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February 24, 2016

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

**Attention: Ken Gould, Public Works Manager**

**RE: Durham Drinking Water System  
2015 Annual Report**

Dear Ken,

Please find attached the 2015 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, 2016.

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

Sincerely,

AMERICAN WATER CANADA CORP.

Greg Prangley  
Project Manager, Ontario Regional Projects

cc. G.Timmerman, AWC West Grey

## 2015 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, 2015

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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Number of Designated Facilities served: n/a
Is your annual report available to the public at no charge on a web site on the Internet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Did you provide a copy of your annual report to all Designated Facilities you serve? <input type="checkbox"/> Yes <input type="checkbox"/> No
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection. Municipality of West Grey Grey Road #4 Durham, ON NOG 2V0	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? <input type="checkbox"/> Yes <input type="checkbox"/> 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
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#### Indicate how you notified system users that your annual report is available, and is free of charge.

<input checked="" type="checkbox"/> Public access/notice via the Web	<input checked="" type="checkbox"/> Public access/notice via Government Office	<input type="checkbox"/> Public access/notice via a newspaper
<input type="checkbox"/> Public access/notice via Public Request	<input type="checkbox"/> Public access/notice via a Public Library	<input checked="" type="checkbox"/> Public access/notice via other method INCLUDED WITH TAX NOTICE

#### 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 17 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.

#### List all water treatment chemicals used over this reporting period

Sodium Hypochlorite 12% v/v

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

Replacement of SCADA/PLC \$120,586

#### 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	Units	Corrective Action	Corrective Action Date
March 17, 2015	Turbidity	3.1	NTU	Flushed to waste, sampling conducted	03/17/2015
March 18, 2015	Turbidity	1.5	NTU	Flushed to waste; repaired analyzer	03/18/2015

#### 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)	51*	0	0	n/a	n/a
Raw (well 2)	51*	0	0	n/a	n/a
Treated POE 1	51*	0	0	51*	0-2
Treated POE 2	51*	0	0	51*	0-1
Distribution	152*	0	0	51*	0-1

\*samples during week of Sept. 28 not delivered to lab in time. See Non-compliance section

#### 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	0.02-0.90	NTU
Turbidity – Well 2 Treated	8760	0.01-2.07*	NTU
Chlorine – Well 1B Treated	8760	0.35-2.06	mg/L
Chlorine – Well 2 Treated	8760	0.32-2.54	mg/L
Chlorine - Distribution	465	0.66-1.27	mg/L

\* Note the AWQI section for high turbidity

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.

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. 2015	96.0-99.0	% transmittance
December 1, 2009	UV transmittance (#2)	Jan-Dec. 2015	96.0-98.0	% 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. 4/15	ND	ND	-	mg/L	NO
Arsenic	Aug. 4/15	ND	ND	-	mg/L	NO
Barium	Aug. 4/15	0.015	0.014	-	mg/L	NO
Boron	Aug. 4/15	ND	0.015	-	mg/L	NO
Cadmium	Aug. 4/15	ND	ND	-	mg/L	NO
Chromium	Aug. 4/15	ND	ND	-	mg/L	NO
Lead-see summary below						
Mercury	Aug. 4/15	ND	ND	-	mg/L	NO
Selenium	Aug. 4/15	ND	ND	-	mg/L	NO
Sodium	Aug. 4/15	4.9	7.6	-	mg/L	NO
Uranium	Aug. 4/15	0.0020	0.0034	-	mg/L	NO
Fluoride	Aug. 8/11	0.2	0.7	-	mg/L	NO
Nitrite	Feb 17/15	ND	ND	-	mg/L	NO
Nitrate	Feb 17/15	1.36	0.63	-	mg/L	NO
Nitrite	May 11/15	ND	ND	-	mg/L	NO
Nitrate	May 11/15	1.32	0.70	-	mg/L	NO
Nitrite	Aug. 4/15	ND	ND	-	mg/L	NO
Nitrate	Aug. 4/15	1.41	0.65	-	mg/L	NO
Nitrite	Nov 16/15	ND	ND	-	mg/L	NO
Nitrate	Nov 16/15	1.16	0.41	-	mg/L	NO

Summary of Lead Results during this reporting period (Winter: Dec. 15/14-April 15/15; Summer: June 15-Oct. 15/15)				
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	ND (2)	NO
Summer	n/a	n/a	ND (2)	NO

