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, 2023

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	Jan 16, 2023 – received 100% (2022-2023 Inspection Period)
Ministry of Labour Inspections	There were no inspections during the reporting period
QEMS External Audit	Surveillance System Audit – (S2 Off-Site) held this year • Oct 19, 2023 - Two (2) OFI's identified
AWQI's	None to report for this year
Non-Compliance	One (1) Non-Compliance Report – Missed Samples – RW/TW/DW Mthly Chemicals & Filter Backwash TSS
Community Complaints	Six (6) Community Complaints • 5-discoloured water issues • 1-taste complaint
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 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
Norfloc 127H	Polymer – Actiflo's	Northland Chemical
Norfloc 18140	Polymer - Lamella Clarifier & Centrifuge Process	Northland Chemical
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, 1 865 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
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
MDWL, 170/03	Missed Samples – RW/TW/DW Mthly Chemicals & Filter Backwash TSS	Dec 5, 203	Operators to be more diligent in following the Sampling Calendar	Complete

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
There were no Non-Compliances identified in the inspection report during this reporting period.				

Flows

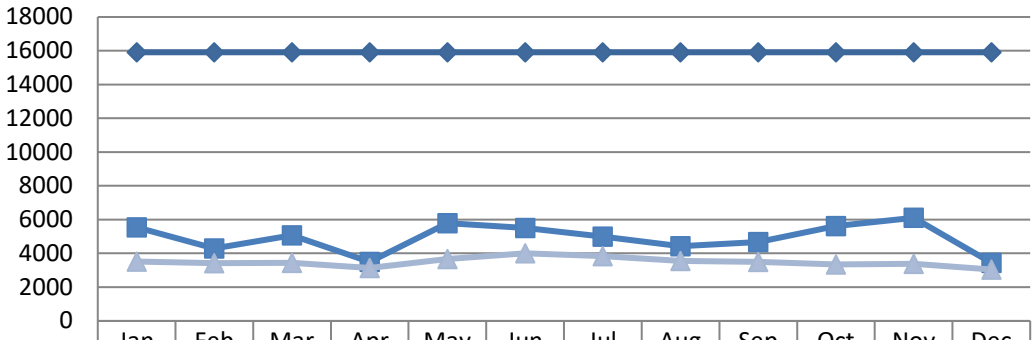
In 2023, the average day flow was at approximately 20.8% of the current plant design for the Deep River Drinking Water System, and the maximum day flow was at approximately 35.5% of the plant design of 13 638 m^3/d.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2023 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)

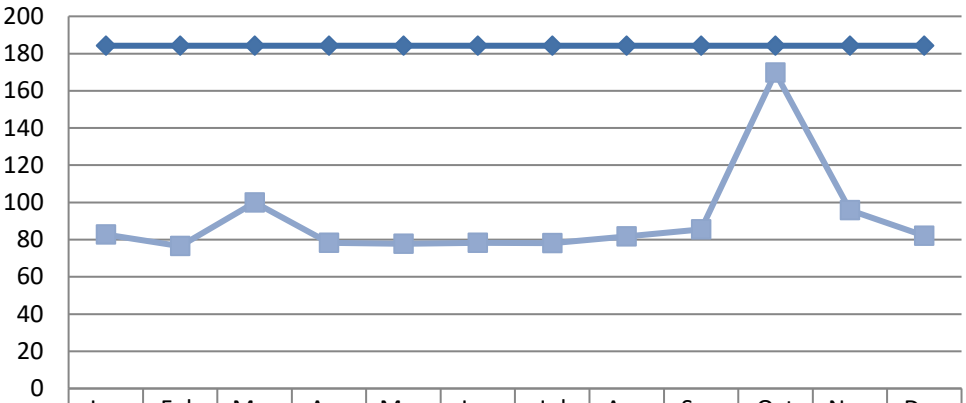
Max Allowable PTTW



	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)	5536	4291	5064	3503	5783	5513	4997	4423	4666	5624	6106	3448
Avg (m3/d)	3512	3418	3444	3144	3663	4005	3833	3557	3501	3339	3389	3046

