February 25, 2022

Municipality of West Grey
402813 Grey Road 4
RR#2
Durham, ON
N0G 1R0

Attention: Brent Glasier, Director of Infrastructure and Public Works

RE: Durham Drinking Water System
2021 Annual Report

Brent,

Please find attached the 2021 Annual Operations Report for the Durham drinking water system, in accordance with Section 11(1) of O. Reg. 170/03. This report covers the period from January 1 to December 31 and meets the requirement of being prepared by February 28 of this year.

Please ensure that a copy of this report is given, without charge, to every person who requests a copy. In addition, please make certain that effective steps are taken to advise residents that copies of the report are available, and of how a copy can be obtained.

Finally, as per Schedule 22 of O. Reg. 170/03, please ensure that at least a copy of the Summary Report is given to the members of municipal council no later than March 31, 2022.

If you have any questions regarding the report, we would be pleased to address them and you should contact the undersigned accordingly.

Sincerely,

VEOLIA WATER CANADA INC.

Greg Prangley
Project Manager

Veolia North America
555 Rene-Levesque Blvd W
Montreal, QC H2Z 1B1

www.Veolianorthamerica.com

2021 ANNUAL REPORT FOR WATER SYSTEMS

Part 1 – ANNUAL REPORT (as required by O. Reg. 170/03, Section 11)

Drinking-Water System Number:	220001771
Drinking-Water System Name:	Durham Drinking Water System
Drinking-Water System Owner:	Municipality of West Grey
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1 – December 31, 2021

Complete if your Category is Large Municipal Residential or Small Municipal Residential		**Complete for all other Categories**	
Does your Drinking-Water System serve more than 10,000 people?	❑ Yes ✓ No	Number of Designated Facilities served:	n/a
Is your annual report available to the public at no charge on a website on the Internet?	✓ Yes ❑ No	Did you provide a copy of your annual report to all Designated Facilities you serve?	❑ Yes ❑ No
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection. **Municipality of West Grey** **402813 Grey Road #4** **Durham, ON NOG 1R0**		Number of Designated Facilities served:	n/a
		Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?	❑ Yes ❑ No

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	**Drinking Water System Number**
n/a	

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

n/a

Indicate how you notified system users that your annual report is available, and is free of charge.

✓ Public access/notice via the Web	✓ Public access/notice via Government Office	❑ Public access/notice via a newspaper
❑ Public access/notice via Public Request	❑ Public access/notice via a Public Library	❑ Public access/notice via other method

Describe your Drinking Water System

Well No. 1B Pumphouse

A GUDI well, 300mm diameter and 77 m deep equipped with a VFD submersible well pump rated at 15.9 L/s at a TDH of 71-133 m. The pumphouse enclosure building is 4.9 m x 3.1 m x 3.3 m high and houses the water treatment equipment including, but not limited to, flow meters, UV disinfection system, cartridge filters, sodium hypochlorite disinfection system, online chlorine and turbidity analyzers, low level alarms, autodialer and backup diesel generator.

Well No. 2 Pumphouse

A GUDI well, 300mm diameter and 74.7 m deep equipped with a VFD submersible well pump rated at 17 L/s at a TDH of 75-139 m. The pumphouse contains the water treatment equipment including, but not limited to, flow meters, UV disinfection system, cartridge filters, sodium hypochlorite disinfection system, online chlorine and turbidity analyzers, low level alarms, autodialer and backup power source available.
Well #2A is located just outside the well#2 pumphouse. It is a 250mm diameter well about 68m deep. The variable speed submersible pump has a capacity of 1134L/min. The capacity of the wellhouse is 18.9L/s

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite -12%

Please provide a brief description and a breakdown of monetary expenses incurred

Portable turbidimeter (shared with Neustadt) $1014.90
New pump motor at Durham well #2 $10,000
Leak detection survey $5,000
Replacement filters $11,925

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
Dec. 10, 2021	Free chlorine residual (treated)	<0.39mg/L	n/a. Residual recovered quickly	Dec. 10, 2021

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period

	Number of Samples	Range of E.Coli Results (min #) - (max #)	Range of Total Coliform Results (min #) - (max #)	Number of HPC Samples	Range of HPC Results (min #) - (max #)
Raw (well 1B)	52	0	0	n/a	n/a
Raw (well 2)	50*	0	0-2	n/a	n/a
Raw (well #2A)	52	0	0	n/a	n/a
Treated POE 1	52	0	0	53	<10 - 10

