

# South Dundas Regional Drinking Water System

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Waterworks # 220001012  
System Category – Large Municipal Residential

## Annual Report

Reporting Period of January 1<sup>st</sup> – December 31<sup>st</sup> 2021

Issued: February 18<sup>th</sup> 2022

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## Report Availability

As the South Dundas Regional 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 municipal office, located at 34 Ottawa Street, Morrisburg, Ontario and on the municipal website ([www.southdundas.com](http://www.southdundas.com)).

## Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	1
Ministry of Labour Inspections	1
QEMS External Audit	1
AWQI's/BWA	1
Non-Compliance	1
Spills	0
Watermain Breaks	11

## System Process Description

### Raw Source

Water is drawn from the St. Lawrence River through a 450 mm diameter steel intake pipe equipped with a sodium hypochlorite feed system for zebra mussel control. The raw water intake crib is located off shore, south of the low lift building located at the base of Augusta Street in Morrisburg. Three vertical turbine pumps convey water from the low lift building to the water treatment plant located at 99 Augusta Street, Morrisburg.

### Treatment

Inside the water treatment facility, water undergoes ultra-filtration through membrane cassettes (ZeeWeed membranes, manufactured by Zenon) which are housed in large concrete tanks. There are three concrete filter tanks, each of which contains two ultra-filtration cassettes. Each filter has a chemical clean and backwash system. They are each equipped with a turbidity analyzer and particle count meter. Three granular activated carbon (GAC) contactors provide taste and odour control. Sodium hypochlorite is used for disinfection. A multi-cell baffled clearwell provides chlorine contact time.

## Distribution

Water is transported through an 11.5 km transmission main from Morrisburg to Iroquois. The water is re-chlorinated at a booster station in Iroquois. A steel elevated storage tank is located in each town. Each has a capacity of 945 m<sup>3</sup>. There are approximately 15 kilometers of water main in Morrisburg and approximately 12 kilometers in Iroquois. The water mains are composed of PVC, cast iron and ductile iron. The combination of clear wells, the reservoir and the elevated tanks provide for peak hour demands and fire flows.

### Treatment Chemicals used during the reporting year

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag

## Summary of Non-Compliance

### Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Corrective Action Taken
Aug 16/21	155081	Morrisburg Distribution	Loss of system pressure	While in VFD mode, Cabinet CP20 At Morrisburg WTP failed causing loss of pressure in the system	Installed program if CP20 fails, a HLP will stay on at 80% to keep system pressure. And a HLP will automatically come on in low pressure.

### Non-Compliance

Legislation	requirement(s) system failed to meet	Date	Details	Corrective Action	Status
Report made along with AWQI.					

### Non-Compliance Identified in a Ministry Inspection

Legislation	requirement(s) system failed to meet	Date(s)	Corrective Action	Status
None to report.				

## Flows

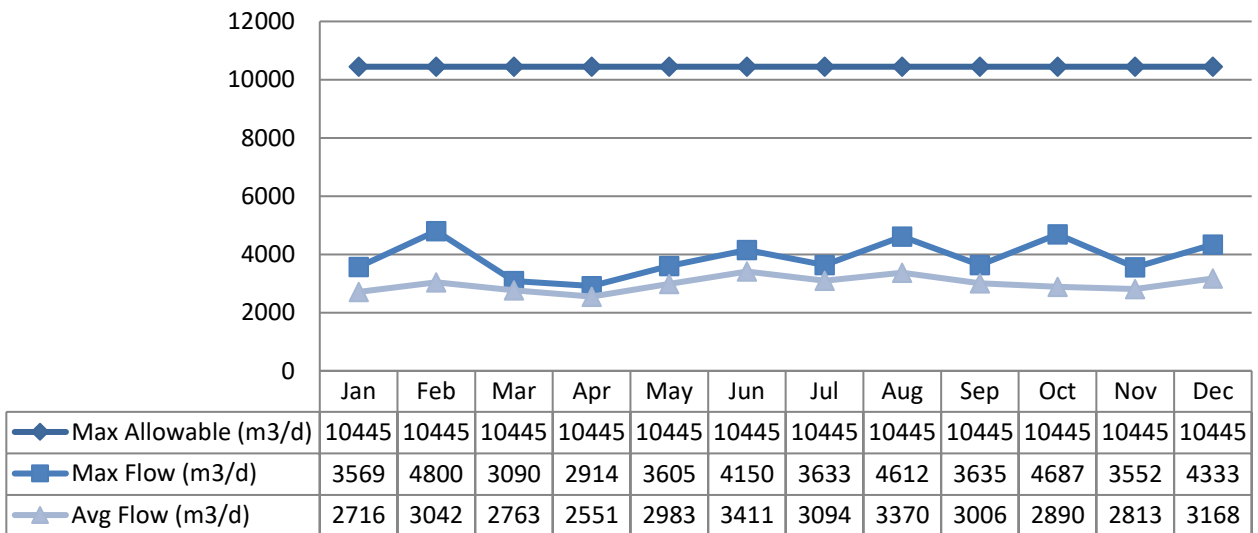
South Dundas’ Drinking Water System is operating on average under half the rated capacity.

