



2017 Annual Drinking Water System Report

Port Dover Drinking Water System

1. Introduction

The Corporation of Norfolk County has prepared this report to satisfy the requirements of Section 11 of Ontario Regulation (O. Reg.) 170/03. This annual report must be prepared no later than February 28 of each year.

This report covers the period from January 1, 2017 to December 31, 2017, and the information provided complies with the reporting requirements of O. Reg. 170/03 Section 11.

A summary of Port Dover's Municipal Drinking Water System is outlined below:

Drinking Water System Number: 220000399

Drinking Water System Name: Port Dover Drinking Water System

Drinking Water System Owner: Corporation of Norfolk County

Drinking Water System Category: Large Municipal Residential

2. Reporting Requirements under Section 11 – O. Reg. 170/03

Section 11 requires that the report include the following information relating to the period covered by the report. This includes:

- A statement of where a report prepared under Schedule 22 will be available for inspection by any member of the public during normal business hours without charge.
- A brief description of the drinking water system, including a list of water treatment chemicals used.
- Any major expenses incurred to install, repair or replace required equipment.



- A summary of any reports made to the Ministry of Environment and Climate Change (MOECC) for Adverse Water Quality Incidents (AWQI's).
- A summary of the results of tests performed under O. Reg. 170/03, an approval, the municipal drinking water licence or an order, including an Ontario Water Resources Act (OWRA) order.
- To describe any corrective actions taken

3. Evidence of Compliance

Availability of the Annual Report

In accordance with Section 11 O. Reg. 170/03, a copy of the annual report will be posted for each system by the end of February each year on the Norfolk County web site at norfolkcounty.ca. A Summary Report on regulatory compliance is required annually under Schedule 22 of Regulation 170/03 for each municipal drinking water system. This report summarizes any known failures to meet the requirements of the Safe Drinking Water Act, its duration and corrective measures. The reports are presented to Norfolk County Council for acceptance before March 31st each year. The reports are made available to the public in April on the Norfolk County web site noted above or by request from the Environmental Services Department. A copy of the annual report is available to the public, free of charge at the following locations as well:

183 Main Street of Delhi, Delhi, ON

50 Colborne St., Simcoe, ON

185 Robinson St., Simcoe, ON

22 Albert St., Langton, ON

Description of the Municipal Drinking Water System

The Port Dover Drinking Water System supplies drinking water to the community of Port Dover. The drinking water system currently serves a population of approximately 7,000. The Port Dover water treatment plant is fed from a surface water source, which is Lake



Erie. The water enters a 500mm intake pipe that is located approximately 450m offshore in about 4.3m of water.

The water distribution system includes a 5,000 m³ elevated tank, which acts as a reservoir when the system requires larger amounts of water than the water treatment plant can supply (such as firefighting and peak flows) and also helps to maintain a constant system pressure. There are approximately 360 fire hydrants and approximately 61,700 meters of water main and transmission main ranging in size from 150 mm to 400mm in diameter. The piping material consists of cast iron, Polyvinyl Chloride (PVC) and ductile iron pipe.

Water Treatment Chemicals

The following water treatment chemicals were used during the reporting period:

- Sodium Hypochlorite
- Carbon Dioxide
- Poly Aluminum Chloride

Significant Expenses Incurred

A brief summary of the major expenses incurred during the reporting period to install, repair or replace required equipment, and value of each, is included in Table 1.

Table 1 – Summary of Expenses Incurred

Activity	Cost Incurred (2017)
Clarifier Remediation	\$968,800.00
Replacement of Section of Watermain	\$185,000.00
General Operations Maintenance and Repair	\$30,700.00

4. Microbiological Testing

E. coli and Total Coliform

As per Schedule 10 of O. Reg. 170/03 – Microbiological Sampling and Testing, bacteriological tests for *E. coli* and total coliforms were performed weekly on the raw



and treated water at the facilities and in the distribution system. The results from the 2017 sampling program for the Port Dover Drinking Water are shown in the table below.

Location	Number of Samples	Range of E.coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)
Raw	52	0 – 100	0 - 4600
Treated	52	0 - 0	0 - 0
Distribution	291	0 - 0	0 - 0

Heterotrophic Plate Count (HPC)

As per Schedule 10 of O. Reg. 170/03 - Microbiological Sampling and Testing, HPC analyses are required from the treated and distribution water. HPC tests are required weekly for treated water and for twenty five percent of the required distribution system bacteriological samples. Results over 500 colonies per 1 mL may indicate a change in water quality but is not considered an indicator of unsafe drinking water. The results from the 2017 HPC sampling program for the Port Dover Drinking Water System are shown in the table below.

