

# Finch Drinking Water System

---

Waterworks # 210003912  
System Category – Large Municipal Residential

## Annual Report

Township of North Stormont

Reporting Period of January 1<sup>st</sup> – December 31<sup>st</sup> 2018

Issued: February 20, 2019

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

<b>Report Availability .....</b>	<b>1</b>
<b>Compliance Report Card .....</b>	<b>1</b>
<b>System Process Description .....</b>	<b>1</b>
Raw Source .....	1
Treatment .....	1
Distribution .....	2
<b>Summary of Non-Compliance .....</b>	<b>2</b>
Adverse Water Quality Incidents .....	2
Non-Compliance .....	2
Non-Compliance Identified in a Ministry Inspection .....	2
<b>Flows .....</b>	<b>3</b>
Raw Water Flows .....	3
Treated Water Flows .....	5
<b>Regulatory Sample Results Summary .....</b>	<b>6</b>
Microbiological Testing .....	6
Operational Testing .....	6
Inorganic Parameters .....	6
Organic Parameters .....	7
Additional Legislated Samples .....	9
<b>Major Maintenance Summary .....</b>	<b>9</b>
<b>WTRS Submission Confirmation .....</b>	<b>A</b>

## Report Availability

As Finch’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, 15 Union Street, Berwick, Ontario and on the Township website ([www.northstormont.ca](http://www.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	1/0
Non-Compliance	0
Spills	0
Watermain Breaks	0

## System Process Description

### Raw Source

Finch’s drinking water system draws water from two groundwater production wells completed in bedrock (Well #1 and Well #2). Well #1 is a 200 mm diameter 54 m deep drilled well located inside the treatment building equipped with a submersible well pump rated at 5 L/s at 50 m total dynamic head (TDH). Well #2 is a 200 mm diameter 54 m deep drilled well located inside the treatment building equipped with a submersible well pump rated at 9.5 L/s at 44.5 m total dynamic head (TDH).

### Treatment

The treatment plant is designed for 777.6 m<sup>3</sup> per day. Contact time is provided in the plant piping, clear well and filters. The treatment facility houses a forced draft aeration tower with capacity of 8 L/s equipped with plastic packing. Sodium hypochlorite is used for primary and secondary disinfection. Sodium hypochlorite is injected by one of two chemical feed pumps prior to entry into the clear well. The clear well is constructed of reinforced concrete and has a minimum operating volume of 20.5 m<sup>3</sup>. Two high lift pumps, each with a capacity of 5 L/s at a TDH of 60 m, deliver water from the clear well to two dual media pressure filters and then to the distribution system. Operation of the high lift pumps is controlled by the water level in the elevated storage tank. The dual media pressure filters are operated in parallel. Each filter has a flow rate of 4 L/s at a filtration rate of approximately 9 m/h. The treatment

plant also houses a 1.5 m diameter baffled pressure vessel for flocculation (presently unused) with a volume of approximately 4 m<sup>3</sup>. The pressure vessel provides a detention time of 8 minutes at a design flow of 8 L/s. Backwash wastewater is collected in a surge tank of approximately 15 m<sup>3</sup> capacity. The wastewater is pumped directly from the surge tank to the sanitary sewer. Water leaving the treatment plant is continuously monitored for flow, chlorine residual and turbidity.

### Distribution

The distribution system consists of an elevated storage tank and approximately 9 km of PVC distribution piping installed in the 1970's. The elevated tank is located across the street from the water treatment plant and has a storage capacity of 580 m<sup>3</sup>. It 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
10/09/2018	143514	Distribution System	Total Coliform detected in routine sample	6 T.C.	O. Reg. 170	Resamples collected. Issue resolved.

