South Dundas Drinking Water System

Waterworks # 220001012
System Category – Large Municipal Residential

Annual Water Report

Prepared For: Township of South Dundas

Reporting Period of January 1st – December 31st 2022

Issued: February 22, 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

Table of Contents

Revision History

Date	Revision #	Revision Notes
February 22, 2023	0	Annual report issued

Report Availability

This system does not serve more than 10,000 residence and the annual reports will be available to residents at the municipal office, located at 34 Ottawa Street, Morrisburg, ON. The report will also be available on the municipal website. (www.southdundas.com)

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	- 1 Ministry Inspection on December 16th, 2022 - Final Inspection Rating: N/A o Action required: Ensure HAB plan training is completed with all staff every year o Recommendation: Municipality is recommended to implement a backflow prevention program
Ministry of Labour Inspections	- No Ministry of Labour Inspections in 2022
QEMS External Audit	- 1 QEMS Audit on October 6th, 2022 - No issues or findings
AWQI's/BWA	- No AWQI or BWA in 2022
Non-Compliance	- No non-compliance in 2022
Community Complaints	- 3 complaints referenced in
Spills	- No spills in 2022
Watermain Breaks	- 6 watermain breaks in 2022 referenced under Distribution Maintenance

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.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag

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^3. There are approximately 15 kilometers of water main in Morrisburg and approximately 12 kilometers in Iroquois. The watermains 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.

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
There was no adverse water quality incidents reported during the reporting period.						

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
There was no non-compliance issues reported during the 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 during this period.				

Community Complaints

Date	Location	Details of Complaint	Corrective Action Taken
04/19/22	5556 Meadow Brook	Water clarity	No sign of clarity issues upon arrival, chlorine residual: 0.98 mg/L
09/30/22	16 Cadwell	Cloudy water	Hydrant flushed, building fire @ 16 Cadwell
10/07/22	16 Cadwell	Cloudy water	Hydrant flushed, building fire @ 16 Cadwell
10/07/22	17 Cadwell	Dirty water	Hydrants flushed, building fire @ 16 Cadwell

Flows

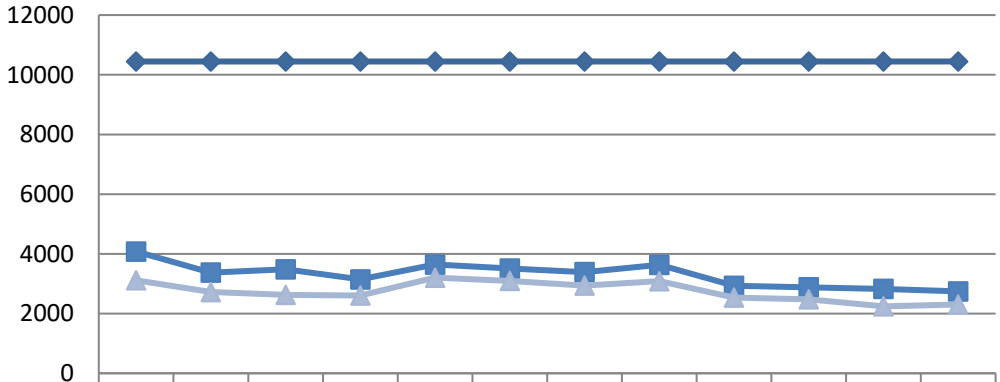
The South Dundas Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

Raw water flows are regulated under the Permit to Take Water (PTTW). Raw flow data for 2022 was submitted to the Ministry electronically under Permit #4362-AAKQNY. The submission confirmation can be found attached in Appendix A.

Raw Flows

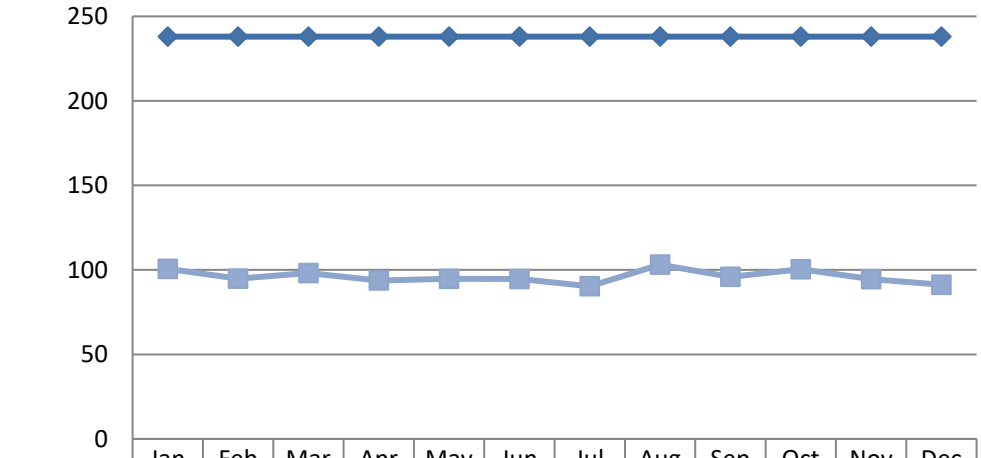
Max Allowable Flow - PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	10445	10445	10445	10445	10445	10445	10445	10445	10445	10445	10445	10445
Max Flow (m3/d)	4079	3372	3483	3144	3645	3510	3389	3633	2931	2880	2826	2744
Avg (m3/d)	3114	2723	2628	2607	3205	3093	2939	3086	2538	2479	2242	2304