Location	Number of Samples	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Treated	52	52	<10 - >200
Distribution	291	133	<10 - 80

5. Chemical Testing

The Safe Drinking Water Act requires periodic testing of the water for sixty different chemical parameters. The latest results for these parameters are provided in Appendix A. The sampling frequency varies for the different types of water systems. If the concentration of the parameter is found to be above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by Regulation. No additional testing is required for the Port Dover Drinking Water System.



6. Operational Monitoring

Operational checks including raw and treated water turbidity and treated and distribution free chlorine were conducted in accordance with Schedule 7 of Reg. O. 170/03.

Turbidity

The turbidity of the treated water is monitored continuously at each treatment plant; the turbidity of the raw water is checked on a weekly basis. Turbidity is measured in Nephelometric Turbidity Units (NTU). Under O. Reg. 170/03 turbidity in groundwater is not reportable, however at it's desirable to have it <1NTU at the treatment plant and <5NTU in the distribution system. A summary of the 2017 turbidity monitoring results are provided in the table below.

Location	Number of Grab Samples	Range of Results	Unit of Measure
Turbidity Filter 1	8760	0.01 – 0.40	NTU
Turbidity Filter 2	8760	0.01 – 1.76	NTU
Turbidity Filter 3	8760	0.01 – 2.00	NTU

Chlorine Residual

In accordance with Schedule 7 of O. Reg. 170/03, free chlorine residuals in the treated water are monitored continuously at the point of entry to the distribution system at all water treatment plants and wells. The free chlorine in the water distribution system must be above 0.05 mg/L, if it is below this, it must be reported and corrective actions taken. The results from the 2017 chlorine residual monitoring program for the Port Dover Drinking Water System are shown in the table below.

Location	Number of Grab Samples	Range of Results	Unit of Measure
Chlorine	8760	0.63 – 5.00	mg/L
Chlorine Residual Distribution System	628	0.01 – 1.89	mg/L



7. Adverse Results

In accordance with Schedule 16 – Reporting of Adverse Test Results and Other Problems of O. Reg. 170/03, there was one Adverse Water Quality Incident (AWQI) issued for the Port Dover Drinking Water System. The following table describes the date the adverse occurred, the parameter, the result, the corrective action taken and the corrective action date.

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
01/14/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	01/14/2017
01/21/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	01/23/2017
01/26/2017	Less than 0.05 mg/L	<0.05	mg/L	Distribution system was	01/26/2017



Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
	chlorine residual in the distribution system at fire hydrant 147			flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	
03/30/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	03/30/2017
04/19/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was	04/19/2017



Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
				required.	
04/20/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	04/20/2017
04/30/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	04/30/2017
05/08/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment	05/08/2017



Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
				Guidelines. No further action was required.	
05/19/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	05/19/2017
05/25/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	05/25/2017
05/30/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within	05/30/2017



Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
				the Ministry of the Environment Guidelines. No further action was required.	
06/03/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	06/03/2017
06/11/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	06/11/2017
06/12/2017	Less than 0.05 mg/L chlorine residual in the	<0.05	mg/L	Distribution system was flushed until residual was	06/12/2017



Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
	distribution system at fire hydrant 147			restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	
06/13/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	06/13/2017
06/14/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	06/14/2017
06/16/2017	Less than	<0.05	mg/L	Distribution	06/16/2017



Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
	0.05 mg/L chlorine residual in the distribution system at fire hydrant 147			system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	
06/17/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	06/19/2017
06/18/2016	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further	06/19/2016



Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
				action was required.	
06/21/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	06/21/2017
06/26/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	06/28/2017
06/27/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the	06/27/2017



Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
				Environment Guidelines. No further action was required.	
06/28/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	06/29/2017
07/31/2017	Less than 0.05 mg/L chlorine residual in the distribution system at fire hydrant 147	<0.05	mg/L	Distribution system was flushed until residual was restored. Results were within the Ministry of the Environment Guidelines. No further action was required.	08/08/2017



APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing Norfolk County is required to complete. Different parameters are required to be tested for at different frequencies as noted below. Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MOECC Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. There was no additional testing or sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

The following tables summarize the Inorganic parameters tested for during the reporting period or the most recent sample results for the Port Dover Drinking Water System.