Monthly Rated Flows (L/s)

Max allowable rate - PTTW



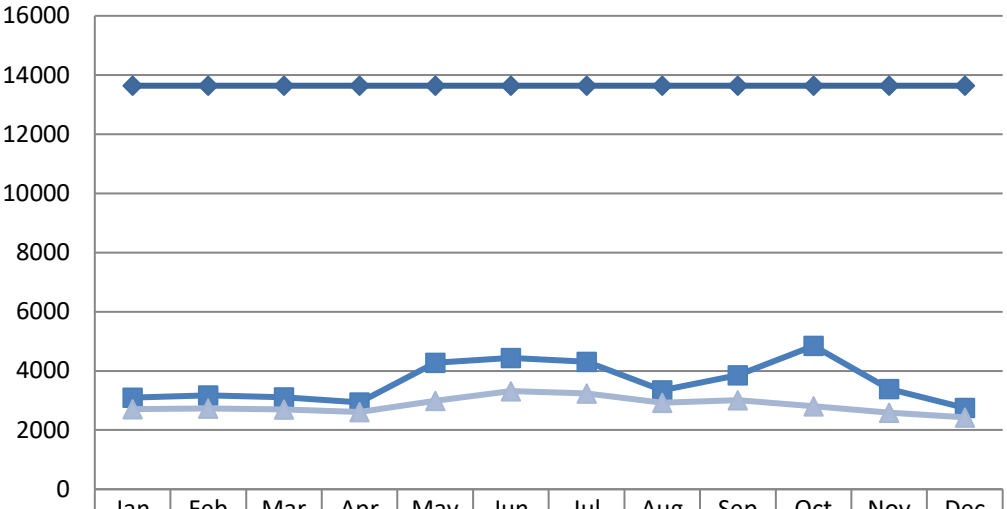
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2
Max Rate (L/s)	82.8	76.5	100.0	78.4	77.8	78.3	78.2	81.8	85.5	169.7	95.9	82.0

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

Monthly Rated Flows

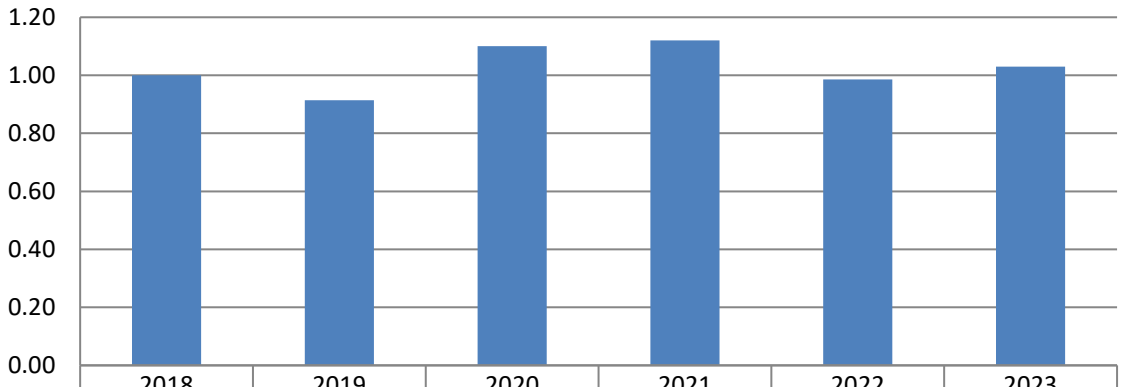
Rated Capacity – MDWL



	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)	3095	3170	3111	2939	4272	4438	4313	3349	3860	4845	3387	2749
Avg (m3/d)	2707	2734	2699	2616	2990	3318	3241	2925	3008	2809	2584	2431

Annual Total Flow Comparison

Total Annual m3(x 10^6)