### 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

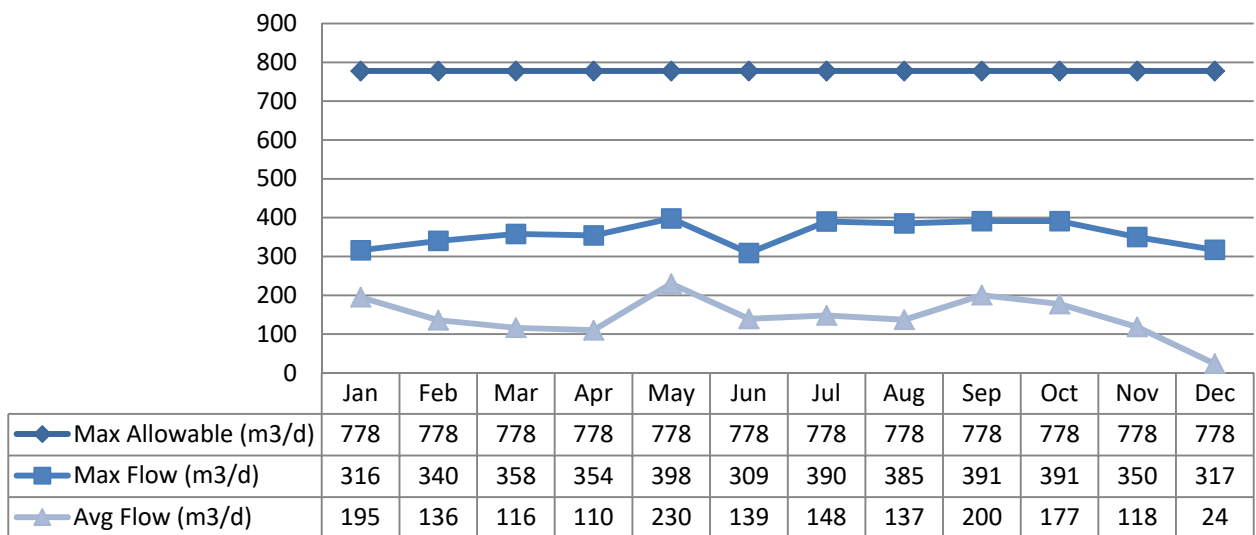
Finch’s drinking water system is operating on average under half the rated capacity.

### 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 #7327-83ZL7J. The submission confirmation can be found attached in Appendix A.