Port Dover Filtration Plant

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	24/05/2017	0.13	ug/L	No
Arsenic	24/05/2017	0.3	ug/L	No
Barium	24/05/2017	20.1	ug/L	No
Boron	24/05/2017	19	ug/L	No
Cadmium	24/05/2017	0.004	ug/L	No
Chromium	24/05/2017	0.11	ug/L	No
Lead	Exempt			
Mercury	24/05/2017	0.01<MDL	ug/L	No
Selenium	24/05/2017	0.12	ug/L	No
Sodium	03/06/2015	13.5	mg/L	No
Fluoride	03/06/2015	0.09		
Uranium	24/05/2017	0.019	ug/L	No
Nitrite	01/03/2017	0.003<MDL	ug/L	No
	24/05/2017	0.003<MDL	ug/L	No
	21/08/2017	0.003<MDL	ug/L	No
	07/11/2017	0.003<MDL	ug/L	No



Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrate	01/03/2017	0.478	ug/L	No
	24/05/2017	0.186	ug/L	No
	21/08/2017	0.122	ug/L	No
	07/11/2017	0.228	ug/L	No

The following tables summarize the Organic parameters tested for during the reporting period or the most recent sample results for the Port Dover Drinking Water.

Port Dover Filtration Plant

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	24/05/2017	0.02<MDL	ug/L	No
Atrazine + N-dealkylated metabolites	24/05/2017	0.06	ug/L	No
Azinphos-methyl	24/05/2017	0.05<MDL	ug/L	No
Benzene	24/05/2017	0.32<MDL	ug/L	No
Benzo(a)pyrene	24/05/2017	0.004<MDL	ug/L	No
Bromoxynil	24/05/2017	0.33<MDL	ug/L	No
Carbaryl	24/05/2017	0.05<MDL	ug/L	No
Carbofuran	24/05/2017	0.01<MDL	ug/L	No
Carbon Tetrachloride	24/05/2017	0.16<MDL	ug/L	No
Chlorpyrifos	24/05/2017	0.02<MDL	ug/L	No
Diazinon	24/05/2017	0.02<MDL	ug/L	No
Dicamba	24/05/2017	0.20<MDL	ug/L	No
1,2-Dichlorobenzene	24/05/2017	0.41<MDL	ug/L	No
1,4-Dichlorobenzene	24/05/2017	0.36<MDL	ug/L	No
1,2-Dichloroethane	24/05/2017	0.35<MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	24/05/2017	0.33<MDL		
Dichloromethane	24/05/2017	0.35<MDL	ug/L	No
2,4 Dichlorophenol	24/05/2017	0.15<MDL	ug/L	No
2,4-	24/05/2017	0.19<MDL	ug/L	No



Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Dichlorophenoxy acetic acid (2,4-D)				
Diclofop-methyl	24/05/2017	0.40<MDL	ug/L	No
Dimethoate	24/05/2017	0.03<MDL	ug/L	No
Diquat	24/05/2017	1<MDL	ug/L	No
Diuron	24/05/2017	0.03<MDL	ug/L	No
Glyphosate	24/05/2017	1<MDL	ug/L	No
Malathion	24/05/2017	0.02<MDL	ug/L	No
MCPA	24/05/2017	0.00012<MDL	mg/L	No
Metolachlor	24/05/2017	0.01	ug/L	No
Metribuzin	24/05/2017	0.02<MDL	ug/L	No
Monochlorobenzene	24/05/2017	0.3<MDL	ug/L	No
Paraquat	24/05/2017	1<MDL	ug/L	No
Pentachlorophenol	24/05/2017	0.15<MDL	ug/L	No
Phorate	24/05/2017	0.01<MDL	ug/L	No
Picloram	24/05/2017	1<MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	24/05/2017	0.04<MDL	ug/L	No
Prometryne	24/05/2017	0.03<MDL	ug/L	No
Simazine	24/05/2017	0.01<MDL	ug/L	No
THM Annual Average 34 ug/L	01/03/2017	15	ug/L	No
	24/05/2017	18	ug/L	No
	21/08/2017	57	ug/L	No
	07/11/2017	46	ug/L	No
Terbufos	24/05/2017	0.01<MDL	ug/L	No
Tetrachloroethylene	24/05/2017	0.35<MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	24/05/2017	0.20<MDL	ug/L	No
Triallate	24/05/2017	0.01<MDL	ug/L	No
Trichloroethylene	24/05/2017	0.44<MDL	ug/L	No
2,4,6-Trichlorophenol	24/05/2017	0.25<MDL	ug/L	No
Trifluralin	24/05/2017	0.02<MDL	ug/L	No
Vinyl Chloride	24/05/2017	0.17<MDL	ug/L	No

The following table summarizes the lead testing as set out in Schedule 15.1 of O. Reg. 170/03 during the reporting period.



Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	Exempt		
Distribution	None. Next required sampling is Spring 2018		