

The Regional Municipality of Durham

Oshawa Drinking Water System 2015 Annual Report

Drinking Water System Number: 220000772

Municipal Drinking Water License Number: 003-111

Drinking Water System Owner: The Regional Municipality of Durham

Drinking Water System Category: Large Municipal Residential

This Annual Report for the calendar year 2015 is designed to inform you about your drinking water system. This report has been prepared to satisfy Section 11 of Ontario Regulation (O. Reg.) 170/03. O. Reg. 170/03 sets requirements for drinking water systems with regard to sampling and testing, levels of treatment, certification of staff, and notification of authorities and the public about water quality. Hard copies of this report are available at the Regional Municipality of Durham Headquarters building located at 605 Rossland Road East, Whitby or on the [Region of Durham's website](http://www.regionofdurham.ca) at www.durham.ca. Further information on the Drinking Water Regulations can be found on the [Ministry of the Environment and Climate Change's website](http://www.ontario.ca/ministry-environment-and-climate-change) at www.ontario.ca/ministry-environment-and-climate-change.

Drinking Water System Process Description

General

The Oshawa Drinking Water System provides potable water to consumers in the City of Oshawa, Community of Courtice, Town of Whitby, Town of Ajax, City of Pickering and Community of Brooklin. The water supply plant is a Class Four Water Treatment Plant with an approved capacity of 134,000 cubic metres per day (m³/d). The Oshawa Water Supply Plant feeds a Class Two Distribution System and Class Three Trunk Distribution System. The treatment and distribution system is owned and operated by the Regional Municipality of Durham. Plant 1 remained off line for 2015.

The source water for the treatment process is drawn from Lake Ontario. The water supply system includes the following 12 processes:

- Zebra mussel control (sodium hypochlorite),
- Screening,
- Pre-chlorination,
- Low lift pumping,
- Coagulation (aluminum sulphate),
- Flocculation,
- Filtration,
- Residual management facility
- Post chlorination,
- Fluoridation (hydrofluosilicic acid),
- Distribution,
- Water storage and high lift pumping.

Raw Water Supply

Raw water is drawn from Lake Ontario through two intake pipes. The first is a 750 millimetre (mm) diameter intake pipe extending 831 metres (m) into the lake at a depth of approximately 7.6 m, and the second is a 900 mm intake pipe extending 924 m into the lake at a depth of approximately 10.7 m. Chlorine is added at the raw water intake for zebra mussel control and to provide initial disinfection. There is also a line for raw water sampling at the east intake crib. The pre-chlorine residual and turbidity are continuously measured as the raw water enters the water supply plant.

Coagulation/Flocculation/Sedimentation

The water from the east intake flows through a traveling screen, while the west intake utilizes a manual screen to remove large solids and continues towards the low lift pumps. Aluminum sulphate (alum) is added into a mechanical mixer upstream of the flocculation tanks. Gentle mixing of the alum with the water occurs as the water passes through the flocculation tanks. Plant One has three sets of three stage, four cell hydraulic spiral upflow flocculation tanks with three trains of horizontal cross flow settling tanks. Plant Two has three sets of two stage, three cell hydraulic spiral upflow flocculation tanks with three trains of horizontal cross flow settling tanks.

Filtration

Most of the particulate matter that was present in the raw water is deposited in the sedimentation tanks. The water supply plant has a total of ten filters to remove flocculated particles. All ten filters are dual media filters, composed of anthracite and sand. The four filters in Plant One are currently out of service. Filter effluent turbidity and head loss are continually monitored to indicate filter effectiveness.

Residual Management Facility

The filter backwash treatment includes isolation of the filter cell, reversal of flow through the media, air scouring or surface water agitation. The backwash water is treated in two plate settling tanks before being dechlorinated. The clear supernatant is discharged back to Lake Ontario.

Disinfection and Fluoridation

Filtered water passes through the filter under-drain into the treated water clearwell and reservoir, and eventually to the high lift pump suction well. The high lift pumps deliver treated water to the distribution system. Disinfection is controlled by the addition of chlorine at multiple application points throughout the plant. Consistent disinfection is ensured by continuous online monitoring of the free chlorine residual throughout the water supply plant. Fluoride (hydrofluosilicic acid) is added to the treated water for the prevention of tooth decay.

Distribution System

The Oshawa/Whitby/Ajax distribution system delivers treated water through 1,988.4 kilometres of watermains in multiple pressure zones and includes nine reservoirs and 12 booster stations and one elevated tank.

The Oshawa distribution system is interconnected with the distribution systems of Whitby and Ajax, therefore the entire system is licensed by the Ministry of the Environment and Climate Change as one distribution system. For the purposes of clarity in this report, distribution information will be recorded under its corresponding system.