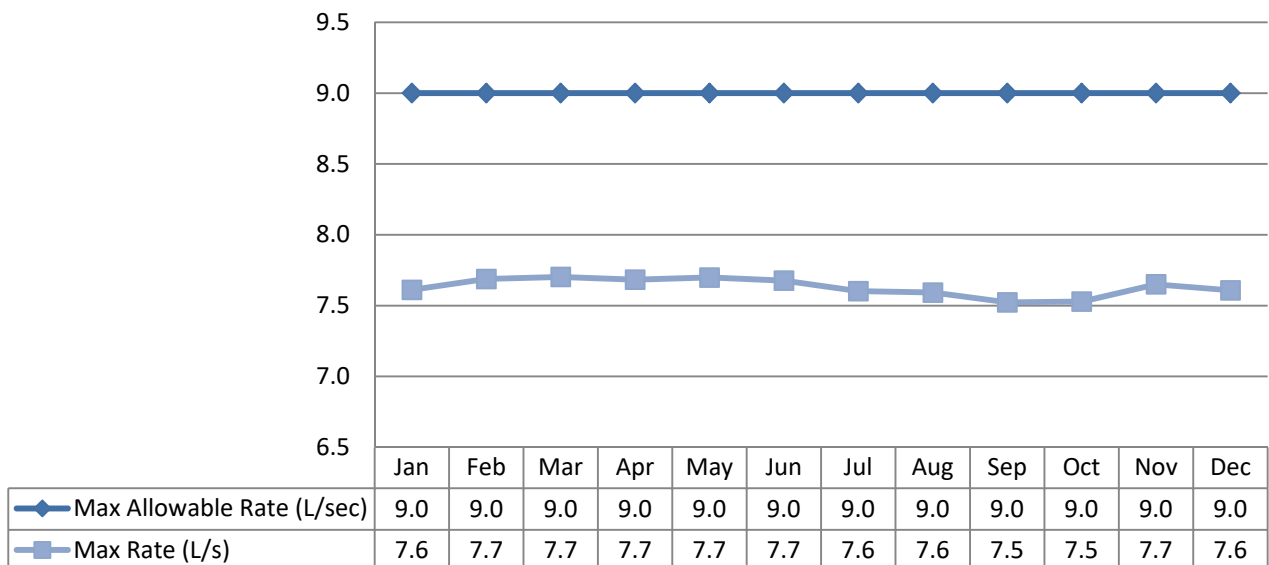
#### Well #1 - Flows

Max. Allowable Flow - PTTW



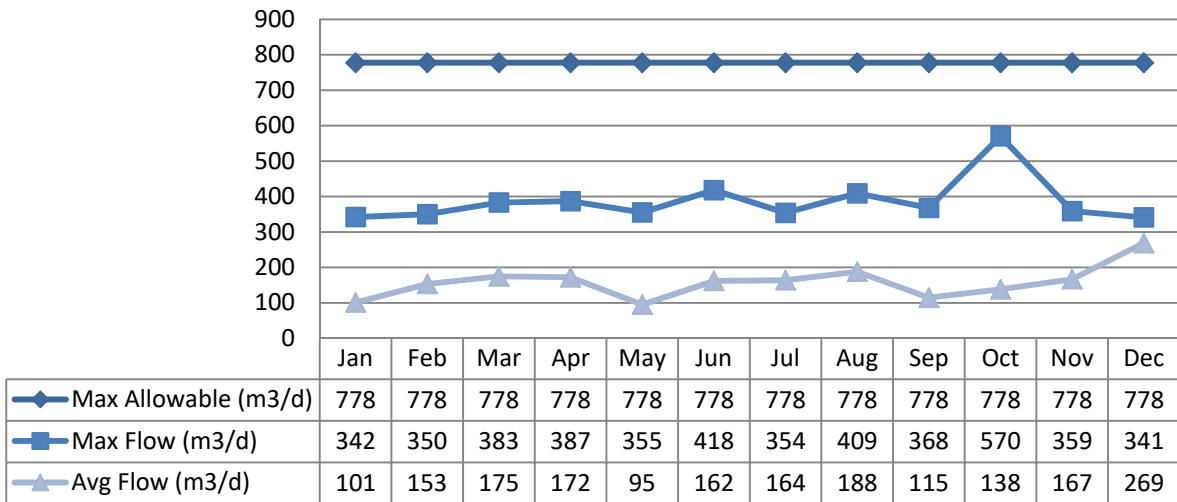
#### Well #1 - Maximum Flow Rates

Max. Allowable Rate - PTTW



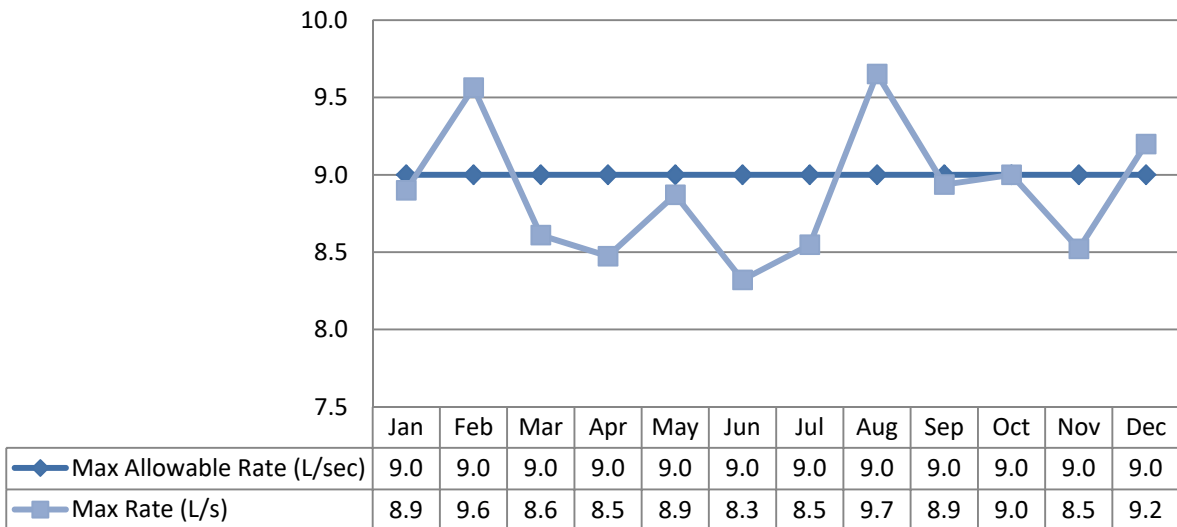
Well #2 - Flows

Max. Allowable Flow - PTTW