	2018	2019	2020	2021	2022	2023
WTP (m3)	1.00	0.914	1.10	1.12	0.986	1.03

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	6	0	41			
Treated Water	52	0	0	0	0	52	0	151
Distribution Water	209	0	0	0	0	149	0	500

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	52	0.64	6.27
Turbidity, In-House (NTU) - TW	52	0.07	0.58
Turbidity, In-House (NTU) - Filt1	49	0.06	0.80
Turbidity, On-Line (NTU) - Filt1	8760	0	0.60
Turbidity, In-House (NTU) - Filt2	49	0.05	0.97
Turbidity, On-Line (NTU) - Filt2	8760	0.15	0.29
Turbidity, In-House (NTU) - Filt3	49	0.03	0.91
Turbidity, On-Line (NTU) - Filt3	8760	0.17	0.26
Free Chlorine Residual, On-Line (mg/L) - TW	8760	1.30	2.63
Free Chlorine Residual, In-House (mg/L) - TW	247	1.32	2.39
Total Chlorine Residual, In-House (mg/L) - TW	247	1.52	2.82
Free Chlorine Residual, In-House (mg/L) – DW, DW1-DW4, DW7	364	0.07	2.02
Fluoride Residual, In-House (mg/L) - TW	241	0	0.80
Fluoride Residual, On-Line (mg/L) - TW	8760	0	7.81

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	2023/01/04	1.6	6.0	No	No
Arsenic: As (ug/L) - TW	2023/01/04	<MDL 1.0	10.0	No	No
Barium: Ba (ug/L) - TW	2023/01/04	<MDL 10.0	1000.0	No	No
Boron: B (ug/L) - TW	2023/01/04	<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	2023/01/04	<MDL 0.1	5.0	No	No
Chromium: Cr (ug/L) - TW	2023/01/04	<MDL 1.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2023/01/04	<MDL 0.1	1.0	No	No
Selenium: Se (ug/L) - TW	2023/01/04	<MDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2023/01/04	<MDL 1.0	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2023/11/07	0.48	1.5	No	No
Nitrite (mg/L) - TW	2023/01/03	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2023/04/04	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2023/07/04	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2023/10/03	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2023/01/03	0.24	10.0	No	No
Nitrate (mg/L) - TW	2023/04/04	0.25	10.0	No	No
Nitrate (mg/L) - TW	2023/07/04	0.18	10.0	No	No
Nitrate (mg/L) - TW	2023/10/03	0.20	10.0	No	No
Sodium: Na (mg/L) - TW	2023/01/04	17.0	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: 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	28	31	500	0
pH	3	6	8.50	9.67	9.5	2
*Lead (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A