*No further residential sampling is required for this system*

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. 4/15	ND	ND	µg/L	NO
Aldicarb	Aug. 4/15	ND	ND	µg/L	NO
Aldrin + Dieldrin	Aug. 4/15	ND	ND	µg/L	NO
Atrazine + N-dealkylated metabolites	Aug. 4/15	ND	ND	µg/L	NO
Azinphos-methyl	Aug. 4/15	ND	ND	µg/L	NO
Bendiocarb	Aug. 4/15	ND	ND	µg/L	NO
Benzene	Aug. 4/15	ND	ND	µg/L	NO
Benzo(a)pyrene	Aug. 4/15	ND	ND	µg/L	NO
Bromoxynil	Aug. 4/15	ND	ND	µg/L	NO
Carbaryl	Aug. 4/15	ND	ND	µg/L	NO
Carbofuran	Aug. 4/15	ND	ND	µg/L	NO
Carbon Tetrachloride	Aug. 4/15	ND	ND	µg/L	NO
Chlordane (Total)	Aug. 4/15	ND	ND	µg/L	NO
Chlorpyrifos	Aug. 4/15	ND	ND	µg/L	NO
Cyanazine	Aug. 4/15	ND	ND	µg/L	NO
Diazinon	Aug. 4/15	ND	ND	µg/L	NO
Dicamba	Aug. 4/15	ND	ND	µg/L	NO
1,2-Dichlorobenzene	Aug. 4/15	ND	ND	µg/L	NO
1,4-Dichlorobenzene	Aug. 4/15	ND	ND	µg/L	NO
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Aug. 4/15	ND	ND	µg/L	NO
1,2-Dichloroethane	Aug. 4/15	ND	ND	µg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	Aug. 4/15	ND	ND	µg/L	NO
Dichloromethane	Aug. 4/15	ND	ND	µg/L	NO
2,4 Dichlorophenol	Aug. 4/15	ND	ND	µg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug. 4/15	ND	ND	µg/L	NO
Diclofop-methyl	Aug. 4/15	ND	ND	µg/L	NO
Dimethoate	Aug. 4/15	ND	ND	µg/L	NO
Dinoseb	Aug. 4/15	ND	ND	µg/L	NO
Diquat	Aug. 4/15	ND	ND	µg/L	NO
Diuron	Aug. 4/15	ND	ND	µg/L	NO

Glyphosate	Aug. 4/15	ND	ND	µg/L	NO
Heptachlor + Heptachlor Epoxide	Aug. 4/15	ND	ND	µg/L	NO
Lindane (Total)	Aug. 4/15	ND	ND	µg/L	NO
Malathion	Aug. 4/15	ND	ND	µg/L	NO
Methoxychlor	Aug. 4/15	ND	ND	µg/L	NO
Metolachlor	Aug. 4/15	ND	ND	µg/L	NO
Metribuzin	Aug. 4/15	ND	ND	µg/L	NO
Monochlorobenzene	Aug. 4/15	ND	ND	µg/L	NO
Paraquat	Aug. 4/15	ND	ND	µg/L	NO
Parathion	Aug. 4/15	ND	ND	µg/L	NO
Pentachlorophenol	Aug. 4/15	ND	ND	µg/L	NO
Phorate	Aug. 4/15	ND	ND	µg/L	NO
Picloram	Aug. 4/15	ND	ND	µg/L	NO
Polychlorinated Biphenyls(PCB)	Aug. 4/15	ND	ND	µg/L	NO
Prometryne	Aug. 4/15	ND	ND	µg/L	NO
Simazine	Aug. 4/15	ND	ND	µg/L	NO
THM (NOTE: show latest annual average)	Q1-Q4 2015	4.76 (distribution)		µg/L	NO
Temephos	Aug. 4/15	ND	ND	µg/L	NO
Terbufos	Aug. 4/15	ND	ND	µg/L	NO
Tetrachloroethylene	Aug. 4/15	ND	ND	µg/L	NO
2,3,4,6-Tetrachlorophenol	Aug. 4/15	ND	ND	µg/L	NO
Triallate	Aug. 4/15	ND	ND	µg/L	NO
Trichloroethylene	Aug. 4/15	ND	ND	µg/L	NO
2,4,6-Trichlorophenol	Aug. 4/15	ND	ND	µg/L	NO
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Aug. 4/15	ND	ND	µg/L	NO
Trifluralin	Aug. 4/15	ND	ND	µg/L	NO
Vinyl Chloride	Aug. 4/15	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:

- 1) **Continuous monitoring equipment that was being utilized was not performing tests for the parameters with at least the minimum frequency specified in Table 6 of O. Reg. 170/03**  
**Actions Required:** Identify how issues of SCADA communication failure events will be addressed to ensure that requirements are maintained and revise Contingency Plan to effectively address issues of SCADA communication failure. In addition, the operating authority will immediately ensure that the MOECC and MOH is contacted during these events to determine acceptable minimum recording frequency requirements
- 2) **The operations and maintenance manuals did not meet the requirements of the Permit and License or Approval under Part V of the SDWA**  
**Actions Required:** Update the O&M manual with the current MDWL and DWWP
- 3) Sample analysis was missed during the week of September 28, 2015 due to a shipping/delivery error. Letter on file from lab indicating the error. Now have automatic lab notifications sent out when samples arrive at lab.

System Capability Assessment						
Comparison of Flow Rates (m <sup>3</sup> /d):						
Month	Average Flow Well #1B	Maximum Flow Well #1B	Max. Instant. Well #1B Flow (L/s)	Average Flow Well #2	Maximum Flow Well #2	Max. Instant. Well #2 Flow (L/s)
January	756	851	14.0	332	521	11.0
February	824	1208	14.0	542	949	11.0
March	943	1165	14.0	696	907	11.0
April	846	1088	14.0	566	765	11.0
May	811	935	14.0	402	765	11.0
June	801	1063	14.0	320	522	11.0
July	790	947	14.0	372	656	11.0
August	755	887	14.0	374	748	11.0
September	762	979	14.0	414	870	11.0
October	765	995	14.0	258	472	11.0
November	725	861	14.0	277	472	11.0
December	648	791	14.0	330	550	11.0
AVERAGE	785	n/a	n/a	406	n/a	n/a
MAXIMUM	-	1208	14.0	-	949	11.0
SYSTEM CAPACITY	1375	1375	18.9	1636	1636	18.9
% CAPACITY	57.1%	87.9%	n/a	24.8%	58.0%	n/a