Major Monetary expenses(above \$10,000)

Under Section 11 of O. Reg. 170/03, a description of any major expenses incurred during this reporting period to install, repair or replace required equipment must be included in the annual report. The details of the 11 major expenses for this drinking water system are as follows:

- Supervisory Control And Data Acquisition (SCADA) upgrades - \$230,434
- Cathodic protection of watermains - \$49,401
- Replacement of polybutylene service connections - \$1,722,259
- Construction for the Oshawa Water Supply System - \$3,581,452
- Replaced sedimentation tank gate valve at the water treatment plant - \$51,901
- Installed pump discharge valves and actuators at Grandview South Pumping Station - \$25,700
- Replaced shear gates in filters at the water treatment plant - \$40,905
- Replaced wash valves at water treatment plant - \$48,030
- Rebuilt Pumps 1 & 2 at Taunton Rd Reservoir and Pumping Station - \$54,295
- Replaced valve with actuator at water treatment plant - \$10,875
- Replaced electric actuator at Grandview Pumping Station - \$39,435

Tables

For a description of terms and abbreviations in all tables, refer to the glossary at the end of the report.

Oshawa Drinking Water System (DWS) Table 1

Summary of all Adverse Water Quality Incidents (AWQI) in 2015 Reported to Spills Action Centre in Accordance with Schedule 16-3 and 16-4 of O. Reg. 170/03.

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
May 7	Total Coliforms (Plant)	1 Colony Forming Unit (CFU) per 100 millilitres (mL)	Flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	May 7
June 28	Total Coliforms (Distribution)	1 CFU/100 mL	Flushed, resampled. Results met ODWQS	June 28
July 15	Total Coliforms (Distribution)	1 CFU/100 mL	Flushed, resampled. Results met ODWQS	July 15
October 6	Chlorine (Distribution)	0.0 milligrams per litre.	Residual restored. Flushed, resampled. Results met ODWQS	October 6

Oshawa DWS Table 2

Membrane Filtration (MF) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Range of Escherichia Coli MF Colony Forming Units per 100 millilitres	Range of Total Coliforms MF Colony Forming Units per 100 millilitres
Raw	197	Non-Detect (ND) - 10	ND – 190
Treated	21	ND	ND - 1(1)*
Distribution	255	ND	ND - 1(2)*

*Number in parenthesis represents number of exceedance(s).

Oshawa DWS Table 3

Presence Absence (P/A) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Escherichia Coli P/A per 100 millilitres	Total Coliforms P/A per 100 millilitres
Treated	197	Absence (A)	A
Distribution	751	A	A

Oshawa DWS Table 4

Heterotrophic Plate Count (H.PC.) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Range of HPC Samples Colony Forming Units per millilitre
Treated	218	Non-Detect (ND) - 440
Distribution	618	ND - 160

Oshawa DWS Table 5

Operational Testing Done Under Schedule 7 of O. Reg. 170/03.

Test	Number of Samples	Range of Results	Unit of Measure	Parameter Description
Turbidity - Filter Effluent	Continuous	0.01 - 0.80	Nephelometric Turbidity Units (NTU)	Turbidity is a measure of particles in water.
Fluoride - Plant	Continuous	0.20 - 1.10	milligrams per Litre (mg/L)	Fluoride is added to water to prevent tooth decay.
Free Chlorine - Plant	Continuous	0.11 – 3.58*	mg/L	Must be sufficient to ensure disinfection has been achieved.
Free Chlorine - Distribution	Continuous	0.12 - 3.10*	mg/L	Recommended level of at least 0.20 mg/L in the distribution system to maintain secondary disinfection, 0.05 mg/L is the minimum required.

*Results include all analyzers and grab samples.

Oshawa DWS Table 6

Summary of Additional Testing and Sampling Carried Out in Accordance With the Requirement of an Approval, Order or Other Legal Instrument.

Type of Sample	Parameter	Date Sampled	Result	MAC	Unit of Measure
Raw Water	Gross Beta	January - December	0.02 - 0.13	N/A	Becquerels per Litre (Bq/L)
Raw Water	Tritium	January - December	1.5 - 10.3	N/A	Bq/L
Treated Water	Tritium	January - December	5.1 - 15.0	7000	Bq/L
Environmental Discharge	Suspended Solids	January - December	3.0 - 13.5	25	Milligrams per Litre (mg/L)

Oshawa DWS Table 7

Summary of Treated Water Inorganic Parameters Tested Under Schedule 13 and 23 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources ¹
Antimony	14	0.0004 - 0.0011	0.006	Milligram per Litre (mg/L)	No	Fire retardants, ceramics, electronics, solder.
Arsenic	14	Non-Detect (ND) - 0.0008	0.025	mg/L	No	Mining.
Barium	2	0.0155 - 0.0217	1.0	mg/L	No	Metal refineries, oil drilling.
Boron	2	0.0229 - 0.0230	5.0	mg/L	No	Industrial.
Cadmium	14	ND - 0.0001	0.005	mg/L	No	Industrial.
Chromium	14	ND - 0.0011	0.05	mg/L	No	Industrial.
Mercury	2	ND	0.001	mg/L	No	Industrial.
Selenium	14	ND - 0.0009	0.01	mg/L	No	Refineries, mines, chemical manufacturing.
Sodium ²	12	13.7 - 19.5	20	mg/L	No	Runoff from road salt.
Uranium	2	ND - 0.0003	0.02	mg/L	No	Power generation.
Nitrite	12	ND	1.0	mg/L	No	Agriculture runoff, landfill leachate and animal waste.
Nitrate	12	0.167 - 0.621	10.0	mg/L	No	Fertilizer.