*Lead will be sampled 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
Treated Water					
Alachlor (ug/L) - TW	2023/01/04	<MDL 0.5	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2023/01/04	<MDL 1.0	5.00	No	No
Azinphos-methyl (ug/L) - TW	2023/01/04	<MDL 2.0	20.00	No	No
Benzene (ug/L) - TW	2023/01/04	<MDL 0.5	1.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Benzo(a)pyrene (ug/L) - TW	2023/01/04	<MDL 0.01	0.01	No	Yes*
Bromoxynil (ug/L) - TW	2023/01/04	<MDL 0.5	5.00	No	No
Carbaryl (ug/L) - TW	2023/01/04	<MDL 5.0	90.00	No	No
Carbofuran (ug/L) - TW	2023/01/04	<MDL 5.0	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2023/01/04	<MDL 0.2	2.00	No	No
Chlorpyrifos (ug/L) - TW	2023/01/04	<MDL 1.0	90.00	No	No
Diazinon (ug/L) - TW	2023/01/04	<MDL 1.0	20.00	No	No
Dicamba (ug/L) - TW	2023/01/04	<MDL 1.0	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2023/01/04	<MDL 0.4	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2023/01/04	<MDL 0.4	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2023/01/04	<MDL 0.5	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2023/01/04	<MDL 0.5	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2023/01/04	<MDL 4.0	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2023/01/04	<MDL 1.0	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2023/01/04	<MDL 1.0	100.00	No	No
Diclofop-methyl (ug/L) - TW	2023/01/04	<MDL 0.9	9.00	No	No
Dimethoate (ug/L) - TW	2023/01/04	<MDL 2.5	20.00	No	No
Diquat (ug/L) - TW	2023/01/04	<MDL 5.0	70.00	No	No
Diuron (ug/L) - TW	2023/01/04	<MDL 10.0	150.00	No	No
Glyphosate (ug/L) - TW	2023/01/04	<MDL 10.0	280.00	No	No
Malathion (ug/L) - TW	2023/01/04	<MDL 0.5	190.00	No	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2023/01/04	<MDL 10.0	100.00	No	No
Metolachlor (ug/L) - TW	2023/01/04	<MDL 1.0	50.00	No	No
Metribuzin (ug/L) - TW	2023/01/04	<MDL 5.0	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2023/01/04	<MDL 0.5	80.00	No	No
Paraquat (ug/L) - TW	2023/01/04	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2023/01/04	<MDL 0.1	3.0	No	No
Pentachlorophenol (ug/L) - TW	2023/01/04	<MDL 1.0	60.0	No	No
Phorate (ug/L) - TW	2023/01/04	<MDL 0.5	2.0	No	No
Picloram (ug/L) - TW	2023/01/04	<MDL 5.0	190.00	No	No
Prometryne (ug/L) - TW	2023/01/04	<MDL 0.25	1.00	No	No
Simazine (ug/L) - TW	2023/01/04	<MDL 1.0	10.00	No	No
Terbufos (ug/L) - TW	2023/01/04	<MDL 0.4	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2023/01/04	<MDL 0.3	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2023/01/04	<MDL 1.0	100.00	No	No
Triallate (ug/L) - TW	2023/01/04	<MDL 1.0	230.00	No	No
Trichloroethylene (ug/L) - TW	2023/01/04	<MDL 0.3	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2023/01/04	<MDL 0.7	5.00	No	No
Trifluralin (ug/L) - TW	2023/01/04	<MDL 1.0	45.00	No	No
Vinyl Chloride (ug/L) - TW	2023/01/04	<MDL 0.2	1.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Distribution Water					
Trihalomethane: Total (ug/L) Running Annual Average (RAA) - DW	2023	98.9	100.00	No	Yes
HAA: Total (ug/L) Running Annual Average (RAA) - DW	2023	62.4	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	2023	< 2 - < 19 mg/L	
			Annual Average	< 4.46 mg/L	25 mg/L

Major Maintenance Summary (Capital)

WO #	Description
3620725	Replacement of fluoride probe and reference probe.
3623237	Inspection or raw water intake by divers.
3623527	Purchase of standard for turbidity analyzer calibrations and colorimeter for CL17 for CW#1.
3624896	Annual calibration/verification of flow meter at CNL reservoir.
35263969	Purchase of sodium hypochlorite for TDR section 1 and CNL section 2.
3526893/3203412	Purchase of CL17 chlorine analyzer reagents for 6 units (2 at booster station and 4 at reservoir).
3571736	Costs for TDR section 1 annual flow meter calibration for booster and metering pit flow meters.
3573432	Annual flow meter calibrations by third party at WTP.
3522979	Electrical repairs to 600V feed to filter #2 and #3 valve.
3524455/3526132/3204346	Replacement of chlorine gas vacuum regulator with rotameter.
3433901	Costs for integrator to perform work within the plant on SCADA, cell communication strength, surge pump switch, VFD, and trend issues.
3480115	Purchase of new pH portable meter and probe.
3481770	Purchase of miscellaneous items such as keys, plywood for lamella tube settlers installation, 48” clear cut deck, hydrant antifreeze and sulfuric acid.
3482874	Purchase of roller assembly for sample pump in reservoir CNL section 2.
3341369/3432946	Costs for cleanout of backwash tanks of process sand and anthracite by contractor.
3430656	Purchase of two spare actuators for filtration area.

