

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 2023

Issued: February 26, 2024

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

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Revision History

Date	Revision #	Revision Notes
February 26, 2024	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	<ul style="list-style-type: none"> - 1 Ministry Inspection on December 7th, 2023 - Final Inspection Rating: N/A <ul style="list-style-type: none"> o Report not issued yet
Ministry of Labour Inspections	<ul style="list-style-type: none"> - No Ministry of Labour Inspections in 2023
QEMS External Audit	<ul style="list-style-type: none"> - Most recent QEMS Audit on October 6th, 2022 - QEMS audit scheduled for February 28th, 2024
AWQI's/BWA	<ul style="list-style-type: none"> - No AWQI or BWA in 2023
Non-Compliance	<ul style="list-style-type: none"> - No non-compliance in 2023
Community Complaints	<ul style="list-style-type: none"> - 1 complaint referenced in report
Spills	<ul style="list-style-type: none"> - No spills in 2023
Watermain Breaks	<ul style="list-style-type: none"> - 5 watermain breaks in 2023 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. 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	KIK Consumer Products

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 m³. 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 identified from a Ministry Inspection during this period.				

Community Complaints

Date	Location	Details of Complaint	Corrective Action Taken
11/21/23	46 Lakeshore Dr.	Taste and odour	Water inspected on site, clarity was good. Chlorine residual 1.14 mg/L

Flows

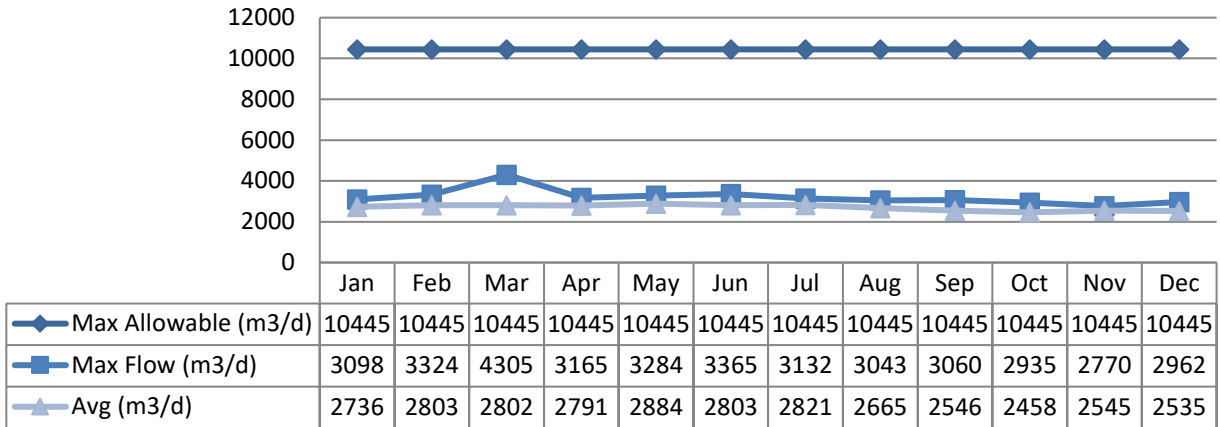
The South Dundas Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

Raw water flows are regulated under the Permit to Take Water (PTTW). The raw flow data for 2023 was submitted to the Ministry electronically under Permit #4362-AAKQNY. The submission confirmation can be found attached in Appendix A.