1 Parameters may occur naturally in the environment.

2 Sodium does not have a Maximum Acceptable Concentration (M.AC); only an aesthetic objective of 200 mg/L Sodium results exceeding 20 mg/L are to be reported as per the Medical Officer of Health Schedule 16-3 (8) of O. Reg. 170/03.

Oshawa DWS Table 8

Summary of Lead Testing Under Schedule 15.1 of O. Reg. 170/03

Location Type	Number of Samples	Range of Lead Results milligram per litre	MAC	Number of Exceedences	pH	Alkalinity milligrams per litre
Plumbing	60	ND - 0.0169	0.01	2	7.29 - 8.03	N/A
Distribution	4	ND - 0.0003	0.01	0	7.63 - 8.04	86.1 - 90.0

Oshawa DWS Table 9

Summary of Treated Water Organic Parameters Tested Under Schedule 24 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Alachlor	2	Non-Detect (ND)	5	microgram/litre (ug/L)	No	Agricultural herbicide.
Aldicarb	2	ND	9	ug/L	No	Agricultural insecticide.
Aldrin + Dieldrin	2	ND	0.7	ug/L	No	Residue from banned insecticide.
Atrazine + N-dealkylated metabolites	2	ND	5	ug/L	No	Agricultural herbicide.
Azinphos-methyl	2	ND	20	ug/L	No	Insecticide.
Bendiocarb	2	ND	40	ug/L	No	Insecticide.
Benzene	2	ND	5	ug/L	No	Plastics manufacturing, leaking fuel tanks.
Benzo(a)pyrene	2	ND	0.01	ug/L	No	Formed from the incomplete burning of organic matter.
Bromoxynil	2	ND	5	ug/L	No	Agricultural herbicide.
Carbaryl	2	ND	90	ug/L	No	Agricultural, forestry, household insecticide.
Carbofuran	2	ND	90	ug/L	No	Agricultural insecticide.
Carbon Tetrachloride	2	ND	5	ug/L	No	Chemical and industrial activities.
Chlordane (Total)	2	ND	7	ug/L	No	Residue from banned insecticide.
Chlorpyrifos	2	ND	90	ug/L	No	Agricultural, household insecticide.
Cyanazine	2	ND	10	ug/L	No	Agricultural, residential herbicide.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Diazinon	2	Non-Detect (ND)	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Dicamba	2	ND	120	ug/L	No	Agricultural herbicide.
1,2-Dichlorobenzene	2	ND	200	ug/L	No	Chemical and industrial factories.
1,4-Dichlorobenzene	2	ND	5	ug/L	No	Chemical and industrial factories.
Dichlorodiphenyltrichloroethane (DDT) + metabolites	2	ND	30	ug/L	No	Residue from banned insecticide.
1,2-Dichloroethane	2	ND	5	ug/L	No	Industrial chemical factories.
1,1-Dichloroethylene (vinylidene chloride)	2	ND	14	ug/L	No	Industrial chemical factories.
Dichloromethane	2	ND	50	ug/L	No	Pharmaceutical and chemical factories.
2,4-dichlorophenol	2	ND	900	ug/L	No	Industrial contamination, reaction with chlorine.
2,4-Dichlorophenoxy acetic acid (2,4-D)	2	ND	100	ug/L	No	Agricultural, residential herbicide.
Diclofop-methyl	2	ND	9	ug/L	No	Agricultural herbicide.
Dimethoate	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Dinoseb	2	ND	10	ug/L	No	Herbicide residue.
Diquat	2	ND	70	ug/L	No	Agricultural, aquatic herbicide.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Diuron	2	Non-Detect (ND)	150	ug/L	No	Agricultural, industrial herbicide.
Glyphosate	2	ND	280	ug/L	No	Agricultural, forestry, household herbicide.
Heptachlor + Heptachlor Epoxide	2	ND	3	ug/L	No	Residue from banned insecticide.
Lindane (Total)	2	ND	4	ug/L	No	Agricultural, pharmaceutical insecticide.
Malathion	2	ND	190	ug/L	No	Pest control insecticide.
Methoxychlor	2	ND	900	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Metolachlor	2	ND	50	ug/L	No	Agricultural herbicide.
Metribuzin	2	ND	80	ug/L	No	Agricultural herbicide.
Monochlorobenzene	2	ND	80	ug/L	No	Industrial and agricultural chemical factories and dry cleaning facilities.
Paraquat	2	ND	10	ug/L	No	Agricultural, aquatic herbicide.
Parathion	2	ND	50	ug/L	No	Agricultural insecticide.
Pentachlorophenol	2	ND	60	ug/L	No	Pesticide, wood preservative residue.
Phorate	2	ND	2	ug/L	No	Agricultural insecticide.
Picloram	2	ND	190	ug/L	No	Industrial herbicide.
Polychlorinated Biphenyls (PCB)	2	ND	3	ug/L	No	Residue from various industrial uses.
Prometryne	2	ND	1	ug/L	No	Agricultural herbicide.
Simazine	2	ND	10	ug/L	No	Agricultural herbicide.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Trihalomethane (THM) - Distribution (annual average)	12	50.7	100	ug/L	No	By-product of chlorination of drinking water.
Temephos	2	Non-Detect (ND)	280	ug/L	No	Insecticide for mosquito, black fly control.
Terbufos	2	ND	1	ug/L	No	Agricultural insecticide.
Tetrachloroethylene	2	ND	30	ug/L	No	Leaching from PVC pipes; discharge from factories; dry cleaners and auto shops (metal degreaser).
2,3,4,6 - Tetrachlorophenol	2	ND	100	ug/L	No	Wood preservative.
Triallate	2	ND	230	ug/L	No	Agricultural herbicide.
Trichloroethylene	2	ND	5	ug/L	No	Metal degreasing sites and other factories.
2,4,6-Trichlorophenol	2	ND	5	ug/L	No	Pesticide manufacturing.
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	2	ND	280	ug/L	No	Industrial herbicide residue.
Trifluralin	2	ND	45	ug/L	No	Agricultural herbicide.
Vinyl Chloride	2	ND	2	ug/L	No	Leaching from PVC pipes; discharge from plastics factories.

