

2021 Annual Drinking Water System Quality Report for Ballantrae/Musselman's Lake DWS

Prepared by The Regional Municipality of York pursuant to Section 11 of O. Reg. 170/03.

Drinking Water System Number: 220008658
Drinking Water System Name: Ballantrae/Musselman's Lake DWS
Drinking Water System Owner: The Regional Municipality of York
Drinking Water System Category: Large Municipal Residential
Drinking Water System Classification: Water Distribution and Supply II
Reporting period: Jan 1, 2021 - Dec 31, 2021

The Ballantrae/Musselman's Lake DWS serves approximately 5,050 people.
(Population is the most recent available estimate based on Statistics Canada census data and building permits)

List all Drinking Water Systems which receive their drinking water from the Ballantrae/Musselman's Lake DWS:

Ballantrae-Musselman's Lake Distribution System (260006737)

This annual report is available to the public at no charge on York Region's website (york.ca/drinkingwater) and upon request. Accessible formats or communication supports are also available upon request. Please contact AccessYork@york.ca or call 1-877-464-9675.

A copy of York Region's annual report was provided to all Drinking Water System owners that are connected to and receive drinking water from York Region.

System users were notified that York Region's annual report is available free of charge by public access and notice through:

- Media (internet, social media)
- Public requests at any time

Summary report required under O. Reg. 170/03 Schedule 22 will be available for inspection at:

The Regional Municipality of York
Administrative Centre
Environmental Services Department
17250 Yonge Street, Newmarket ON L3Y 6Z1

Description of the Ballantrae/Musselman's Lake DWS

Introduction

The communities of Ballantrae and Musselman's Lake are centered on Aurora Road and Highway 48 in Whitchurch-Stouffville. Local groundwater is naturally high in minerals. York Region operates the water supply, while the Town of Whitchurch-Stouffville maintains water quality and distributes it to users. The Province governs York Region's operations with Acts and Regulations, a Permit to Take Water, a Municipal Drinking Water License and an operating Permit.

Raw water source

Groundwater

Profile of water in distribution system

Groundwater

Water treatment description

Ballantrae-Musselman's Lake system includes three wells and one storage facility. Chlorine provides disinfection and maintains a secondary residual. Sodium silicate is added to sequester naturally occurring iron and manganese. The storage facility holds treated water and maintains pressure. Tests confirm good ground water quality. Operators test the water and inspect the process. Online analyzers continuously monitor treatment and water flow. When a significant process or water quality issue is detected, the system automatically pauses operation until an operator takes action.

List of water treatment chemicals used in this system

Chlorine (Gas, Sodium Hypochlorite); Sodium Silicate

Brief description and breakdown of monetary expenses incurred

\$804,940 for treatment facility upgrades, elevated tank repairs and upgrades, well rehabilitation and maintenance, general maintenance and repairs.

Notices submitted under Section 18(1) of the *Safe Drinking Water Act* or Section 16-4 of O. Reg. 170/03 and reported to MECP Spills Action Centre

Not Applicable

Intentionally blank. No notices were submitted for this report period.

**Microbiological testing completed under
Schedule 10 of O. Reg. 170/03**

For additional distribution samples collected under Schedule 10, refer to the local municipality.

Test Parameter	Sample Source	Count of Samples	Count of Presence
E. Coli	Raw	145	0
	Treated	104	0
Heterotrophic Plate Count	Treated	104	16
Total Coliforms	Raw	145	0
	Treated	104	0

**Operational testing completed under Schedule 7
of O. Reg. 170/03 during this reporting period**

Test Parameter	Test Unit	No. of Samples ¹	Average	Minimum	Maximum
Free Chlorine	mg/L	8,760	1.56	0.00	3.43
Turbidity (Treated)	NTU	8,760	0.05	0.00	2.68

¹ 8,760 is used as the number of samples for continuous analyzers.

Summary of testing pursuant to Schedule 13 of O. Reg. 170/03 and sampling carried out in accordance with the requirement of an approval, order or other legal instrument

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect (i.e. the " $<$ " is omitted) and are rounded to three decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater.

Test Parameter ^{2 3}	Test Unit	No. of Samples ¹	Average	Minimum	Maximum
Fluoride	mg/L	12	0.082	<0.05	0.13
Haloacetic Acids	ug/L	4	15.750	<8	21
Nitrate	mg/L	12	0.500	<0.50	<0.50
Nitrite	mg/L	12	0.050	<0.05	<0.05
Sodium	mg/L	3	11.550	10.20	12.80
Trihalomethanes	ug/L	6	22.325	5.70	28.20

*Lead testing under Schedule 15.1 is conducted by the local municipality - refer to local municipality reports for results. York Region occasionally collects samples tested for lead for non-regulatory research purposes.

¹ 8,760 is used as the number of samples for continuous analyzers.

² The Average for Haloacetic Acids and Trihalomethanes is calculated as the running annual average of quarterly results in accordance with O. Reg 170/03. The Minimum and Maximum values reflect individual test results.

³ Where sampling for 'N-Nitrosodimethylamine (NDMA)' is required, locations were selected to represent the farthest points in the distribution system. For York DWS and sub-systems, representative sample locations were selected from across the interconnected sub-systems, therefore not all sub-systems were chosen for NDMA sampling.