3432913	Purchase of sodium hypochlorite for TDR section 1 and CNL section 2.
3246864	Replacement of CNL colorimeter assembly for CL17 #2 chlorine analyzer at booster station.
3288585	Maintenance costs for water pump issue with plant generator.
3290597	Costs for service call for integrator to assist in LLP #2 fault and SCADA programming.
3340665	Miscellaneous capital purchases for strainers for poly pump, grease gun for centrifuge bearings, plugs, marking paint, tubing, tarp to cover lamella tube settler, filter glass and belts.
3243367	Service call for integrator to assist in Filter #3 actuator problems.
3244743	Replacement of tube settlers for the lamella clarifier.
3201172	Service call for contractor to troubleshoot four gas heaters and furnace.
3203066	Miscellaneous purchases for items including sump pump for basement, plug end, material for THM project, pallet jack, stabical standard, box extension, drywall and lumber and other material to complete training room, piping for turbidity meters, ballasts and bulbs, fuses and hoses, belts for air blower and circulation pump, tools, toilet lever repair, actiflo programming rate troubleshooting, and other hardware.

Distribution Maintenance

Date	Location Reference	Details
2023	Various Locations	Twenty-two (22) Water Turn OFF/ON's for Service Repairs and Locates
2023	Various Locations	Seasonal Flushing – Spring was completed between May - June; Fall Flushing was completed between Sept - Oct
2023	Various Locations	Winterized Hydrants – completed by Nov 2nd
2023	Five (5) Locations – Dalton Street, Laurier Avenue, Frontenac Crescent, alley behind Valu-Mart, Home Hardware	Broken Water Mains – Jan 6th, Jan 13th, Feb 3rd, Oct 9th, Nov 28th
2023	Various Locations	Twenty (20) Water service seasonal Shut OFF/ON's – Residential/Recreational
2023	Algonquin Street, Wolfe Avenue, Greenwood Road, Darwin Crescent (3)	Six (6) Community Complaint – 5 discoloured water + 1 taste
Jan 16th	Alder Crescent & Laurier Avenue	Steamed out 3 hydrants from flushing on water main break
Jan 19th, Apr 20th, Oct 30th, Nov 30th	Lawrence Hall	Assisted with flushing sprinkler system with contractor

Date	Location Reference	Details
Jan 20th	Tamarack Apartment Bldg	Checked for isolation valve in preparation for shutdown by contractor to install backflow preventer
Mar 27th	Low Lift Bldg	Checked amperage since cannot pull pumps
Apr 12th	Poplar Street	Energize sprinkler line valve on Poplar, as per CNL
May 3rd, May 25th, June 1st	Various Locations	Met with town staff to review hydrants, valves and water main re-lining and replacement list
May 8th	Huron Street	Bagged hydrant (HUR1) out-of-service
May 23-24th	Hospital	Met with public works staff and hospital maintenance to review water shutdown for internal valve replacement
Jun 1st	Alder Crescent, Huron Street	Vacuumed out curb stops for shutdown for plumbers
Jun 15th, Jun 21st, Jul 10th	Beach Avenue	Checked hydrant that was leaking out of loose cap; will not shut off – town needs to repair/dig up; New curb stop installation at property line
Jul 4th	Laurier Avenue	Cleaned out pipe, but valve will not turn
Aug 21st	Booster Pumping Station	Met with town to reposition septic weepers so road can be built to new LTC building next door
Aug 23rd	Darwin Crescent	Begin running hydrant on Darwin with small hose to sanitary sewer due reduce colour complaints
Aug 31st	Highway #17 – Old Auto Garage	Tried to clean out curb stop full of dirt and hardened to close off small leak before shut off valve inside garage – notified town will need to be dug or sucked out to close valve
Sep 20th	Low Lift Bldg	Intake inspection by divers – all pumps locked out until completed
Oct 5-6th	Frontenac Crescent	Hydrant (FRN-11) put out-of-service until repaired by public works

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:Jan 29, 2024 8:30 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 | 2024/01/29
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