Oshawa DWS Table 10

Inorganic or Organic Parameter(s) that Exceed Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards. No inorganic or organic parameters exceeded half the maximum allowable concentration in 2015.

Parameter	Result	Unit of Measure	Date of Sample
Not Applicable (N/A)	N/A	N/A	N/A

The Regional Municipality of Durham

Whitby Drinking Water System 2015 Annual Report

Drinking Water System Number: 220000754

Municipal Drinking Water License Number: 003-111

Drinking Water System Owner: The Regional Municipality of Durham

Drinking Water System Category: Large Municipal Residential

This Annual Report for the calendar year 2015 is designed to inform you about your drinking water system. This report has been prepared to satisfy Section 11 of Ontario Regulation (O. Reg.) 170/03. O. Reg. 170/03 sets requirements for drinking water systems with regard to sampling and testing, levels of treatment, certification of staff, and notification of authorities and the public about water quality. Hard copies of this report are available at the Regional Municipality of Durham Headquarters building located at 605 Rossland Road East, Whitby or on the [Region of Durham's website](http://www.durham.ca) at www.durham.ca. Further information on the Drinking Water Regulations can be found on the [Ministry of the Environment and Climate Change's website](http://www.ontario.ca/ministry-environment-and-climate-change) at www.ontario.ca/ministry-environment-and-climate-change.

Drinking Water System Process Description

General

The Whitby Drinking Water System provides potable water to consumers in the Town of Whitby, Community of Brooklin, City of Oshawa, Town of Ajax, City of Pickering and Community of Courtice. The water supply plant is a Class Three Water Treatment Plant with an approved capacity of 118,000 cubic metres per day (m³/d). The Whitby Water Supply Plant feeds a Class Two Distribution System and Class Three Trunk Distribution System. The treatment and distribution system is owned and operated by the Regional Municipality of Durham.

The source water for the treatment process is drawn from Lake Ontario. The water supply system includes the following twelve processes:

- Zebra mussel control (chlorine),
- Screening,
- Pre-chlorination,
- Low lift pumping,
- Dechlorination (sodium bisulphite),
- Coagulation (aluminum sulphate),
- Flocculation,
- Filtration,
- Post-chlorination,
- Fluoridation (hydrofluorosilicic acid),
- Distribution,
- Water storage and high lift pumping.

Raw Water Supply

Raw water is drawn from Lake Ontario through a 1,350 millimetre diameter intake pipe extending 1,710 metres (m) into the lake. The intake structure is located at a depth of approximately 16 m. Chlorine is added at the raw water intake for zebra mussel control and to provide initial disinfection. There is also a line for raw water sampling at the intake crib. The pre-chlorine residual and turbidity are continuously measured as the raw water enters the water supply plant.

Coagulation/Flocculation

The water flows through traveling screens to remove large solids and continues towards the low lift pumps. Aluminum sulphate (alum) is added into a mechanical mixer upstream of the flocculation tanks. Gentle mixing of the alum with the water occurs as the water passes through the flocculation tanks. There are six sets of hydraulic spiral upflow flocculation tanks, each with three cells arranged for parallel flow.

Filtration

Particulate matter that is present in the raw water is captured by the coagulation/flocculation process and deposited on the top of the filters. The water supply plant has four filters to remove flocculated particles. All filters are dual media filters, composed of anthracite and sand. Filter effluent turbidity and head loss are continuously monitored to indicate filter effectiveness. The filters are cleaned using a backwash treatment. The backwash water is discharged to a two -cell sedimentation tank to allow for settling of the suspended solids. The settled solids are pumped to the sanitary sewer. The supernatant is discharged back to Lake Ontario.

Disinfection and Fluoridation

Filtered water passes through the filter under-drain into the treated water clearwell. Treated water passing through the filters and enters a clearwell which feeds into the high lift suction well. The high lift pumps deliver treated water to the distribution system. Disinfection is controlled by the addition of chlorine at multiple application points throughout the plant. Sodium bisulfite, a dechlorination chemical, is used to manage chlorine residuals. Consistent disinfection is ensured by continuous online monitoring of the free chlorine residual throughout the water supply plant. Fluoride (hydrofluosilicic acid) is added to the treated water for the prevention of tooth decay.

Distribution System

The Oshawa/Whitby/Ajax distribution system delivers treated water through 1,988.4 kilometres of watermains in multiple pressure zones and includes nine reservoirs and 12 booster stations and one elevated tank.