Organic and inorganic parameter(s), from Schedule 23 and 24, that exceeded half the standard prescribed in Schedule 2 of O. Reg. 169/03 Ontario Drinking Water Quality Standards

Not Applicable
Intentionally blank. There were no applicable test results.

Summary of inorganic parameters tested pursuant to Schedule 23 of O. Reg. 170/03

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect and are rounded to four decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater.

Test Parameter	Test Unit	No. of Samples	Average	Minimum	Maximum	ODWS Limit
Antimony	mg/L	3	0.0005	<0.0005	<0.0005	0.0060
Arsenic	mg/L	3	0.0006	<0.0005	0.0007	0.01
Barium	mg/L	3	0.0664	0.0502	0.0865	1
Boron	mg/L	3	0.0153	0.0062	0.0229	5
Cadmium	mg/L	3	0.0005	<0.0005	<0.0005	0.0050
Chromium	mg/L	3	0.0005	<0.0005	<0.0005	0.05
Mercury	ug/L	3	0.0500	<0.05	<0.05	1
Selenium	mg/L	3	0.0005	<0.0005	<0.0005	0.05
Uranium	mg/L	3	0.0005	<0.0005	<0.0005	0.02

Summary of organic parameters tested pursuant to Schedule 24 of O. Reg. 170/03

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect and are rounded to three decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater.

Test Parameter	Test Unit	No. of Samples	Average	Minimum	Maximum	ODWS Limit
1,1-dichloroethylene (vinylidene chloride)	ug/L	2	0.300	<0.30	<0.30	14
1,2-(o-dcb) Dichlorobenzene	ug/L	2	0.100	<0.10	<0.10	0.20
1,2-Dichloroethane	ug/L	2	0.100	<0.10	<0.10	5
1,4-(p-dcb) Dichlorobenzene	ug/L	2	0.100	<0.10	<0.10	5
2,3,4,6-Tetrachlorophenol	ug/L	2	0.500	<0.50	<0.50	100
2,4,6-Trichlorophenol	ug/L	2	0.500	<0.50	<0.50	5
2,4-Dichlorophenol	ug/L	2	0.700	<0.70	<0.70	900
2,4-dichlorophenoxyacetic acid (2,4-D)	ug/L	2	0.800	<0.80	<0.80	100
2-methyl-4-chlorophenoxyacetic acid	ug/L	2	5.000	<5	<5	100
Alachlor	ug/L	2	0.400	<0.40	<0.40	5
Atrazine + N-dealkylated metabolites	ug/L	2	0.200	<0.20	<0.20	5
Azinphos-methyl	ug/L	2	0.300	<0.30	<0.30	20
Benzene	ug/L	2	0.100	<0.10	<0.10	1
Benzo(a)pyrene	ug/L	2	0.010	<0.01	<0.01	0.01
Bromoxynil	ug/L	2	0.400	<0.40	<0.40	5
Carbaryl	ug/L	2	3.000	<3	<3	90
Carbofuran	ug/L	2	3.000	<3	<3	90
Carbon Tetrachloride	ug/L	2	0.200	<0.20	<0.20	2
Chlorpyrifos	ug/L	2	0.200	<0.20	<0.20	90
Diazinon	ug/L	2	0.200	<0.20	<0.20	20
Dicamba	ug/L	2	0.400	<0.40	<0.40	120
Dichloromethane	ug/L	2	2.000	<2	<2	50
Diclofop-methyl	ug/L	2	0.400	<0.40	<0.40	9
Dimethoate	ug/L	2	0.300	<0.30	<0.30	20
Diquat	ug/L	2	1.000	<1	<1	70
Diuron	ug/L	2	3.000	<3	<3	150
Glyphosate	ug/L	2	25.000	<25	<25	280
Malathion	ug/L	2	0.200	<0.20	<0.20	190
Metolachlor	ug/L	2	0.200	<0.20	<0.20	50
Metribuzin	ug/L	2	0.300	<0.30	<0.30	80
Monochlorobenzene	ug/L	2	0.100	<0.10	<0.10	80
Paraquat	ug/L	2	1.000	<1	<1	10
Pentachlorophenol	ug/L	2	0.400	<0.40	<0.40	60
Phorate	ug/L	2	0.200	<0.20	<0.20	2
Picloram	ug/L	2	0.700	<0.70	<0.70	190
Polychlorinated Biphenyls (PCBs)	ug/L	2	0.020	<0.02	<0.02	3
Prometryne	ug/L	2	0.200	<0.20	<0.20	1
Simazine	ug/L	2	0.200	<0.20	<0.20	10
Terbufos	ug/L	2	0.200	<0.20	<0.20	1
Tetrachloroethylene (perchloroethylene)	ug/L	2	0.300	<0.30	<0.30	10
Triallate	ug/L	2	4.000	<4	<4	230
Trichloroethylene	ug/L	2	0.100	<0.10	<0.10	5
Trifluralin	ug/L	2	0.006	<0.0060	<0.0060	45
Vinyl Chloride	ug/L	2	0.200	<0.20	<0.20	1