0 | 20.00 | No | No |
| Benzene (ug/L) - TW | 2021/01/12 | <MDL 0.5 | 1.0 | No | No |
| Benzo(a)pyrene (ug/L) - TW | 2021/01/12 | <MDL 0.01 | 0.01 | No | Yes* |

| | Sample Date (yyyy/mm/dd) | Sample Result | MAC | Number of Exceedances | |
|---|---|---|---|---|---|
| | | | | MAC | 1/2 MAC |
| Bromoxynil (ug/L) - TW | 2021/01/12 | <MDL 0.5 | 5.00 | No | No |
| Carbaryl (ug/L) - TW | 2021/01/12 | <MDL 5.0 | 90.00 | No | No |
| Carbofuran (ug/L) - TW | 2021/01/12 | <MDL 5.0 | 90.00 | No | No |
| Carbon Tetrachloride (ug/L) - TW | 2021/01/12 | <MDL 0.2 | 2.00 | No | No |
| Chlorpyrifos (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 90.00 | No | No |
| Diazinon (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 20.00 | No | No |
| Dicamba (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 120.00 | No | No |
| 1,2-Dichlorobenzene (ug/L) - TW | 2021/01/12 | <MDL 0.4 | 200.00 | No | No |
| 1,4-Dichlorobenzene (ug/L) - TW | 2021/01/12 | <MDL 0.4 | 5.00 | No | No |
| 1,2-Dichloroethane (ug/L) - TW | 2021/01/12 | <MDL 0.2 | 5.00 | No | No |
| 1,1-Dichloroethylene (ug/L) - TW | 2021/01/12 | <MDL 0.5 | 14.00 | No | No |
| Dichloromethane (Methylene Chloride) (ug/L) - TW | 2021/01/12 | <MDL 4.0 | 50.00 | No | No |
| 2,4-Dichlorophenol (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 900.00 | No | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 100.00 | No | No |
| Diclofop-methyl (ug/L) - TW | 2021/01/12 | <MDL 0.9 | 9.00 | No | No |
| Dimethoate (ug/L) - TW | 2021/01/12 | <MDL 2.5 | 20.00 | No | No |
| Diquat (ug/L) - TW | 2021/01/12 | <MDL 5.0 | 70.00 | No | No |
| Diuron (ug/L) - TW | 2021/01/12 | <MDL 10.0 | 150.00 | No | No |
| Glyphosate (ug/L) - TW | 2021/01/12 | <MDL 10.0 | 280.00 | No | No |
| Malathion (ug/L) - TW | 2021/01/12 | <MDL 0.5 | 190.00 | No | No |
| 2-Methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW | 2021/01/12 | <MDL 10.0 | 100.00 | No | No |
| Metolachlor (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 50.00 | No | No |
| Metribuzin (ug/L) - TW | 2021/01/12 | <MDL 5.0 | 80.00 | No | No |
| Monochlorobenzene (Chlorobenzene) (ug/L) - TW | 2021/01/12 | <MDL 0.5 | 80.00 | No | No |
| Paraquat (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 10.00 | No | No |
| PCB (ug/L) - TW | 2021/01/12 | <MDL 0.1 | 3.0 | No | No |
| Pentachlorophenol (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 60.0 | No | No |
| Phorate (ug/L) - TW | 2021/01/12 | <MDL 0.5 | 2.0 | No | No |
| Picloram (ug/L) - TW | 2021/01/12 | <MDL 5.0 | 190.00 | No | No |
| Prometryne (ug/L) - TW | 2021/01/12 | <MDL 0.25 | 1.00 | No | No |
| Simazine (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 10.00 | No | No |
| Terbufos (ug/L) - TW | 2021/01/12 | <MDL 0.4 | 1.00 | No | No |
| Tetrachloroethylene (ug/L) - TW | 2021/01/12 | <MDL 0.3 | 10.00 | No | No |
| 2,3,4,6-Tetrachlorophenol (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 100.00 | No | No |
| Triallate (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 230.00 | No | No |
| Trichloroethylene (ug/L) - TW | 2021/01/12 | <MDL 0.3 | 5.00 | No | No |
| 2,4,6-Trichlorophenol (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 5.00 | No | No |
| Trifluralin (ug/L) - TW | 2021/01/12 | <MDL 1.0 | 45.00 | No | No |
| Vinyl Chloride (ug/L) - TW | 2021/01/12 | <MDL 0.2 | 1.00 | No | No |
| **Distribution Water** | | | | | |