The Whitby distribution system is interconnected with the distribution systems of Oshawa and Ajax, therefore the entire system is licensed by the Ministry of the Environment and Climate Change as one distribution system. For the purposes of clarity in this report, distribution information will be recorded under its corresponding system.

Major Monetary expenses(above \$10,000)

Under Section 11 of O. Reg. 170/03, a description of any major expenses incurred during this reporting period to install, repair or replace required equipment must be included in the annual report. The details of the nine major expenses for this drinking water system are as follows:

- Cement mortar lining of watermains - \$978,075
- Replacement of polybutylene service connections - \$965,135
- Cathodic protection of watermains - \$137,758
- Supervisory Control And Data Acquisition (SCADA) upgrades - \$119,562
- Replaced sodium bisulfite mixer pump at the water treatment plant - \$14,891
- Replaced actuator at Garrard Pumping Station - \$31,084
- Replaced discharge pipe pump at Garrard Pumping Station - \$15,965
- Repaired vertical turbine at Garrard Pumping Station - \$29,863
- Repaired central vacuum system and valve shut down at water supply plant - \$22,747

Tables

For a description of terms and abbreviations in all tables, refer to the glossary at the end of the report.

Whitby Drinking Water System (DWS) Table 1

Summary of all Adverse Water Quality Incidents (AWQI) in 2015 Reported to Spills Action Centre in Accordance with Schedule 16-3 and 16-4 of O. Reg. 170/03.

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
**June 30	Lead (Distribution)	0.0221 milligram per Litre (mg/L)	Replaced hydrant components.	June 30
**July 2	Lead (Distribution)	0.0248 mg/L	Replaced hydrant components.	July 8
July 19	Total Coliforms (Distribution)	2 Colony Forming Units per 100 millilitres	Flushed, resampled. Results met ODWQS	July 19 and July 21
August 18	Total Coliforms and Escherichia coli (distribution)	Presence	Flushed, resampled. Results met ODWQS	August 18 and 19

**AWQI's from June 30 to July 2 are all related to one sample required under Schedule 15.1.

Whitby DWS Table 2

Membrane Filtration (MF) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Range of Escherichia Coli MF Colony Forming Units per 100 millilitres	Range of Total Coliforms MF Colony Forming Units per 100 millilitres
Raw	191	Non-Detect (ND) - 1	ND - 120
Treated	4	ND	ND
Distribution	189	ND	ND - 2(1)*

* Number in parenthesis represents number of exceedance(s).

Whitby DWS Table 3

Presence Absence (P/A) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Escherichia Coli P/A per 100 millilitres	Total Coliforms P/A per 100 millilitres
Treated	191	Absence (A)	A
Distribution	706	A - Presence (P)(1)*	A - P(1)*

*Number in parenthesis represents number of exceedance(s).

Whitby DWS Table 4

Heterotrophic Plate Count (H.P.C.) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Range of HPC Samples Colony Forming Units per millilitre
Treated	195	Non-Detect (ND) - 210
Distribution	521	ND - 2400

Whitby DWS Table 5

Operational Testing Done Under Schedule 7 of O. Reg. 170/03.

Test	Number of Samples	Range of Results	Unit of Measure	Parameter Description
Turbidity - Filter Effluent	Continuous	0.02 - 1.66	Nephelometric Turbidity Units (NTU)	Turbidity is a measure of particles in water.
Fluoride - Plant	Continuous	0.2 - 1.31	milligrams per Litre (mg/L)	Fluoride is added to water to prevent tooth decay.
Free Chlorine - Plant	Continuous	0.8 - 4.0**	mg/L	Must be sufficient to ensure disinfection has been achieved.
Free Chlorine - Distribution	Continuous	0.04 - 4.68**	mg/L	Recommended level of at least 0.20 mg/L in the distribution system to maintain secondary disinfection, 0.05 mg/L is the minimum required.

**Results include all analyzers and grab samples.

Whitby DWS Table 6

Summary of Additional Testing and Sampling Carried Out in Accordance With the Requirement of an Approval, Order or Other Legal Instrument.

Type of Sample	Parameter	Date Sampled	Result	MAC	Unit of Measure
Raw Water	Gross Beta	January - December	0.1 - 0.3	N/A	Becquerels per Litre (Bq/L)
Raw Water	Tritium	January - December	1.0 - 10.2	N/A	Bq/L
Treated Water	Tritium	January - December	5.1 - 11.0	7000	Bq/L
Environmental Discharge	Suspended Solids	January - December	7.4 - 23.4	25	Milligrams per Litre (mg/L)

Whitby DWS Table 7

Summary of Treated Water Inorganic Parameters Tested Under Schedule 13 and 23 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources ¹
Antimony	14	Non-Detect (ND) - 0.0011	0.006	Milligram per Litre (mg/L)	No	Fire retardants, ceramics, electronics, solder.
Arsenic	14	ND - 0.0009	0.025	mg/L	No	Mining.
Barium	2	0.0212 - 0.0217	1.0	mg/L	No	Metal refineries, oil drilling.
Boron	2	0.024 - 0.025	5.0	mg/L	No	Industrial.
Cadmium	14	ND – 0.0001	0.005	mg/L	No	Industrial.
Chromium	14	ND - 0.0008	0.05	mg/L	No	Industrial.
Mercury	2	ND	0.001	mg/L	No	Industrial.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources ¹
Selenium	14	ND - 0.0014	0.01	mg/L	No	Refineries, mines, chemical manufacturing.
Sodium²	12	13.9 – 17.9	20	mg/L	No	Runoff from road salt.
Uranium	2	ND - 0.0003	0.02	mg/L	No	Power generation.
Nitrite	12	ND	1.0	mg/L	No	Agriculture runoff, landfill leachate and animal waste.
Nitrate	12	0.16 - 0.49	10.0	mg/L	No	Fertilizer.