### Raw Water Flows

Raw water flows are regulated under the Permit to Take Water (PTTW). Raw flow data for 2021 was submitted to the Ministry electronically under Permit #4362-AAKQNY. The submission confirmation can be found attached in Appendix A.

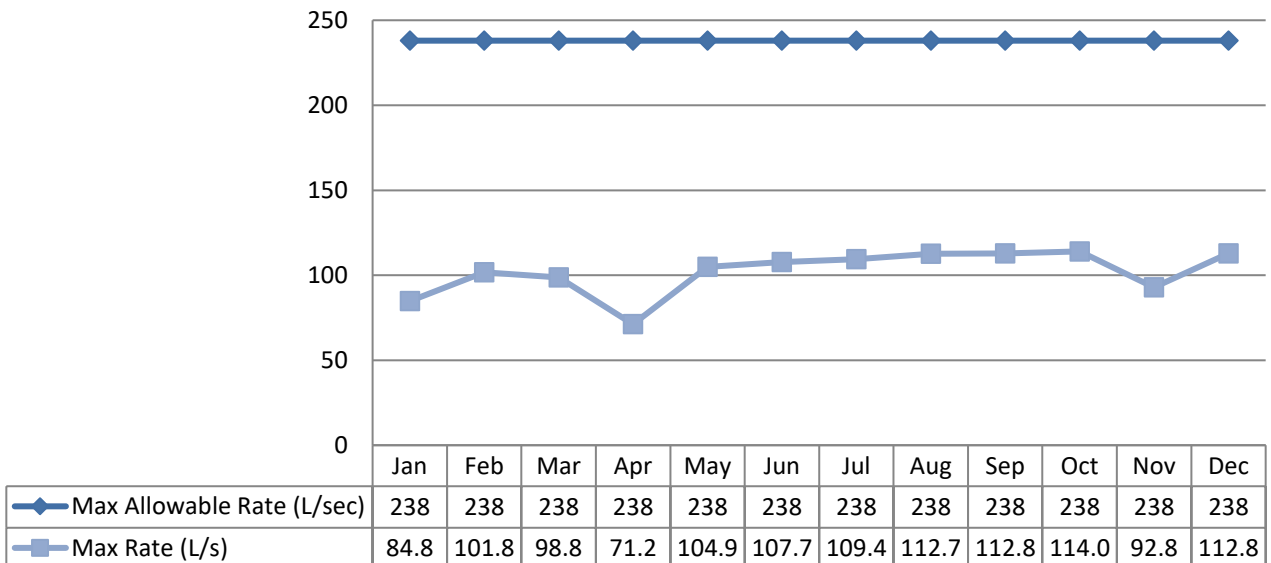