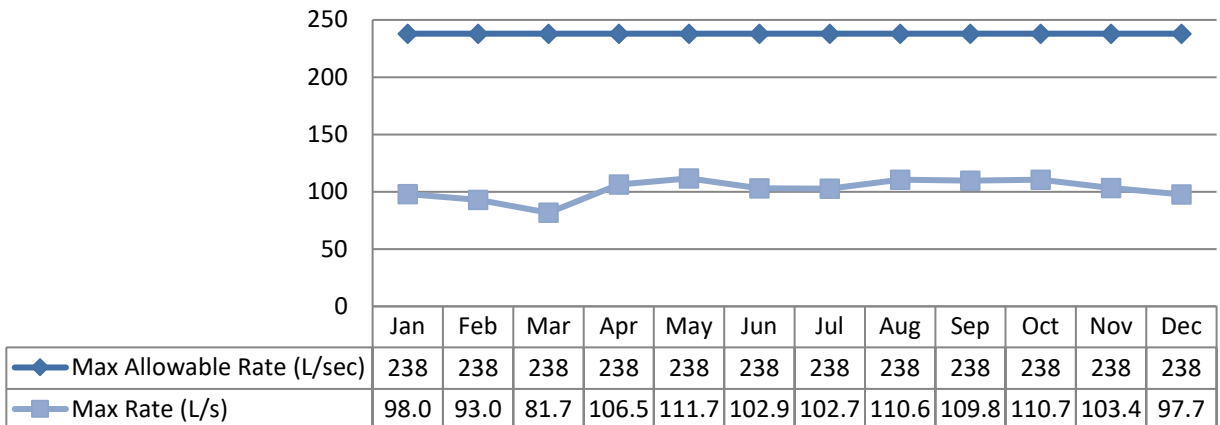
Raw Flows

Max Allowable Flow - PTTW



Maximum Flow Rates

Max Allowable Rate - PTTW

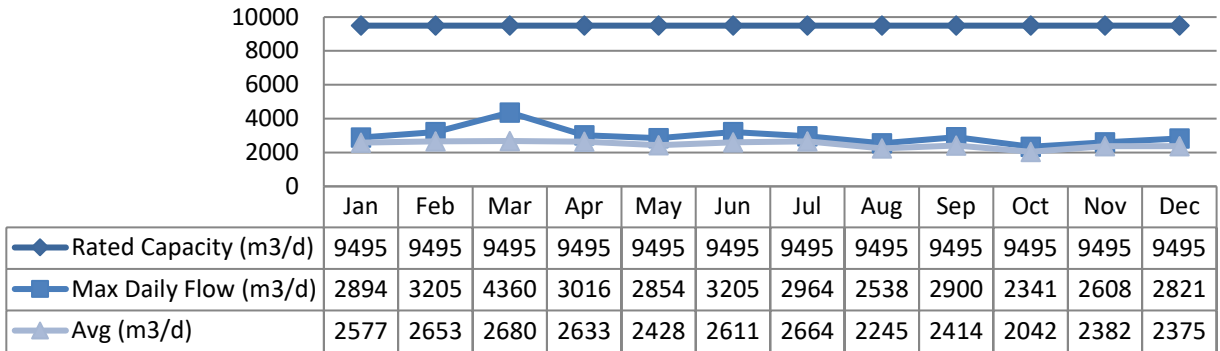


Treated Water Flows

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

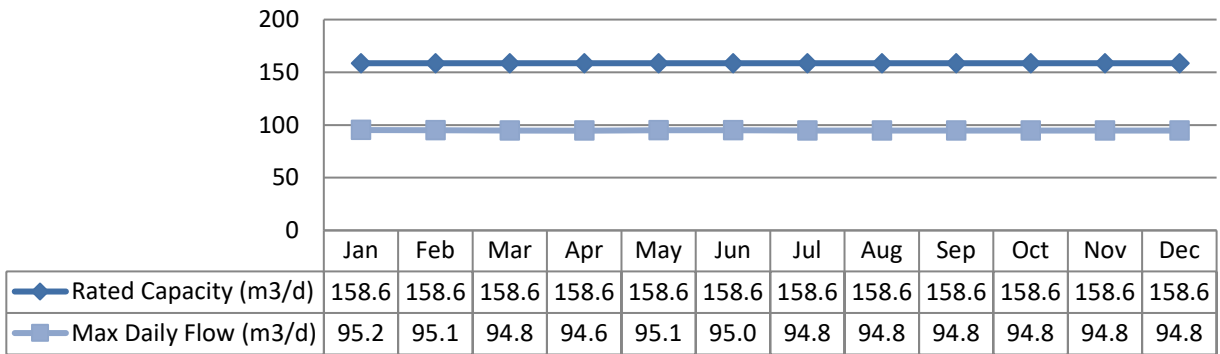
Treated Flows

Rated Capacity - MDWL

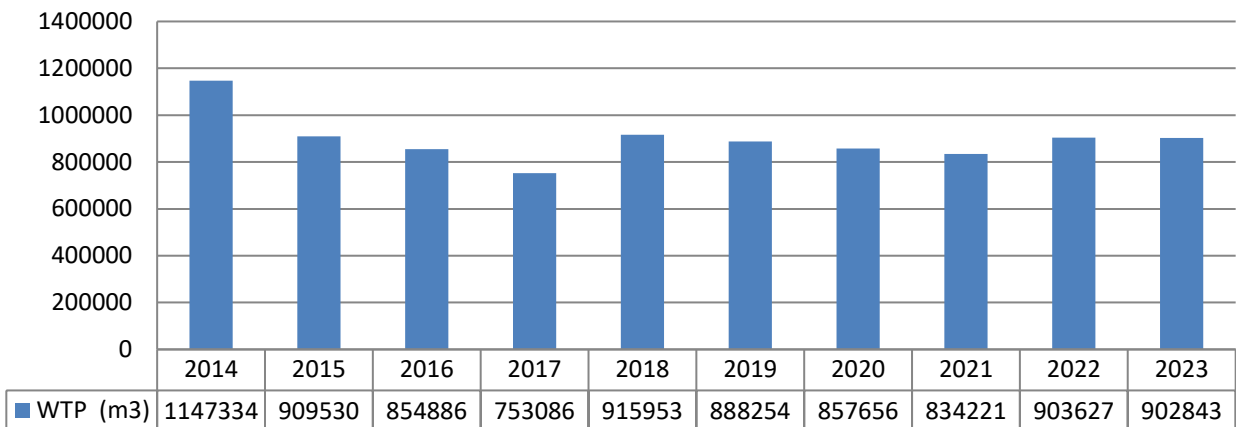


Treated Flows

Max Allowable Rate - 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	4	0	112		
Treated Water	52	0	0	0	0	2	12
Distribution Water	154	0	0	0	0	2	76

Operational Testing

	No. of Samples Collected	Range of Results		
		Minimum	Average	Maximum
Turbidity, On-line (NTU) - RW	8760	N/A	0.62	10
Turbidity, On-Line (NTU) - TW	8760	N/A	0.04	0.78
Turbidity, On-Line (NTU) - Filt1	8760	N/A	0.02	0.12
Turbidity, On-Line (NTU) - Filt2	8760	N/A	0.03	1.00
Turbidity, On-Line (NTU) - Filt3	8760	N/A	0.02	0.14
Free Chlorine Residual, On-Line (mg/L) - TW	8760	1.02	1.57	3.35
Free Chlorine Residual, On-line (mg/L) – Iroquois Booster	8760	0.33	1.40	2.67
Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.53	1.12	1.55
Free Chlorine Residual, DW Field (mg/L) - DW	154	0.31	N/A	1.67