1 Parameters may occur naturally in the environment.

2 Sodium does not have a Maximum Acceptable Concentration (MAC); only an aesthetic objective of 200 mg/L Sodium results exceeding 20 mg/L are to be reported as per the Medical Officer of Health Schedule 16-3 (8) of O. Reg. 170/03.

Whitby DWS Table 8

Summary of Lead Testing Under Schedule 15.1 of O. Reg. 170/03.

Location Type	Number of Samples	Range of Lead Results milligram per litre	MAC	Number of Exceedences	pH	Alkalinity milligrams per litre
Plumbing	62	ND - 0.0013	0.01	0	7.21 - 8.06	N/A
Distribution	6	0.0001 - 0.0221	0.01	1	7.38 - 8.01	83.1 - 87.6

Whitby DWS Table 9

Summary of Treated Water Organic Parameters Tested Under Schedule 24 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Alachlor	2	Non-Detect (ND)	5	microgram/litre (ug/L)	No	Agricultural herbicide.
Aldicarb	2	ND	9	ug/L	No	Agricultural insecticide.
Aldrin + Dieldrin	2	ND	0.7	ug/L	No	Residue from banned insecticide.
Atrazine + N-dealkylated metabolites	2	ND	5	ug/L	No	Agricultural herbicide.
Azinphos-methyl	2	ND	20	ug/L	No	Insecticide.
Bendiocarb	2	ND	40	ug/L	No	Insecticide.
Benzene	2	ND	5	ug/L	No	Plastics manufacturing, leaking fuel tanks.
Benzo(a)pyrene	2	ND	0.01	ug/L	No	Formed from the incomplete burning of organic matter.
Bromoxynil	2	ND	5	ug/L	No	Agricultural herbicide.
Carbaryl	2	ND	90	ug/L	No	Agricultural, forestry, household insecticide.
Carbofuran	2	ND	90	ug/L	No	Agricultural insecticide.
Carbon Tetrachloride	2	ND	5	ug/L	No	Chemical and industrial activities.
Chlordane (Total)	2	ND	7	ug/L	No	Residue from banned insecticide.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Chlorpyrifos	2	Non-Detect (ND)	90	ug/L	No	Agricultural, household insecticide.
Cyanazine	2	ND	10	ug/L	No	Agricultural, residential herbicide.
Diazinon	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Dicamba	2	ND	120	ug/L	No	Agricultural herbicide.
1,2-Dichlorobenzene	2	ND	200	ug/L	No	Chemical and industrial factories.
1,4-Dichlorobenzene	2	ND	5	ug/L	No	Chemical and industrial factories.
Dichlorodiphenyltrichloroethane (DDT) + metabolites	2	ND	30	ug/L	No	Residue from banned insecticide.
1,2-Dichloroethane	2	ND	5	ug/L	No	Industrial chemical factories.
1,1-Dichloroethylene (vinylidene chloride)	2	ND	14	ug/L	No	Industrial chemical factories.
Dichloromethane	2	ND	50	ug/L	No	Pharmaceutical and chemical factories.
2,4-dichlorophenol	2	ND	900	ug/L	No	Industrial contamination, reaction with chlorine.
2,4-Dichlorophenoxy acetic acid (2,4-D)	2	ND	100	ug/L	No	Agricultural, residential herbicide.
Diclofop-methyl	2	ND	9	ug/L	No	Agricultural herbicide.
Dimethoate	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Dinoseb	2	ND	10	ug/L	No	Herbicide residue.
Diquat	2	ND	70	ug/L	No	Agricultural, aquatic herbicide.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Diuron	2	Non-Detect (ND)	150	ug/L	No	Agricultural, industrial herbicide.
Glyphosate	2	ND	280	ug/L	No	Agricultural, forestry, household herbicide.
Heptachlor + Heptachlor Epoxide	2	ND	3	ug/L	No	Residue from banned insecticide.
Lindane (Total)	2	ND	4	ug/L	No	Agricultural, pharmaceutical insecticide.
Malathion	2	ND	190	ug/L	No	Pest control insecticide.
Methoxychlor	2	ND	900	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Metolachlor	2	ND	50	ug/L	No	Agricultural herbicide.
Metribuzin	2	ND	80	ug/L	No	Agricultural herbicide.
Monochlorobenzene	2	ND	80	ug/L	No	Industrial and agricultural chemical factories and dry cleaning facilities.
Paraquat	2	ND	10	ug/L	No	Agricultural, aquatic herbicide.
Parathion	2	ND	50	ug/L	No	Agricultural insecticide.
Pentachlorophenol	2	ND	60	ug/L	No	Pesticide, wood preservative residue.
Phorate	2	ND	2	ug/L	No	Agricultural insecticide.
Picloram	2	ND	190	ug/L	No	Industrial herbicide.
Polychlorinated Biphenyls (PCB)	2	ND	3	ug/L	No	Residue from various industrial uses.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Prometryne	2	Non-Detect (ND)	1	ug/L	No	Agricultural herbicide.
Simazine	2	ND	10	ug/L	No	Agricultural herbicide.
Trihalomethane (THM) - Distribution (annual average)	12	42.1	100	ug/L	No	By-product of chlorination of drinking water.
Temephos	2	ND	280	ug/L	No	Insecticide for mosquito, black fly control.
Terbufos	2	ND	1	ug/L	No	Agricultural insecticide.
Tetrachloroethylene	2	ND	30	ug/L	No	Leaching from PVC pipes; discharge from factories; dry cleaners and auto shops (metal degreaser).
2,3,4,6 - Tetrachlorophenol	2	ND	100	ug/L	No	Wood preservative.
Triallate	2	ND	230	ug/L	No	Agricultural herbicide.
Trichloroethylene	2	ND	5	ug/L	No	Metal degreasing sites and other factories.
2,4,6-Trichlorophenol	2	ND	5	ug/L	No	Pesticide manufacturing.
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	2	ND	280	ug/L	No	Industrial herbicide residue.
Trifluralin	2	ND	45	ug/L	No	Agricultural herbicide.
Vinyl Chloride	2	ND	2	ug/L	No	Leaching from PVC pipes; discharge from plastics factories.