#### Raw Flows

Max. Allowable Flow - PTTW



### Maximum Flow Rates

Max. Allowable Rate - PTTW

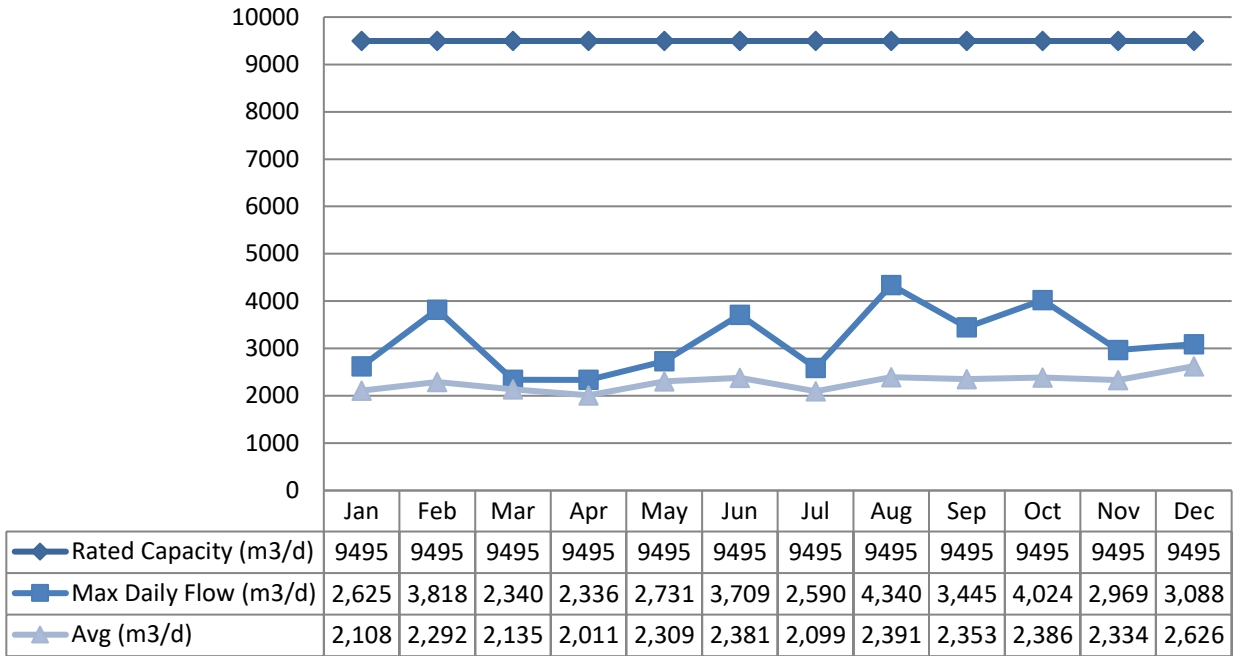


**Treated Water Flows**

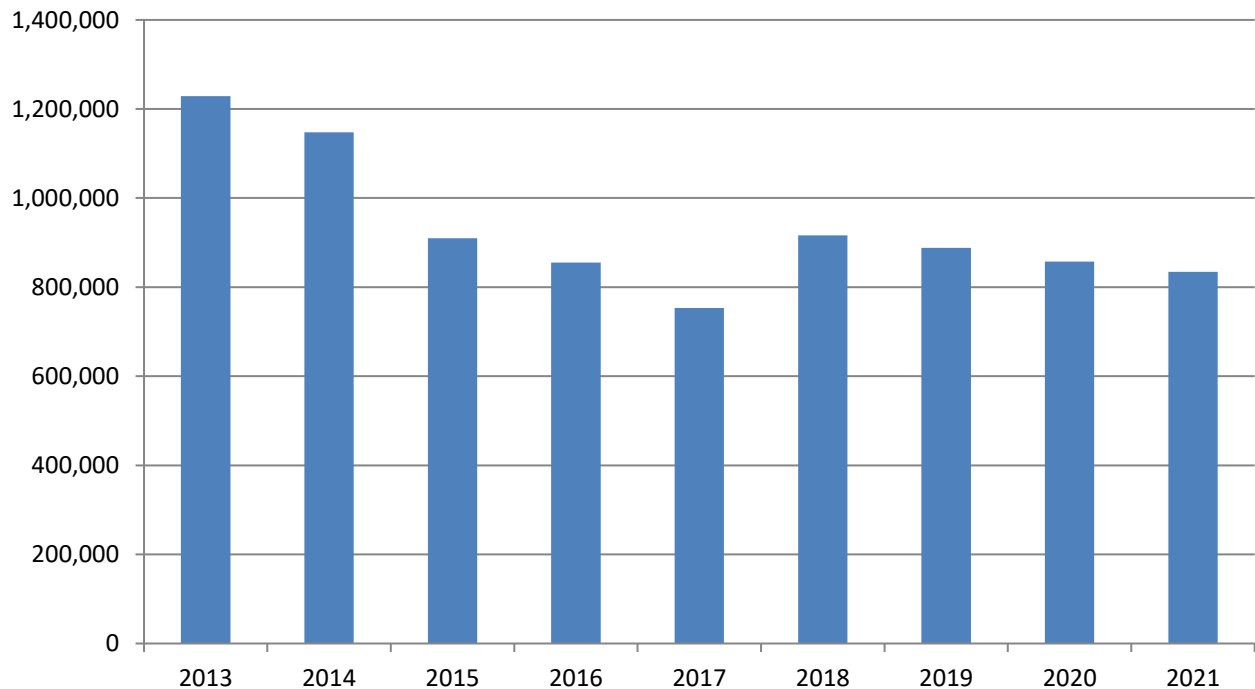
Treated water flows are regulated under the Municipal Drinking Water Licence (MDWL).