Treated POE 2	52	0	0	53	<10 - 130
Distribution	156	0	0	53	<10 - 2000

*well offline in late August / early Sept. so no samples were collected

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report			
	Number of Grab Samples	**Range of Results** (min #) – (max #)	**Units**
Turbidity – well 1B Treated	8760	0.04-1.34	NTU
Turbidity – Well 2 Treated	8760	0.04-2.00	NTU
Chlorine – Well 1B Treated	8760	0.00-2.00	mg/L
Chlorine – Well 2 Treated	8760	0.34-2.00	mg/L
Chlorine - Distribution	469	0.81-1.53	mg/L

There were no instances of untreated water being delivered into the distribution system. Well pumps automatically shut off when chlorine levels drop below a preset value, or if Turbidity exceeds 1.0NTU for 10 minutes. SCADA system reads all values, even when well pumps are off or equipment service is being conducted

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument				
Date of legal instrument issued	**Parameter**	**Date Sampled**	**Range of Results**	**Unit of Measure**
December 1, 2009	**UV transmittance (#1B)**	**Jan-Dec. 2021**	**97.0-100.0**	**% transmittance**
December 1, 2009	**UV transmittance (#2)**	**Jan-Dec. 2021**	**98.0-100.0**	**% transmittance**

Summary of Inorganic parameters tested during this reporting period or the most recent sample results						
Parameter	**Sample Date**	**Result Value POE 1**	**Result Value POE 2**	**Distribution**	**Unit of Measure**	**Exceedance**
Antimony	Aug. 30/21	ND	ND	-	mg/L	NO
Arsenic	Aug. 30/21	ND	ND	-	mg/L	NO
Barium	Aug. 30/21	0.0184	0.0153	-	mg/L	NO
Boron	Aug. 30/21	0.013	0.019	-	mg/L	NO
Cadmium	Aug. 30/21	0.004	0.011	-	ug/L	NO
Chromium	Aug. 30/21	0.28	0.19	-	ug/L	NO
Lead-see summary below						
Mercury	Aug. 30/21	ND	ND	-	mg/L	NO
Selenium	Aug. 30/21	0.70	0.91	-	ug/L	NO
Sodium	Aug. 4/20	6.2	11.0	-	mg/L	NO
Uranium	Aug. 30/21	0.00212	0.00357	-	mg/L	NO
Fluoride	Aug. 30/21	0.20	0.67	-	mg/L	NO
Nitrite	Feb. 8/21	ND	ND	-	mg/L	NO
Nitrate	Feb. 8/21	1.39	1.01	-	mg/L	NO
Nitrite	May 17/21	ND	ND	-	mg/L	NO
Nitrate	May 17/21	1.44	1.05	-	mg/L	NO
Nitrite	Aug. 30/21	ND	ND	-	mg/L	NO
Nitrate	Aug. 30/21	1.43	0.89	-	mg/L	NO
Nitrite	Nov. 15/21	ND	ND	-	mg/L	NO
Nitrate	Nov. 15/21	1.42	0.91	-	mg/L	NO

Summary of Lead Results during this reporting period (Winter: Dec. 15/20-April 15/21; Summer: June 15-Oct. 15/21				
Sampling Period	Range of Results (µg/L) from Residential Samples (# of Samples taken)	Non-residential locations	Distribution System	Any Adverse Water Quality Incidents?
Winter	n/a	n/a	n/a	NO
Summer	n/a	n/a	n/a	NO

Only alkalinity testing was required in 2021

Summary of Organic parameters sampled during this reporting period or the most recent sample results					
Parameter	**Sample Date**	**Result Value POE 1**	**Result Value POE 2**	**Unit of Measure**	**Exceedance**
Alachlor	Aug. 30/21	ND	ND	µg/L	NO
Atrazine + N-dealkylated metobolites	Aug. 30/21	ND	ND	µg/L	NO
Azinphos-methyl	Aug. 30/21	ND	ND	µg/L	NO
Benzene	Aug. 30/21	ND	ND	µg/L	NO
Benzo(a)pyrene	Aug. 30/21	ND	ND	µg/L	NO
Bromoxynil	Aug. 30/21	ND	ND	µg/L	NO
Carbaryl	Aug. 30/21	ND	ND	µg/L	NO
Carbofuran	Aug. 30/21	ND	ND	µg/L	NO
Carbon Tetrachloride	Aug. 30/21	ND	ND	µg/L	NO
Chlorpyrifos	Aug. 30/21	ND	ND	µg/L	NO
Diazinon	Aug. 30/21	ND	ND	µg/L	NO
Dicamba	Aug. 30/21	ND	ND	µg/L	NO
1,2-Dichlorobenzene	Aug. 30/21	ND	ND	µg/L	NO
1,4-Dichlorobenzene	Aug. 30/21	ND	ND	µg/L	NO
1,2-Dichloroethane	Aug. 30/21	ND	ND	µg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	Aug. 30/21	ND	ND	µg/L	NO
Dichloromethane	Aug. 30/21	ND	ND	µg/L	NO
2-4 Dichlorophenol	Aug. 30/21	ND	ND	µg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug. 30/21	ND	ND	µg/L	NO
Diclofop-methyl	Aug. 30/21	ND	ND	µg/L	NO
Dimethoate	Aug. 30/21	ND	ND	µg/L	NO