Whitby DWS Table 10

Inorganic or Organic Parameter(s) that Exceed Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards. No inorganic or organic parameters exceeded half the maximum allowable concentration in 2015.

Parameter	Result	Unit of Measure	Date of Sample
Not Applicable (N/A)	N/A	N/A	N/A

The Regional Municipality of Durham

Ajax Drinking Water System 2015 Annual Report

Drinking Water System Number: 220008890

Municipal Drinking Water License Number: 003-111

Drinking Water System Owner: The Regional Municipality of Durham

Drinking Water System Category: Large Municipal Residential

This Annual Report for the calendar year 2015 is designed to inform you about your drinking water system. This report has been prepared to satisfy Section 11 of Ontario Regulation (O. Reg.) 170/03. O. Reg. 170/03 sets requirements for drinking water systems with regard to sampling and testing, levels of treatment, certification of staff, and notification of authorities and the public about water quality. Hard copies of this report are available at the Regional Municipality of Durham Headquarters building located at 605 Rossland Road East, Whitby or on the [Region of Durham's website](http://www.durham.ca) at www.durham.ca. Further information on the Drinking Water Regulations can be found on the [Ministry of the Environment and Climate Change's website](http://www.ontario.ca/ministry-environment-and-climate-change) at www.ontario.ca/ministry-environment-and-climate-change.

Drinking Water System Process Description

General

The Ajax Drinking Water System provides potable water to consumers in the Town of Ajax and City of Pickering. The plant also has the capability to supply water to the Town of Whitby, Community of Brooklin, City of Oshawa, and Community of Courtice. The water supply plant is a Class Four Water Treatment Plant with a rated capacity of 163,500 cubic metres per day (m³/d). Ajax Water Supply Plant supplies a Class Two Distribution System, and a Class Three Trunk Distribution System. The treatment and distribution system is owned and operated by the Regional Municipality of Durham.

The source water for the treatment process is drawn from Lake Ontario. The water supply system includes the following 13 processes:

- Zebra mussel control (sodium hypochlorite),
- Screening,
- Pre-chlorination,
- Low lift pumping,
- pH adjustment (sulphuric acid),
- Coagulation (aluminum sulphate),
- Flocculation,
- Filtration,
- Post chlorination,
- Dechlorination (sodium bisulphite),
- Fluoridation (hydrofluosilicic acid),
- Distribution,
- Water storage and high lift pumping.

Raw Water Supply

Raw water is drawn from Lake Ontario through a 2,100 millimetre (mm) diameter intake pipe extending 2,506 metres (m) into the lake. The intake structure is located at a depth of approximately 18 m. Five 100 mm diameter lines are located outside the intake pipe. Three lines are used for raw water sampling and two lines are dedicated to the delivery of chlorine solution to a zebra mussel chlorine diffuser that is used for initial disinfection and control of zebra mussels. The chlorine residual and turbidity are continuously measured as the raw water enters the water supply plant. Sulphuric acid can be added for pH adjustment to enhance disinfection, coagulation and flocculation.

Coagulation/Flocculation

The water flows through traveling screens to remove large solids and continues towards the low lift pumps. Aluminum sulphate (alum) is added to a mechanical mixer upstream of the flocculation tanks. Gentle mixing of the alum with the water occurs as the water passes through the six sets of hydraulic spiral up-flow flocculation tanks. Each tank contains three flocculation cells.

Filtration

Particulate matter that is present in the raw water is captured by the coagulation/flocculation process and deposited on the top of the filters. The water supply plant has six dual media filters to remove flocculated particles. Four of the filters use granulated activated carbon (GAC) and two use anthracite. GAC is used to assist in taste and odour control. Filter effluent turbidity and head loss are continuously monitored to indicate filter effectiveness. Three vertical centrifugal pumps are available for backwashing the filters. The backwashed water is discharged to two holding tanks and two sedimentation tanks to allow for settling of the suspended solids. The settled solids are pumped to the sanitary sewer. The dechlorinated clear supernatant is discharged back to Lake Ontario.