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	52	0	1	0	10	n/a	n/a
Treated Water	52	0	0	0	0	2	2
Distribution Water	157	0	0	0	0	2	2

### Operational Testing

	No. of Samples Collected	Range of Results		
		Minimum	Average	Maximum
Turbidity (NTU) - RW	8760	N/A	0.35	10.00
Turbidity (NTU) - TW	8760	N/A	0.03	2.00
Turbidity (NTU) - Filt1	8760	N/A	0.02	1.00
Turbidity (NTU) - Filt2	8760	N/A	0.02	0.80
Turbidity (NTU) - Filt3	8760	N/A	0.03	0.88
Free Chlorine Residual (mg/L) - TW	8760	1.09	1.61	2.17
Free Chlorine Residual (mg/L) – Iroquois Booster	8760	0.57	1.03	5.00
Free Chlorine Residual, On-Line (mg/L) – DW	8760	0.34	1.25	1.89
Free Chlorine Residual, In-House (mg/L) - DW	156	0.71	N/A	1.53

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
<b>Treated Water</b>					
Antimony: Sb (ug/L) - TW	2021/03/01	0.1	6.0	No	No
Arsenic: As (ug/L) - TW	2021/03/01	0.7	10.0	No	No
Barium: Ba (ug/L) - TW	2021/03/01	18.0	1000.0	No	No
Boron: B (ug/L) - TW	2021/03/01	22.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2021/03/01	<MDL 0.02	5.0	No	No
Chromium: Cr (ug/L) - TW	2021/03/01	<MDL 2.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2021/03/01	<MDL 0.02	1.0	No	No
Selenium: Se (ug/L) - TW	2021/03/01	<MDL 1.0	50.0	No	No

	Sample Date/ (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Uranium: U (ug/L) - TW	2021/03/01	0.38	20.0	No	No
<b>Additional Inorganics</b>					
Fluoride (mg/L) - TW	2021/03/01	0.1	1.5	No	No
Nitrite (mg/L) - TW	2021/01/11	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2021/04/07	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2021/07/12	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2021/10/04	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2021/01/11	0.3	10.0	No	No
Nitrate (mg/L) - TW	2021/04/07	0.3	10.0	No	No
Nitrate (mg/L) - TW	2021/07/12	0.2	10.0	No	No
Nitrate (mg/L) - TW	2021/10/04	0.1	10.0	No	No
Sodium: Na (mg/L) - TW	2021/03/01	17.5	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. Lead samples due Winter 2022/2023. 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)	6	6	86	99	n/a	n/a
pH	6	6	7.73	8.09	n/a	n/a
Lead (ug/l)	3	3	0.04	0.16	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
<b>Treated Water</b>					
Alachlor (ug/L) - TW	2021/03/01	<MDL 0.3	5.0	No	No
Atrazine + Metabolites (ug/L) - TW	2021/03/01	< 0.5	5.00	No	No
Azinphos-methyl (ug/L) - TW	2021/03/01	<MDL 1.0	20.0	No	No
Benzene (ug/L) - TW	2021/03/01	<MDL 0.5	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2021/03/01	<MDL 0.006	0.01	No	No
Bromoxynil (ug/L) - TW	2021/03/01	<MDL 0.5	5.0	No	No



