Crysler Drinking Water System

Waterworks # 220008649
System Category – Large Municipal Residential

Annual Report

Township of North Stormont

Reporting Period of January 1st – December 31st 2018

Issued: February 20, 2019

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

As Crysler's drinking water system is considered a large municipal residential system under O. Reg. 170/03, this report must be made available to the public. It can be found at the Township of North Stormont's municipal office located at 15 Union Street, Berwick, Ontario and on the Township website (https://northstormont.ca).

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	1
Ministry of Labour Inspections	0
QEMS External Audit	1
AWQI's/BWA	1/1
Non-Compliance	0
Spills	0
Watermain Breaks	0

System Process Description

Raw Source

Crysler's drinking water system draws water from a groundwater production well (Well #1) located approximately 5 kilometers east of the Village. There is also a standby well (Well #2) located on site. Well #1 is a 250 mm diameter 12.2 m deep drilled well equipped with a submersible turbine pump rated at 19.5 L/s. The standby well is a 250 mm diameter 13.4 m deep drilled well equipped with a submersible turbine pump rated at 19.5 L/s. Crysler's well supply is considered groundwater under the direct influence of surface water (GUDI) with effective in situ filtration.

Treatment

Raw water enters the pump house and passes through one of two ultra violet light reactors which provide primary disinfection of the water. UV intensity is monitored continuously. Sodium hypochlorite is then injected to provide secondary disinfection. Contact time is achieved in the transmission pipe. Treated water leaving the plant is continuously monitored for flow, chlorine residual and turbidity.

Distribution

The water system began supplying water to the Village in 1996. The distribution system consists of an elevated storage tank and approximately 11 kilometers of PVC distribution piping. The elevated tank is fabricated of steel and mounted on a concrete pedestal. It is located on the north side of County Road 13 approximately 600 m east of Crysler and has a storage capacity of 1238 m^3. The storage tank provides for peak hour demands and fire flows.

Treatment Chemicals used during the reporting year

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag/Jutzi

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
06/11/18	139740	Distribution System	Loss of Pressure	Plant lockout occurred while tower was offline for maintenance. Precautionary BWA issued by MOH.	O. Reg. 170/03	Collected distribution samples after lockouts cleared and service restored. BWA lifted by MOH.

Non-Compliance

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
None to report.				

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
None to report.				

Flows

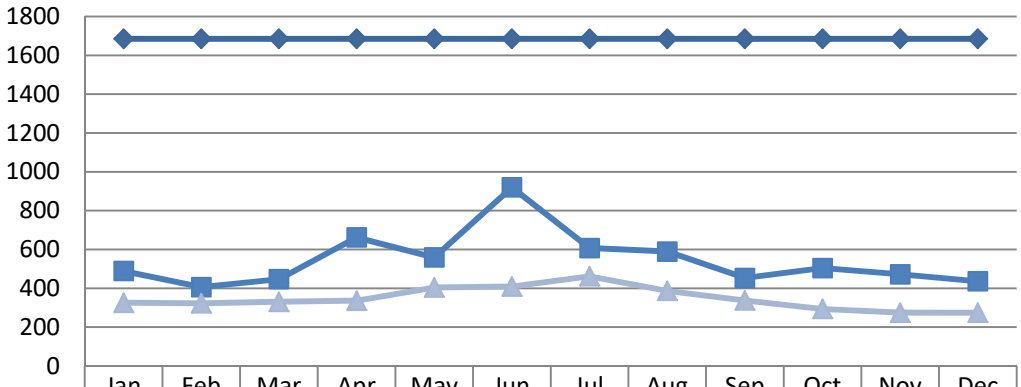
Crysler's drinking water system is operating on average under half the rated capacity.

Raw Water Flows

Raw water flows are regulated under the Permit to Take Water (PTTW). Raw flow data for 2018 was submitted to the Ministry electronically under Permit #1075-9AENZU. The submission confirmation can be found attached in Appendix A.