Maximum Flow Rates

Max Allowable Rate - PTTW



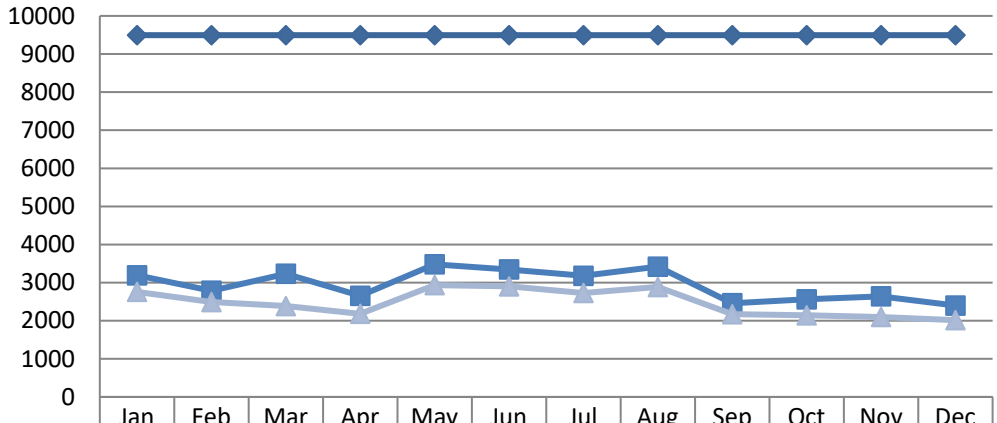
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	238	238	238	238	238	238	238	238	238	238	238	238
Max Rate (L/s)	100.6	94.8	98.1	93.7	94.7	94.6	90.3	103.1	95.9	100.4	94.5	91.2

Treated Water Flows

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

Treated Flows

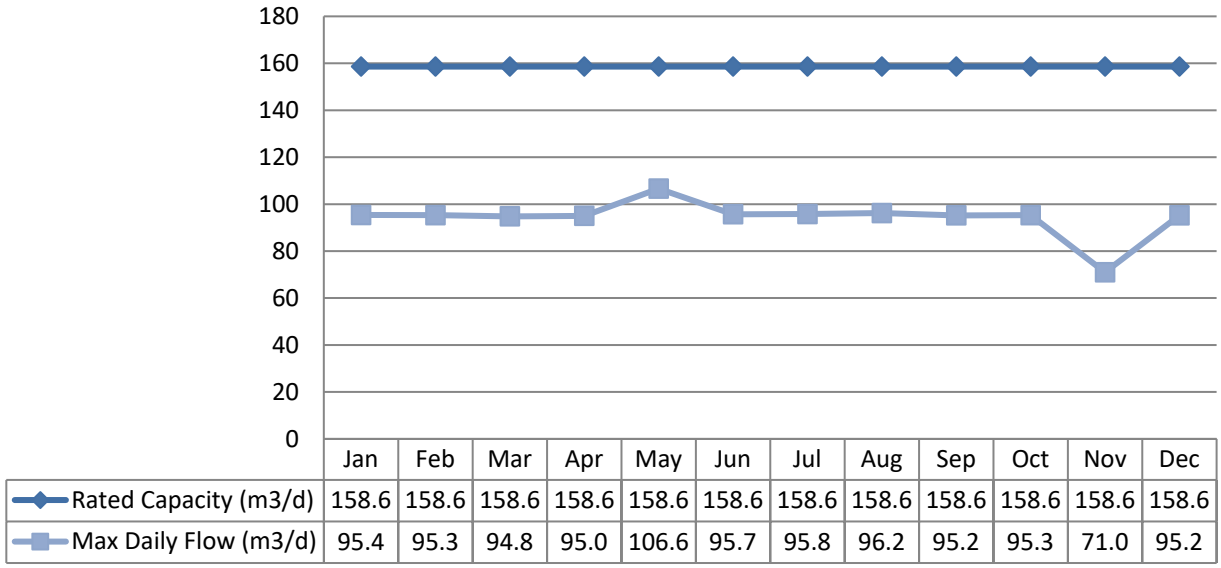
Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	9495	9495	9495	9495	9495	9495	9495	9495	9495	9495	9495	9495
Max Daily Flow (m3/d)	3192	2787	3232	2654	3480	3346	3179	3418	2460	2562	2639	2399
Avg (m3/d)	2,757	2,490	2,386	2,181	2,934	2,902	2,728	2,886	2,172	2,143	2,097	2,015