Diquat	Aug. 30/21	ND	ND	µg/L	NO
Diuron	Aug. 30/21	ND	ND	µg/L	NO
Glyphosate	Aug. 30/21	ND	ND	µg/L	NO
HAA	Q1-Q4 2021	<5.3 (distribution)		µg/L	NO
Malathion	Aug. 30/21	ND	ND	µg/L	NO
MCPA	Aug. 30/21	ND	ND	mg/L	NO
Metolachlor	Aug. 30/21	ND	ND	µg/L	NO
Metribuzin	Aug. 30/21	ND	ND	µg/L	NO
Monochlorobenzene	Aug. 30/21	ND	ND	µg/L	NO
Paraquat	Aug. 30/21	ND	ND	µg/L	NO
Pentachlorophenol	Aug. 30/21	ND	ND	µg/L	NO
Phorate	Aug. 30/21	ND	ND	µg/L	NO
Picloram	Aug. 30/21	ND	ND	µg/L	NO
Polychlorinated Biphenyls(PCB)	Aug. 30/21	ND	ND	µg/L	NO
Prometryne	Aug. 30/21	ND	ND	µg/L	NO
Simazine	Aug. 30/21	ND	ND	µg/L	NO
THM (NOTE: show latest annual average)	Q1-Q4 2021	5.6 (distribution)		µg/L	NO
Terbufos	Aug. 30/21	ND	ND	µg/L	NO
Tetrachloroethylene	Aug. 30/21	ND	ND	µg/L	NO
2,3,4,6-Tetrachlorophenol	Aug. 30/21	ND	ND	µg/L	NO
Triallate	Aug. 30/21	ND	ND	µg/L	NO
Trichloroethylene	Aug. 30/21	ND	ND	µg/L	NO
2,4,6-Trichlorophenol	Aug. 30/21	ND	ND	µg/L	NO
Trifluralin	Aug. 30/21	ND	ND	µg/L	NO
Vinyl Chloride	Aug. 30/21	ND	ND	µg/L	NO

ND = Non-Detect

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
None				

Part 2 – SUMMARY REPORT (as required by O. Reg. 170/03, Schedule 22)

Non-Compliance with Legislations, Regulations, Approvals & Orders
During this period, the Facility was operated in full compliance with the Act, the regulations and the Facility's approval, save and except for the following:

Primary disinfection chlorine monitoring was not conducted at a location approved by the MDWL and/or DWWP, or at/near a location where the intended CT has just been achieved.

The current configuration of Well #1B does not allow for free chlorine residual measurements to be taken at the point where CT is achieved. Furthermore, the CT calculation used in operations at well #1B did not reflect the disinfection criteria requirements outlined in the MDWL

Actions Required:

If the reclassification of well #1B to a non-GUDI source is approved, the Owner shall submit a MDWL amendment application, in order to make appropriate changes. In the event that the report is not approved after MECP review, the Owner shall submit a comprehensive action plan to show how the system will achieve both a 2-log inactivation of viruses as well as how the equivalent free chlorine residual will be measured at the point where CT has been achieved. In the interim, the Owner and Operating Authority shall continue to operate the well #1B drinking water system according to current MDWL primary disinfection requirements of 2-log removal of viruses

Month	Average Flow Well #1B	Maximum Flow Well #1B	Average Flow Well #2	Maximum Flow Well #2	Average Flow Well #2A	Maximum Flow Well #2A
January	533	584	270	363	270	363
February	574	654	284	344	285	344
March	582	651	299	340	300	340
April	569	617	307	337	308	338
May	552	631	296	346	296	346
June	596	756	294	359	295	359
July	478	573	254	306	255	307
August	445	526	166	267	295	496
September	415	574	215	500	266	592
October	459	563	264	485	218	290
November	441	537	239	335	240	336
December	421	491	226	303	227	304
AVERAGE	**505**	**n/a**	**259**	**n/a**	**271**	**n/a**
MAXIMUM	**-**	**756**	**-**	**500**	**-**	**592**
SYSTEM CAPACITY	**1469**	**1469**	**1469**	**1469**	**1469**	**1469**
% CAPACITY	**34.4%**	**51.5%**	**17.7%**	**34.0%**	**18.4%**	**40.3%**