Well #1 - Flows

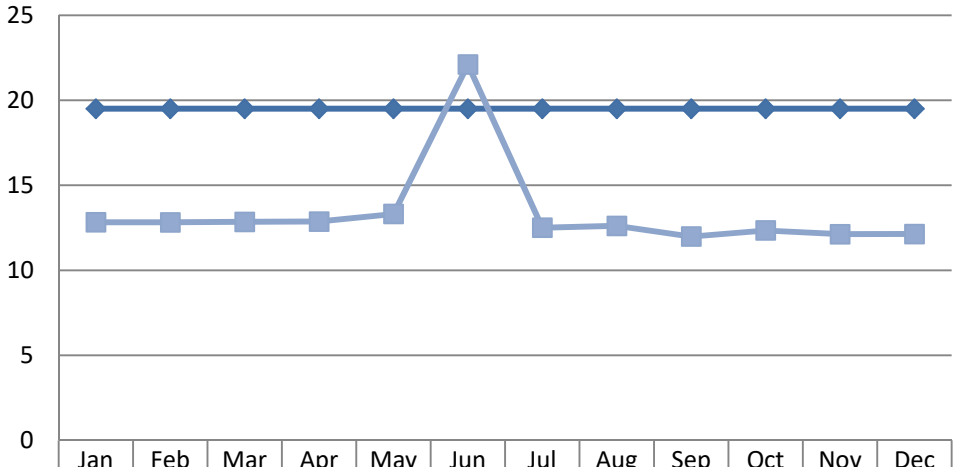
Max. Allowable Flow - PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685
Max Flow (m3/d)	489	406	447	662	559	920	607	589	453	504	472	436
Avg Flow (m3/d)	325	322	330	336	404	409	462	387	337	294	274	274

Well #1 - Maximum Flow Rates

Max. Allowable Rate - PTTW

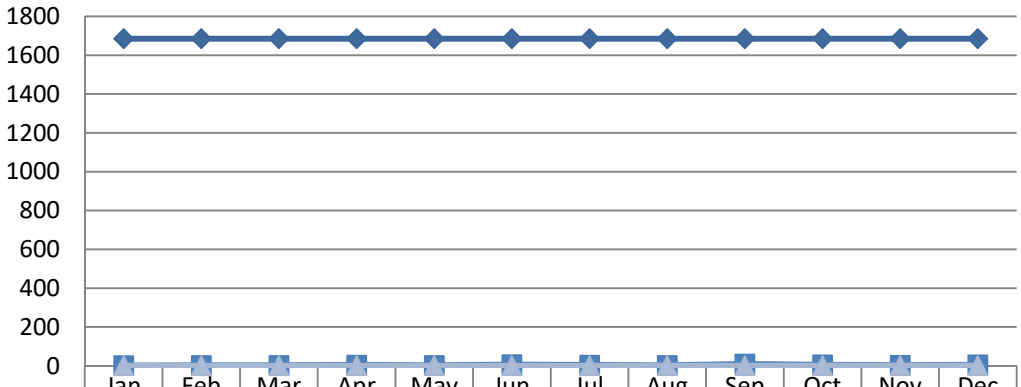


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Max Rate (L/s)	12.8	12.8	12.8	12.9	13.3	22.1	12.5	12.6	12.0	12.3	12.1	12.1

** Well flow spikes in June above 19.5 L/sec <1 minute in duration, associated with loss of pressure AWQI #139740*

Well #2 (Standby) - Flows

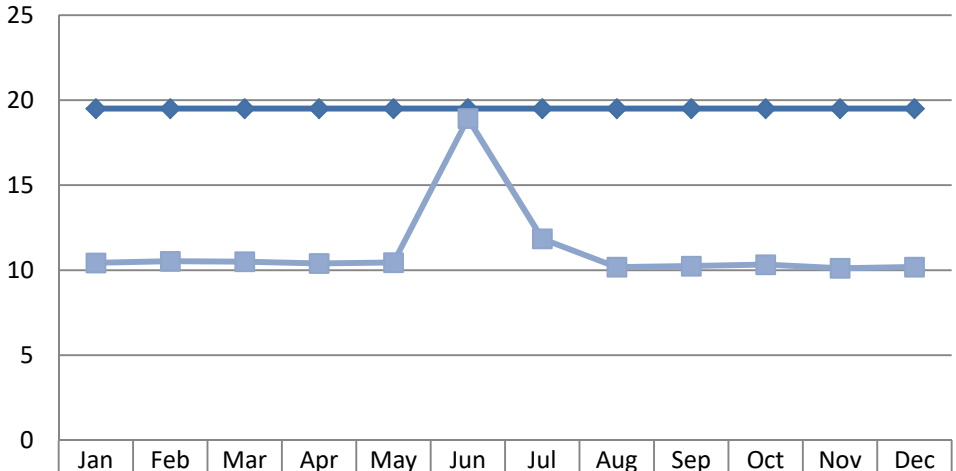
Max. Allowable Flow - PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685
Max Flow (m3/d)	1	2	2	4	2	6	4	2	9	5	3	5
Avg Flow (m3/d)	0.16	0.29	0.23	0.30	0.16	0.67	0.26	0.23	0.57	0.65	0.40	0.42