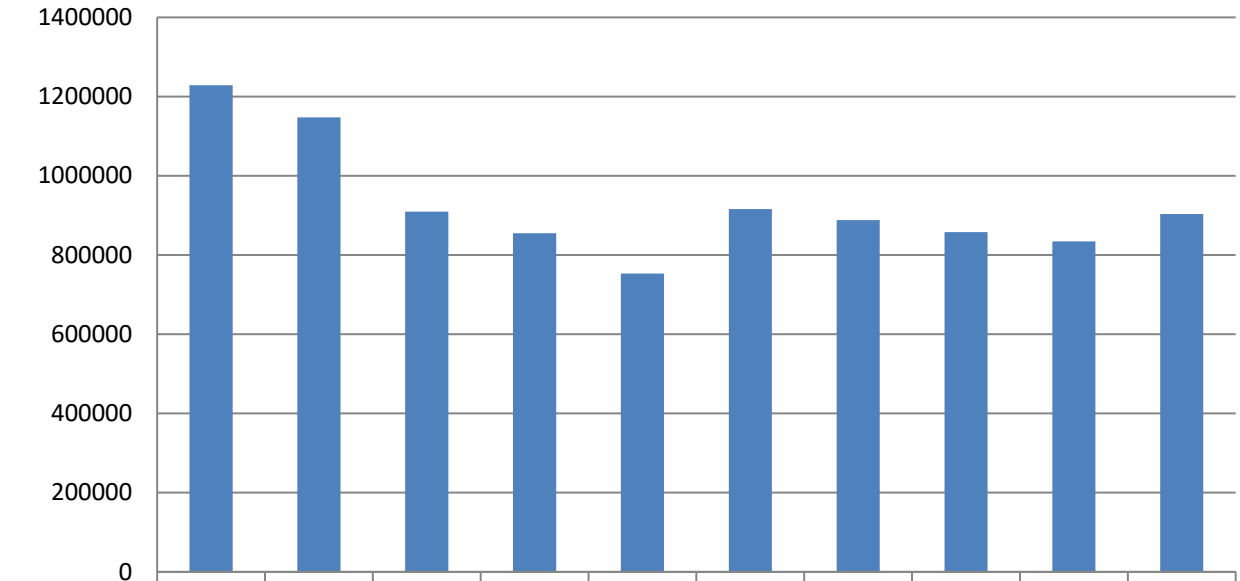
Treated Flows

Max Allowable Rate - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	158.6	158.6	158.6	158.6	158.6	158.6	158.6	158.6	158.6	158.6	158.6	158.6
Max Daily Flow (m3/d)	95.4	95.3	94.8	95.0	106.6	95.7	95.8	96.2	95.2	95.3	71.0	95.2

Annual Total Flow Comparison



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
WTP (m3)	1228780	1147334	909530	854886	753086	915953	888254	857656	834221	903627

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	3	0	21		
Treated Water	52	0	0	0	0	2	4
Distribution Water	156	0	0	0	0	2	16

Operational Testing

	No. of Samples Collected	Range of Results		
		Minimum	Average	Maximum
Turbidity, On-line (NTU) - RW	8760	N/A	0.74	10
Turbidity, On-Line (NTU) - TW	8760	N/A	0.03	0.92
Turbidity, On-Line (NTU) - Filt1	8760	N/A	0.02	0.07
Turbidity, On-Line (NTU) - Filt2	8760	N/A	0.02	0.28
Turbidity, On-Line (NTU) - Filt3	8760	N/A	0.04	0.11
Free Chlorine Residual, On-Line (mg/L) - TW	8760	1.11	1.55	2.55
Free Chlorine Residual, On-line (mg/L) – Iroquois Booster	8760	0.42	1.48	3.86
Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.62	1.17	2.13
Free Chlorine Residual, DW Field (mg/L) - DW	156	0.56	N/A	1.81