Well #2 - Maximum Flow Rates

Max. Allowable Rate - PTTW



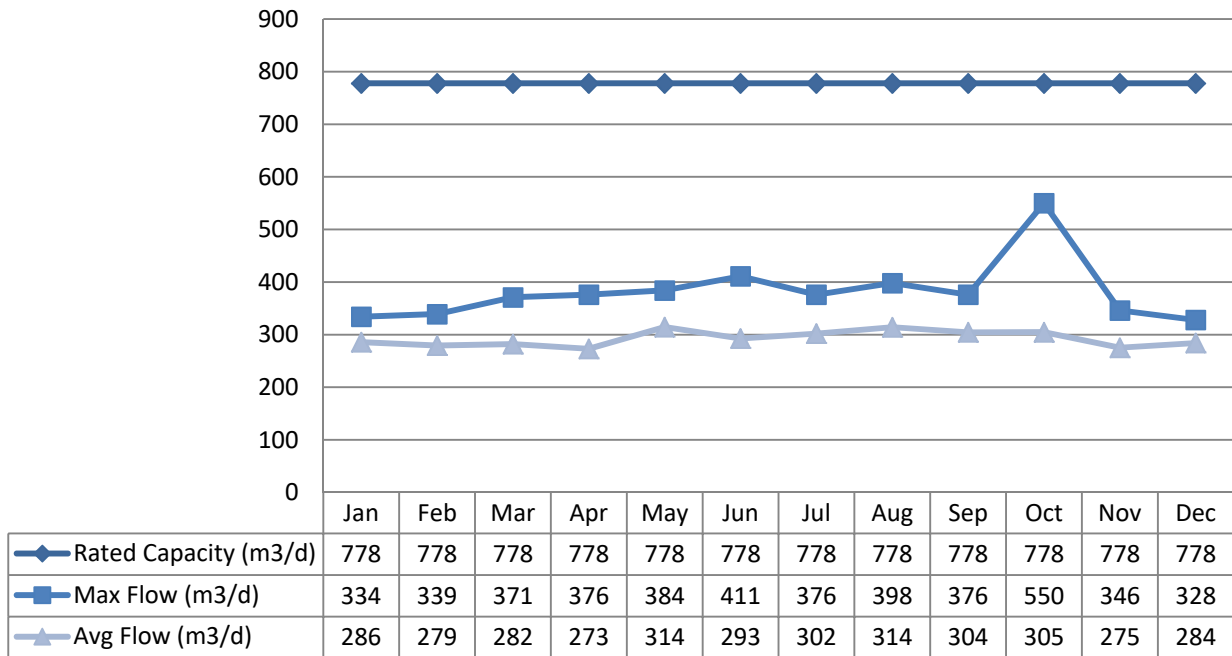
\* Well #2 - spikes above 9 L/s <1 min. on start up

**Treated Water Flows**

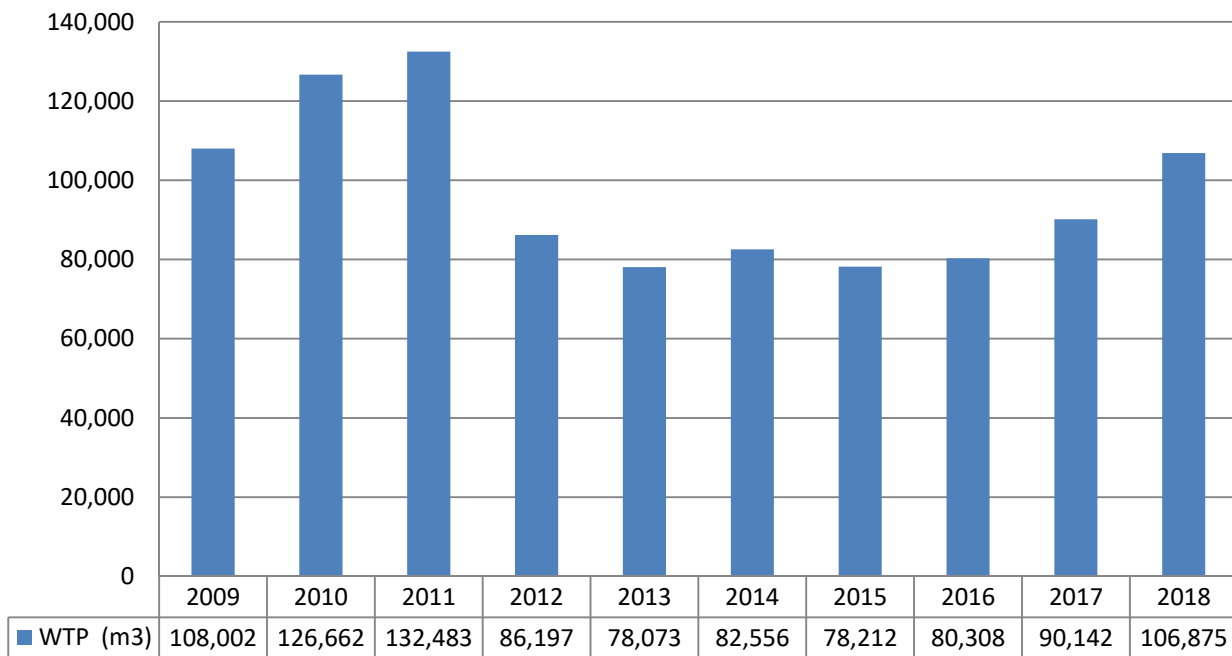
Treated water flows are regulated under the Municipal Drinking Water Licence (MDWL).