Well #2 (Standby) - Maximum Flow Rates

Max. Allowable Rate - PTTW



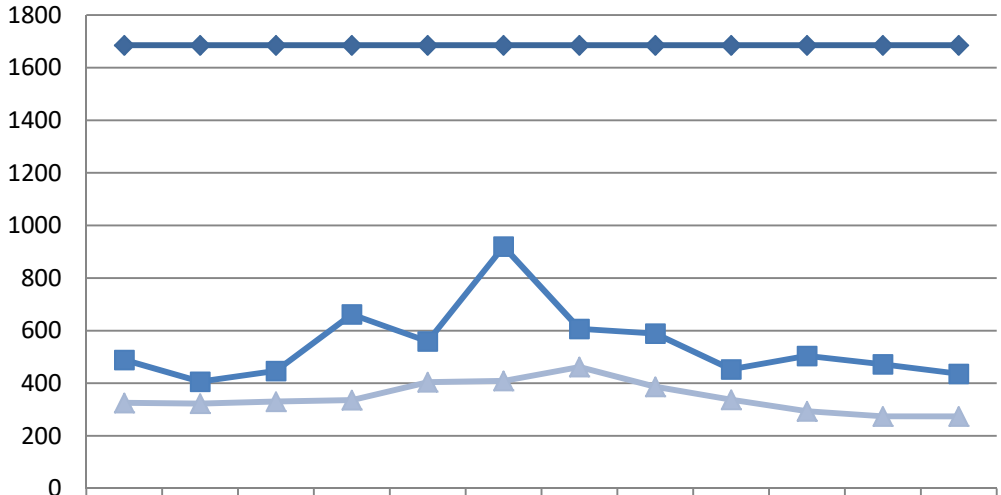
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Max Rate (L/s)	10.4	10.5	10.5	10.4	10.4	18.9	11.8	10.2	10.2	10.3	10.1	10.2

Treated Water Flows

Treated water flows are regulated under the Municipal Drinking Water Licence (MDWL).

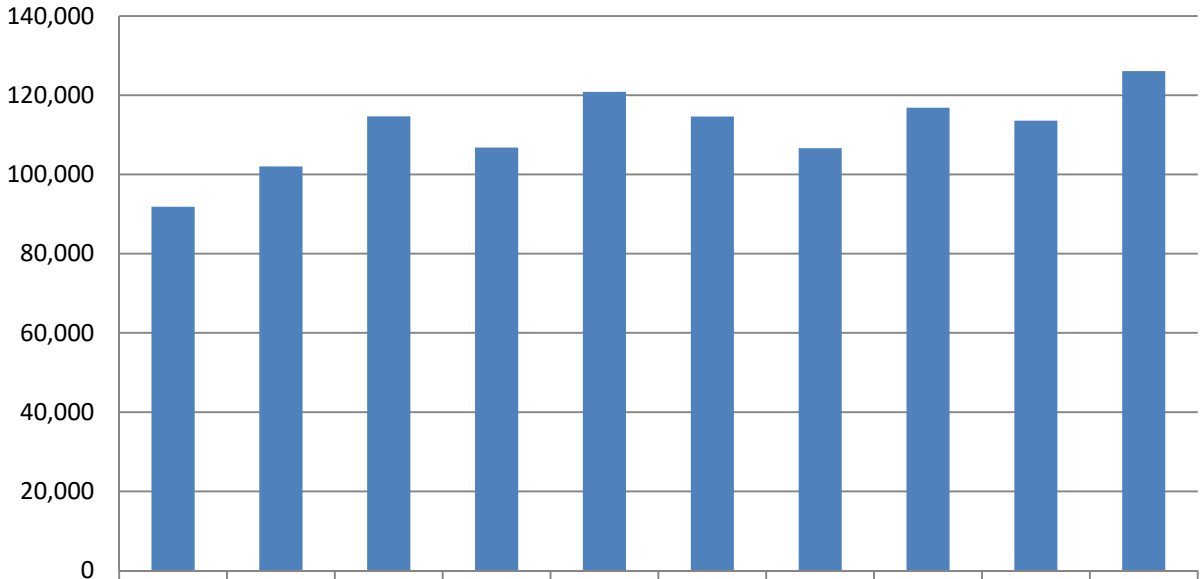
Treated Flows

Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685
Max Flow (m3/d)	489	406	447	662	559	920	607	589	453	504	472	436
Avg Flow (m3/d)	325	322	330	336	404	409	462	387	337	294	274	274

Annual Total Flow Comparison



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
WTP (m3)	91,844	102,026	114,666	106,793	120,850	114,650	106,650	116,853	113,574	126,103

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	Min	Max
Raw Water	108	0	0	0	15	n/a	n/a
Treated Water	52	0	0	0	5	0	1940
Distribution Water	106	0	0	0	0	0	33