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	2023/03/06	<BDL 0.1	6.0	No	No
Arsenic: As (ug/L) - TW	2023/03/06	<BDL 0.1	10.0	No	No
Barium: Ba (ug/L) - TW	2023/03/06	2.0	1000.0	No	No
Boron: B (ug/L) - TW	2023/03/06	<BDL 5.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2023/03/06	<BDL 0.01	5.0	No	No
Chromium: Cr (ug/L) - TW	2023/03/06	<BDL 2.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2023/03/06	<BDL 0.02	1.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Selenium: Se (ug/L) - TW	2023/03/06	<BDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2023/03/06	0.14	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2021/03/01	0.1	1.5	No	No
Nitrite (mg/L) - TW	2023/01/03	<BDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2023/04/03	<BDL 0.05	1.0	No	No
Nitrite (mg/L) - TW	2023/07/17	<BDL 0.05	1.0	No	No
Nitrite (mg/L) - TW	2023/10/10	<BDL 0.05	1.0	No	No
Nitrate (mg/L) - TW	2023/01/03	0.3	10.0	No	No
Nitrate (mg/L) - TW	2023/04/03	0.34	10.0	No	No
Nitrate (mg/L) - TW	2023/07/17	0.19	10.0	No	No
Nitrate (mg/L) - TW	2023/10/10	0.16	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 2025 – April 15 2026 and June 15 – October 15 2026. Last lead samples were collected in January and June of 2023.