| | Sample Date (yyyy/mm/dd) | Sample Result | MAC | Number of Exceedances | |
|---|---|---|---|---|---|
| | | | | MAC | 1/2 MAC |
| Trihalomethane: Total (ug/L) Running Annual Average (RAA) - DW | 2021 | 99.99 | 100.00 | No | Yes |
| HAA: Total (ug/L) Running Annual Average (RAA) - DW | 2021 | 62.03 | 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 | 2021 | <2 mg/L - <9 mg/L | |
| | | | Annual Average | 4.8 mg/L | 25 mg/L |

## Major Maintenance Summary (Capital)

| WO # | Description |
|---|---|
| 2363554 | • Calibration of the flow meters at the booster pumping station and meter pit. |
| 2362002 | • Replacement for the clear well chlorinator. |
| 2453805 | • Calibration of 3 flow meters at the water plant. |
| 2130226 | • Costs associated with an assessment and evaluation of alternatives to minimize the DBP formation based on CNL's current operating conditions and existing drinking water system. |
| 2091105 | • Miscellaneous purchases of equipment and supplies for the O & M of the water plant. |
| 2451259 | • Removal of sand from the channel that feeds water to the filters from the actiflo's. |
| 2315436 | • Purchase of CL17 preventative maintenance kits and reagents for the CNL waterline. |
| 2093445 | • Service work completed on the generator. |
| 2581523 | • Water plant generator emergency service call by Galpower. |
| 2177160 | • Replacement of the filter to clear well pipe and spool assembly by Harrington Mechanical. |
| 2452033 | • Replacement of Prominent raw water caustic soda pump. |
| 2094169 | • Replacement of the CNL reservoir effluent flow meter . |
| 2542964 | • Cost for calibration of CNL flow meter. |

| | |
|---|---|
| 2501914 | • Replacement of colorimeter assembly for the CL17 chlorine analyzer for the CNL section 2 replacement. |
| 2540895 | • Costs for CNL section 2 chlorine analyzer reagents. |
| 2317108 | • Costs for Capitol Controls to troubleshoot the communication problems between the CNL reservoir and booster pumping station, and the alarms also affected by this issue. |
| 2091108 | • Replacement of the Limitorque analog circuit board. |
| 2130908 | • Replacement of three Swan turbidity meters. |
| 2315443 | • Replacement of Limitorque actuator for filter #2. |
| 2363346 | • Purchase of a spare filter actuator. |
| 2174417 | • Replacement of two Sigma Prominent metering actiflo polymer pumps. |
| 2174563 | • Purchase of two Prominent caustic soda metering pump repair kits. |
| 2093279 | • Replacement of the PLC processor unit. |
| 2174420 | • Costs associated with Bell Canada's service work after the switch gear replacement caused by the fire. |
| 2361744 | • Costs for centrifuge troubleshooting and repairs. |
| 2500636 | • Replacement of the decanter controller. |
| 2503436/2542992 | • Costs for Ranger Septic to remove sludge from centrifuge tank and deliver to sewage plant holding tank. |

## Distribution Maintenance

| Date | Location Reference | Details |
|---|---|---|
| 2021 | Various Locations | Forty (40) Water Turn Off/On for Service Repairs |
| 2021 | Various Locations | Seasonal Flushing – Spring was completed between April 19-May 17; Fall was completed between Oct 18-Nov 10 |
| 2021 | Various Locations | Winterized Hydrants – completed by Nov 16 |
| 2021 | Six (6) Locations – Yacht Club, 55 Poplar, Faraday, 17 Lasalle, Troyes Avenue, JL Gray | Broken Water Mains – Feb 11, Feb 23, Mar 14, Nov 2, Nov 15, Dec 21 |
| 2021 | Various Locations | Three (3) Emergency Shut Offs - Residential |
| 2021 | Newton Crescent | One (1) Community Complaint – discoloured water |

# 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: 8528-9ECQPJ
Permit Holder: THE CORPORATION OF THE TOWN OF DEEP RIVER.
Received on:Feb 10, 2022 3:17 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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DEEP2 RIVER2 | 2022/02/10
version: v4.5.0.21 (build#: 22)
Last modified: 2018/09/18