	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Carbaryl (ug/L) - TW	2021/03/01	<MDL 3.0	90.0	No	No
Carbofuran (ug/L) - TW	2021/03/01	<MDL 1.0	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2021/03/01	<MDL 0.2	2.0	No	No
Chlorpyrifos (ug/L) - TW	2021/03/01	<MDL 0.5	90.0	No	No
Diazinon (ug/L) - TW	2021/03/01	<MDL 1.0	20.0	No	No
Dicamba (ug/L) - TW	2021/03/01	<MDL 10.0	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2021/03/01	<MDL 0.5	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2021/03/01	<MDL 0.5	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2021/03/01	<MDL 0.5	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2021/03/01	<MDL 0.5	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2021/03/01	<MDL 5.0	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2021/03/01	<MDL 0.2	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2021/03/01	<MDL 10.0	100.0	No	No
Diclofop-methyl (ug/L) - TW	2021/03/01	<MDL 0.9	9.0	No	No
Dimethoate (ug/L) - TW	2021/03/01	<MDL 1.0	20.0	No	No
Diquat (ug/L) - TW	2021/03/01	<MDL 5.0	70.0	No	No
Diuron (ug/L) - TW	2021/03/01	<MDL 5.0	150.0	No	No
Glyphosate (ug/L) - TW	2021/03/01	<MDL 25.0	280.0	No	No
Malathion (ug/L) - TW	2021/03/01	<MDL 5.0	190.0	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA) (ug/L) - TW	2021/03/01	< 10	100.00	No	No
Metolachlor (ug/L) - TW	2021/03/01	<MDL 3.0	50.0	No	No
Metribuzin (ug/L) - TW	2021/03/01	<MDL 3.0	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2021/03/01	<MDL 0.5	80.0	No	No
Paraquat (ug/L) - TW	2021/03/01	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2021/03/01	<MDL 0.05	3.0	No	No
Pentachlorophenol (ug/L) - TW	2021/03/01	<MDL 0.2	60.0	No	No
Phorate (ug/L) - TW	2021/03/01	<MDL 0.3	2.0	No	No
Picloram (ug/L) - TW	2021/03/01	<MDL 15.0	190.0	No	No
Prometryne (ug/L) - TW	2021/03/01	<MDL 0.1	1.0	No	No
Simazine (ug/L) - TW	2021/03/01	<MDL 0.5	10.0	No	No
Terbufos (ug/L) - TW	2021/03/01	<MDL 0.5	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2021/03/01	<MDL 0.5	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2021/03/01	<MDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2021/03/01	<MDL 10.0	230.0	No	No
Trichloroethylene (ug/L) - TW	2021/03/01	<MDL 0.5	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2021/03/01	<MDL 0.2	5.0	No	No
Trifluralin (ug/L) - TW	2021/03/01	<MDL 0.5	45.0	No	No
Vinyl Chloride (ug/L) - TW	2021/03/01	<MDL 0.2	1.0	No	No

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

	Year	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
<b>Distribution Water</b>					
Trihalomethane (THM): Total (ug/L) Annual Average - DW	2021	37.25	100	No	No
Haloacetic Acid (HAA): Total (ug/L) Annual Average - DW	2021	12.8	80	No	No

### Additional Legislated Samples



Document	Parameter	Limit (mg/L)	Result (mg/L)
MDWL # 165-101	Filter Backwash Supernatant Suspended Solids	Annual Average < 25	1.5

## Major Maintenance Summary

Description
<ul style="list-style-type: none"> <li>- Iroquois tower rehabilitation</li> <li>- Morrisburg tower rehabilitation</li> <li>- Lowlift Pump 2 maintenance</li> <li>- Felker/HWY 31 valve repair</li> <li>- Control Panel 01 rack 1 and 2 replaced</li> <li>- SCADA upgrades</li> <li>- Booster station panel view changed</li> <li>- Yearly generator maintenance</li> <li>- Flow testing on hydrants</li> <li>- Hydrants colour coded</li> <li>- Yearly flow meter and analyzer calibrations</li> <li>- Yearly backflow preventer maintenance</li> </ul>

# Appendix A

## WTRS Submission Confirmation



Ministry of the Environment,  
Conservation and Parks

| [WT DATA](#) | [USER PROFILE](#) | [CONTACT US](#) | [HELP](#) | [HOME](#) | [LOGOUT](#) |

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: 4362-AAKQNY  
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF SOUTH DUNDAS.  
Received on: Feb 2, 2022 8:37 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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