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW1	12	0.29	0.37
Turbidity, In-House (NTU) - RW2	12	0.30	0.35
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.25	5.00
Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.33	2.31
Free Chlorine Residual, DW Field (mg/L) - DW	106	0.79	2.06
UV Intensity (W/m^2)	8760	42.08	n/a
UV Transmittance (%)	100	93.0	100

NOTE: Spikes recorded by on-line instrumentation may result from 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 60 months. Nitrate and Nitrite are tested quarterly and metals are tested annually as required under O. Reg. 170/03. In the event any parameter exceeds half the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O. Reg. 169/03
- MDL = 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	2018/01/22	0.03	6.0	No	No
Arsenic: As (ug/L) - TW	2018/01/22	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2018/01/22	79.3	1000.0	No	No
Boron: B (ug/L) - TW	2018/01/22	9.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2018/01/22	0.008	5.0	No	No
Chromium: Cr (ug/L) - TW	2018/01/22	<MDL 0.03	50.0	No	No
Mercury: Hg (ug/L) - TW	2018/01/22	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2018/01/22	0.05	50.0	No	No
Uranium: U (ug/L) - TW	2018/01/22	2.5	20.0	No	No

Additional Inorganics					
Fluoride (mg/L) - TW	2017/01/09	0.07	1.5	No	No
Nitrite (mg/L) - TW	2018/01/22	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/06/25	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/07/16	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/10/15	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2018/01/22	0.448	10.0	No	No
Nitrate (mg/L) - TW	2018/06/25	0.338	10.0	No	No
Nitrate (mg/L) - TW	2018/07/16	0.255	10.0	No	No
Nitrate (mg/L) - TW	2018/10/15	0.124	10.0	No	No
Sodium: Na (mg/L) - TW	2018/01/09	8.72	20*	n/a	n/a

*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 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 a reduced sampling schedule. No plumbing samples were collected.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	4	4	160	169	n/a	-
pH	4	4	8.0	8.3	n/a	-
Lead (ug/l)	-	-	-	-	10	0

Organic Parameters

These parameters are tested annually as a requirement under O. Reg. 170/03. In the event any parameter exceeds half the maximum allowable concentration the parameter is required to be sampled quarterly.

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

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2018/01/22	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2018/01/22	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2018/01/22	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2018/01/22	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2018/01/22	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2018/01/22	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2018/01/22	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2018/01/22	<MDL 0.01	90.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Carbon Tetrachloride (ug/L) - TW	2018/01/22	<MDL 0.16	2.00	No	No
Chlorpyrifos (ug/L) - TW	2018/01/22	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2018/01/22	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2018/01/22	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2018/01/22	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2018/01/22	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2018/01/22	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2018/01/22	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2018/01/22	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2018/01/22	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2018/01/22	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2018/01/22	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2018/01/22	<MDL 0.03	20.00	No	No
Diquat (ug/L) - TW	2018/01/22	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2018/01/22	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2018/01/22	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2018/01/22	<MDL 0.02	190.00	No	No
2-Methyl-4-Chlorophenoxyacetic Acid (MCPA) (ug/L) - TW	2018/01/15	<MDL 0.12	100.00	No	No
Metolachlor (ug/L) - TW	2018/01/22	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2018/01/22	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2018/01/22	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2018/01/22	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2018/01/22	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2018/01/22	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2018/01/22	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2018/01/22	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW	2018/01/22	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2018/01/22	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2018/01/22	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2018/01/22	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2018/01/22	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2018/01/22	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2018/01/22	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2018/01/22	<MDL 0.25	5.00	No	No
Trifluralin (ug/L) - TW	2018/01/22	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2018/01/22	<MDL 0.17	1.00	No	No

Distribution samples are tested quarterly for THM's and HAA's in accordance with O. Reg. 170/03.

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Distribution Water					
Trihalomethane (THM): Total (ug/L) Annual Average - DW	2018/01/01	8.84	100	No	No
Haloacetic Acid (HAA): Total (ug/L) Annual Average - DW	2018/01/01	<MDL 5.3	n/a	n/a	n/a

Additional Legislated Samples

No additional sampling required.

Major Maintenance Summary

Description
- Rebuilt 4 hydrants - Installed new chlorine analyzer at WTP - Installed new turbidity analyzer at WTP - Rebuilt chlorine pump panels - Installed new chlorine analyzer in distribution system - Purchased new submersible well pump - Cleaned and inspected water tower - Replaced broken hydrant - Upgraded radio communication - Installed cathodic protection

Appendix A

WTRS 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: 1075-9AENZU
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF NORTH STORMONT.
Received on:Jan 22, 2019 2:39 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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NORTH2 DUNDAS2 | 2019/01/22
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