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	93	98	N/A	N/A
pH	6	6	7.63	7.94	N/A	N/A
Lead (ug/l)	6	3	0.02	1.40	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	2023/03/06	<BDL 0.3	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2023/03/06	<BDL 0.5	5.0	No	No
Azinphos-methyl (ug/L) - TW	2023/03/06	<BDL 1.0	20.0	No	No
Benzene (ug/L) - TW	2023/03/06	<BDL 0.5	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2023/03/06	<BDL 0.006	0.01	No	Yes

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Bromoxynil (ug/L) - TW	2023/03/06	<BDL 0.5	5.0	No	No
Carbaryl (ug/L) - TW	2023/03/06	<BDL 3.0	90.0	No	No
Carbofuran (ug/L) - TW	2023/03/06	<BDL 1.0	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2023/03/06	<BDL 0.2	2.0	No	No
Chlorpyrifos (ug/L) - TW	2023/03/06	<BDL 0.5	90.0	No	No
Diazinon (ug/L) - TW	2023/03/06	<BDL 1.0	20.0	No	No
Dicamba (ug/L) - TW	2023/03/06	<BDL 1.0	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2023/03/06	<BDL 0.5	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2023/03/06	<BDL 0.5	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2023/03/06	<BDL 0.5	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2023/03/06	<BDL 0.5	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2023/03/06	<BDL 5.0	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2023/03/06	<BDL 0.2	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2023/03/06	<BDL 1.0	100.0	No	No
Diclofop-methyl (ug/L) - TW	2023/03/06	<BDL 0.9	9.0	No	No
Dimethoate (ug/L) - TW	2023/03/06	<BDL 1.0	20.0	No	No
Diquat (ug/L) - TW	2023/03/06	<BDL 5.0	70.0	No	No
Diuron (ug/L) - TW	2023/03/06	<BDL 5.0	150.0	No	No
Glyphosate (ug/L) - TW	2023/03/06	<BDL 25.0	280.0	No	No
Malathion (ug/L) - TW	2023/03/06	<BDL 5.0	190.0	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA)	2023/03/06	<BDL 10.0	100.0	No	No
Metolachlor (ug/L) - TW	2023/03/06	<BDL 3.0	50.0	No	No
Metribuzin (ug/L) - TW	2023/03/06	<BDL 3.0	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2023/03/06	<BDL 0.5	80.0	No	No
Paraquat (ug/L) - TW	2023/03/06	<BDL 1.0	10.0	No	No
PCB (ug/L) - TW	2023/03/06	<BDL 0.05	3.0	No	No
Pentachlorophenol (ug/L) - TW	2023/03/06	<BDL 0.2	60.0	No	No
Phorate (ug/L) - TW	2023/03/06	<BDL 0.3	2.0	No	No
Picloram (ug/L) - TW	2023/03/06	<BDL 5.0	190.0	No	No
Prometryne (ug/L) - TW	2023/03/06	<BDL 0.1	1.0	No	No
Simazine (ug/L) - TW	2023/03/06	<BDL 0.5	10.0	No	No
Terbufos (ug/L) - TW	2023/03/06	<BDL 0.5	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2023/03/06	<BDL 0.5	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2023/03/06	<BDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2023/03/06	<BDL 10.0	230.0	No	No
Trichloroethylene (ug/L) - TW	2023/03/06	<BDL 0.5	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2023/03/06	<BDL 0.2	5.0	No	No
Trifluralin (ug/L) - TW	2023/03/06	<BDL 0.5	45.0	No	No
Vinyl Chloride (ug/L) - TW	2023/03/06	<BDL 0.2	1.0	No	No

Distribution Water	Sample Year	RAA	MAC	Number of Exceedances	
				MAC	½ MAC
Trihalomethane: Total (ug/L) - RAA - DW	2023	41.75	100	No	No
Haloacetic Acids: Total (ug/L) - RAA - DW	2023	19.175	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
<ul style="list-style-type: none"> - Venturi system installed to replace vacuum system - Replaced air compressor - Replaced train 2 turbidity meter - Replaced train 3 turbidity meter

Distribution Maintenance

Date	Location Reference	Category	Details	Corrective Repair
02/04/23	8 Ann St (Iroquois)	1	10" ductile iron, radial break	Clamp 11.05-11.45
02/08/23	11 Ellis Dr (Iroquois)	1	6" ductile iron, radial break	Clamp 6.85-7.25
02/27/23	45 Main St (Morrisburg)	1	6" ductile iron, blow out	Clamp 6.85-7.25
04/11/23	2 Elizabeth Dr (Iroquois)	1	8" ductile iron, radial break	Clamp 9.05-9.45
12/23/23	2 Casselman Rd (Morrisburg)	1	6" ductile iron, radial break	Clamp 6.85-7.25

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.