NOTE: spikes 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 170/03. Sodium and Fluoride are required to be tested every 60 months. Nitrate and Nitrite are tested quarterly and the metals are tested annually as required under 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	2022/03/14	0.1	6.0	No	No
Arsenic: As (ug/L) - TW	2022/03/14	0.7	25.0	No	No
Barium: Ba (ug/L) - TW	2022/03/14	18.0	1000.0	No	No
Boron: B (ug/L) - TW	2022/03/14	19.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2022/03/14	<BDL 0.02	5.0	No	No
Chromium: Cr (ug/L) - TW	2022/03/14	<BDL 2.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2022/03/14	<BDL 0.02	1.0	No	No
Selenium: Se (ug/L) - TW	2022/03/14	<BDL 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	2022/03/14	0.3	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2021/03/01	0.1	1.5	No	No
Nitrite (mg/L) - TW	2022/01/04	<BDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/04/25	<BDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/07/12	<BDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2022/10/03	<BDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2022/01/04	0.3	10.0	No	No
Nitrate (mg/L) - TW	2022/04/25	0.3	10.0	No	No
Nitrate (mg/L) - TW	2022/07/12	0.2	10.0	No	No
Nitrate (mg/L) - TW	2022/10/03	0.2	10.0	No	No
Sodium: Na (mg/L) - TW	2021/03/01	17.5	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 reduced sampling. Lead sampling is due between December 15 2022 – April 15 2023 and June 15 – October 15 2023. Last lead samples collect in 2020.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	3	6	95	102	N/A	N/A
pH	3	6	7.60	8.05	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 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	2022/03/14	<BDL 0.3	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2022/03/14	<BDL 1.0	20.0	No	No
Azinphos-methyl (ug/L) - TW	2022/03/14	<BDL 0.5	1.0	No	No
Benzene (ug/L) - TW	2022/03/14	<BDL 0.006	0.01	No	Yes
Benzo(a)pyrene (ug/L) - TW	2022/03/14	<BDL 0.5	5.0	No	No
Bromoxynil (ug/L) - TW	2022/03/14	<BDL 3.0	90.0	No	No
Carbaryl (ug/L) - TW	2022/03/14	<BDL 1.0	90.0	No	No
Carbofuran (ug/L) - TW	2022/03/14	<BDL 0.2	2.0	No	No
Carbon Tetrachloride (ug/L) - TW	2022/03/14	<BDL 0.5	90.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Chlorpyrifos (ug/L) - TW	2022/03/14	<BDL 1.0	20.0	No	No
Diazinon (ug/L) - TW	2022/03/14	<BDL 1.0	120.0	No	No
Dicamba (ug/L) - TW	2022/03/14	<BDL 0.5	200.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2022/03/14	<BDL 0.5	5.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2022/03/14	<BDL 0.5	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2022/03/14	<BDL 0.5	14.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2022/03/14	<BDL 5.0	50.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2022/03/14	<BDL 0.2	900.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2022/03/14	<BDL 1.0	100.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2022/03/14	<BDL 0.9	9.0	No	No
Diclofop-methyl (ug/L) - TW	2022/03/14	<BDL 1.0	20.0	No	No
Dimethoate (ug/L) - TW	2022/03/14	<BDL 5.0	70.0	No	No
Diquat (ug/L) - TW	2022/03/14	<BDL 5.0	150.0	No	No
Diuron (ug/L) - TW	2022/03/14	<BDL 25.0	280.0	No	No
Glyphosate (ug/L) - TW	2022/03/14	<BDL 5.0	190.0	No	No
Malathion (ug/L) - TW	2022/03/14	<BDL 3.0	50.0	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA)	2022/03/14	<BDL 3.0	80.0	No	No
Metolachlor (ug/L) - TW	2022/03/14	<BDL 0.5	80.0	No	No
Metribuzin (ug/L) - TW	2022/03/14	<BDL 1.0	10.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2022/03/14	<BDL 0.05	3.0	No	No
Paraquat (ug/L) - TW	2022/03/14	<BDL 0.2	60.0	No	No
PCB (ug/L) - TW	2022/03/14	<BDL 0.3	2.0	No	No
Pentachlorophenol (ug/L) - TW	2022/03/14	<BDL 5.0	190.0	No	No
Phorate (ug/L) - TW	2022/03/14	<BDL 0.3	5.0	No	No
Picloram (ug/L) - TW	2022/03/14	<BDL 1.0	20.0	No	No
Prometryne (ug/L) - TW	2022/03/14	<BDL 0.1	1.0	No	No
Simazine (ug/L) - TW	2022/03/14	<BDL 0.5	10.0	No	No
Terbufos (ug/L) - TW	2022/03/14	<BDL 0.5	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2022/03/14	<BDL 0.5	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022/03/14	<BDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2022/03/14	<BDL 10.0	230.0	No	No
Trichloroethylene (ug/L) - TW	2022/03/14	<BDL 0.5	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2022/03/14	<BDL 0.2	5.0	No	No
Trifluralin (ug/L) - TW	2022/03/14	<BDL 10.0	100.0	No	No
Vinyl Chloride (ug/L) - TW	2022/03/14	<BDL 0.5	45.0	No	No