Treated Flows

Rated Capacity - MDWL



Annual Total Flow Comparison



## 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	104	0	0	0	0	n/a	n/a
Treated Water	52	0	0	0	0	0	400
Distribution Water	104	0	0	0	6	0	1240

### Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW1	12	0.30	0.36
Turbidity, In-House (NTU) - RW2	12	0.31	0.38
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.45	4.21
Free Chlorine Residual, On-Line (mg/L) - DW1	8760	0.48	2.75
Free Chlorine Residual, In-House (mg/L) - DW1	52	0.73	2.18
Free Chlorine Residual, In-House (mg/L) - DW2	52	0.65	1.86

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 every 36 months 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
<b>Treated Water</b>					
Antimony: Sb (ug/L) - TW	2018/01/22	0.13	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	403	1000.0	No	No
Boron: B (ug/L) - TW	2018/01/22	181	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2018/01/22	0.016	5.0	No	No
Chromium: Cr (ug/L) - TW	2018/01/22	0.12	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	<MDL 0.04	50.0	No	No
Uranium: U (ug/L) - TW	2018/01/22	0.115	20.0	No	No



Additional Inorganics					
Fluoride (mg/L) - TW	2017/01/09	0.47	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	0.125	10.0	No	No
Nitrate (mg/L) - TW	2018/06/25	0.118	10.0	No	No
Nitrate (mg/L) - TW	2018/07/16	0.095	10.0	No	No
Nitrate (mg/L) - TW	2018/10/15	0.105	10.0	No	No
Sodium: Na (mg/L) - TW	2017/01/16	90.6	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 reduced sampling. 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)	3	3	308	325	n/a	-
pH	3	3	7.89	8.7	n/a	-
Lead (ug/l)	-	-	-	-	10	0

#### Organic Parameters

These parameters are tested every 36 months 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
<b>Treated Water</b>					
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	2018/01/22	<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	No. of Exceedances	
				MAC	1/2 MAC
<b>Distribution Water</b>					
Trihalomethane (THM): Total (ug/L) Annual Average - DW	2018/01/01	60.3	100	No	Yes
Haloacetic Acid (HAA): Total (ug/L) Annual Average - DW	2018/01/01	15.5	n/a	n/a	n/a

### Additional Legislated Samples

No additional sampling required.

## Major Maintenance Summary

Description
<ul style="list-style-type: none"> <li>- Rebuilt 4 hydrants</li> <li>- Repaired broken water laterals</li> <li>- Replaced distribution system chlorine analyzer</li> <li>- Installed cathodic protection</li> <li>- Replaced curb stops</li> <li>- Cleaned and inspected water tower</li> <li>- Cleaned and inspected backwash tank</li> <li>- Purchased new flow meters for Well #1 and Well #2</li> <li>- Rebuilt chlorine panels</li> <li>- Installed new chlorine pump</li> <li>- Purchased data logger for water treatment plant</li> <li>- Purchased chlorine pump rebuild kits</li> </ul>

# Appendix A

---

## WTRS Submission Confirmation



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: 7327-83ZL7J

Permit Holder: THE CORPORATION OF THE TOWNSHIP OF NORTH STORMONT.

Received on: Jan 22, 2019 2:42 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.

[Return to Main Page](#)

NORTH2 DUNDAS2 | 2019/01/22  
version: v4.5.0.21 (build#: 22)  
Last modified: 2018/09/18



This site maintained by  
the Government of Ontario

©2019 Queen's Printer for Ontario

Find  
7327-83ZL7J  
2019