Distribution Water	Sample Year	RAA	MAC	Number of Exceedances	
				MAC	½ MAC
Trihalomethane: Total (ug/L) - RAA - DW	2022	37.75	100	No	No
Haloacetic Acids: Total (ug/L) - RAA - DW	2022	12.625	80	No	No

RAA= Running Annual Average
MAC = Maximum Allowable Concentration as per O.Reg 169/03
BDL = Below the laboratory detection level

Additional Legislated Samples

Document	Parameter	Limit (mg/L)	Result (mg/L)
MDWL # 165-101	Filter Backwash Supernatant Suspended Solids	Annual Average < 25	1.75

Major Maintenance Summary

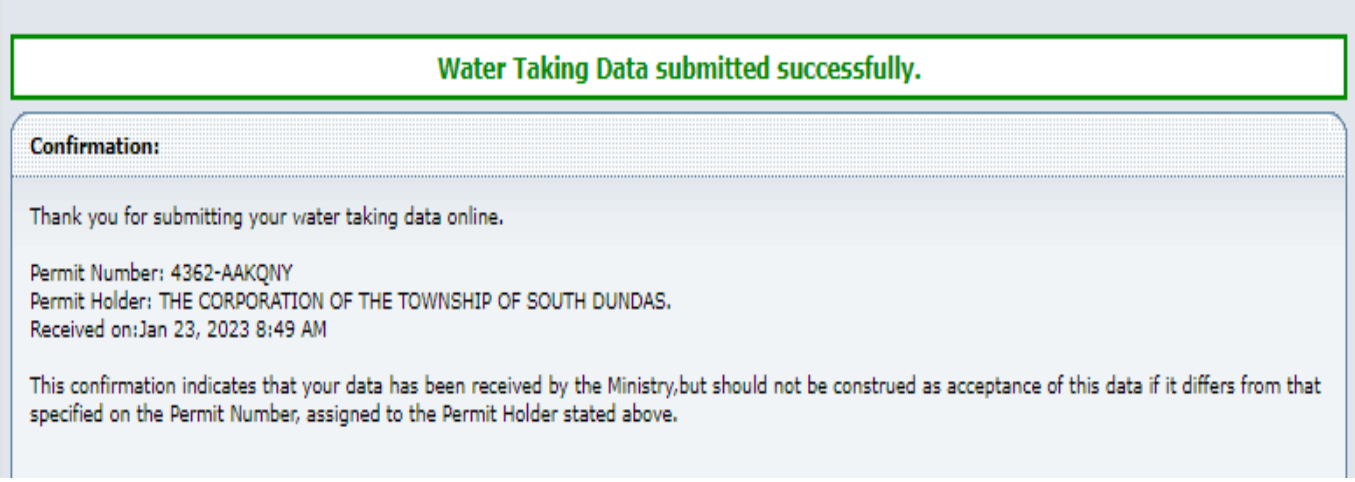
Description
- Pace to flow injection and monitoring at the WTP - Low lift pump 2 rebuild - Carmen, Dundas, Elisabeth and Bay (Iroquois) watermains relined and several valve replacements

Distribution Maintenance

Date	Location Reference	Category	Details	Corrective Repair
01/27/22	11 Dundas (Iroquois)	1	6” ductile, radial break	Main stop clamp 6.85-7.25 w/ tap
03/03/22	8 Ann (Iroquois)	1	10” ductile, radial break	Clamp 11.05-11.45
03/10/22	1 Dundas (Iroquois	1	6” ductile, radial break	Clamp 6.85-7.25
11/21/22	80 Park (Morrisburg)	1	6” ductile, radial break	Clamp 6.85-7.25
12/19/22	Farlinger/Park (Morrisburg)	1	6” ductile, radial break	Clamp 6.85-7.25
12/22/22	2 Island Park (Iroquois)	1	8” ductile, radial break	Clamp 9.00-9.48

Appendix A

WTRS Data and Submission Confirmation



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:Jan 23, 2023 8:49 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.