Disinfection and Fluoridation

Filtered water passes through the filter under-drain into the reservoir. The water in the reservoir then enters the clear well and eventually the high lift pump suction well. The high lift pumps deliver treated water to the distribution system. Disinfection is controlled by the addition of chlorine at multiple application points throughout the plant. Sodium bisulphate, a dechlorination chemical, is used to manage chlorine residuals. Consistent disinfection is ensured by continuous online monitoring of the free chlorine residual throughout the water supply plant. Fluoride (hydrofluosilicic acid) is added to the treated water for the prevention of tooth decay.

Distribution System

The Oshawa/Whitby/Ajax distribution system delivers treated water through 1,988.4 kilometres of watermains in multiple pressure zones and includes nine reservoirs and 12 booster stations and one elevated tank.

The Ajax distribution system is interconnected with the distribution systems of Whitby and Oshawa, therefore the entire system is licensed by the Ministry of the Environment and Climate Change as one distribution system. For the purposes of clarity in this report, distribution information will be recorded under its corresponding system.

Major Monetary expenses(above \$10,000)

Under Section 11 of O. Reg. 170/03, a description of any major expenses incurred during this reporting period to install, repair or replace required equipment must be included in the annual report. The details of the 13 major expenses for this drinking water system are as follows:

- Construction costs for the Brock Zone 1 Reservoir and Zone 3 and 4 Pumping Station - \$3,016,859
- Supervisory Control And Data Acquisition (SCADA) upgrades - \$165,965
- Cathodic protection of watermains - \$180,971
- Replacement of polybutylene service connections - \$5,133,655
- High voltage maintenance on breakers at the water treatment plant - \$59,773
- Replaced four turbidity meters at the water treatment plant - \$13,226
- Replaced mixer at water treatment plant - \$16,800
- Replaced process pump at the water treatment plant - \$12,629
- Rebuilt pump for pump optimization at the water treatment plant - \$60,364
- Repaired low lift No. 2 pump at water treatment plant - \$23,572
- Repaired high lift pump No. 1 at water treatment plant - \$36,792
- Replaced check valves and butterfly valves at Rosebank Pumping Station - \$39,450
- Replaced granular activated carbon in filters at water treatment plant - \$124,387

Tables

For a description of terms and abbreviations in all tables, refer to the glossary at the end of the report.

Ajax Drinking Water System (DWS) Table 1

Summary of all Adverse Water Quality Incidents (AWQI) in 2015 Reported to Spills Action Centre in Accordance with Schedule 16-3 and 16-4 of O. Reg. 170/03.

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
March 4	Lead (Plant)	1.3 milligram per Litre (mg/L)	Flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	March 4
April 2	Total Coliforms (Distribution)	Presence	Flushed, resampled. Results met ODWQS	April 2
May 14	Total Coliforms (Distribution)	Presence	Flushed, resampled. Results met ODWQS	May 14
June 18	Total Coliforms (Distribution)	Presence	Flushed, resampled. Results met ODWQS	June 18
July 29	Total Coliforms (Distribution)	4 Colony Forming Units (CFU) per 100 millilitres (mL)	Flushed, resampled. Results met ODWQS	July 29 and 30
July 30	Total Coliforms (Distribution)	1 CFU/100 mls	Flushed, resampled. Results met ODWQS	July 30
September 3	Total Coliforms (Distribution)	Presence	Flushed, resampled. Results met ODWQS	September 3
September 18	Total Coliforms (Distribution)	8 CFU/100 mls	Flushed, resampled. Results met ODWQS	September 18 and 19
October 22	Alum (Plant)	0.0 mg/L	Feed restored	October 22
October 29	Low pressure (Distribution)	Not Applicable (N/A)	Flushed, sampled. Results met ODWQS	October 29

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
November 13	Low pressure (Distribution)	N/A	Flushed, sampled. Results met ODWQS	November 13
December 22	Low pressure (Distribution)	N/A	Flushed, sampled. Results met ODWQS	December 22

Ajax DWS Table 2

Membrane Filtration (MF) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Range of Escherichia Coli MF Colony Forming Units per 100 millilitres	Range of Total Coliforms MF Colony Forming Units per 100 millilitres
Raw	197	Non-Detect (ND) - 3	ND - 90
Treated	23	ND	ND
Distribution	340	ND	ND - 8(3)*

* Number in parenthesis represents number of exceedance(s).

Ajax DWS Table 3

Presence Absence (P/A) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Escherichia Coli P/A per 100 millilitres	Total Coliforms P/A per 100 millilitres
Treated	197	Absence (A)	A
Distribution	1058	A	A - Presence (P)(4)*

* Number in parenthesis represents number of exceedance(s).

Ajax DWS Table 4

Heterotrophic Plate Count (H.P.C.) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Range of HPC Samples Colony Forming Units per millilitre
Treated	220	Non-Detect (ND) - 210
Distribution	844	ND - 470

Ajax DWS Table 5

Operational Testing Done Under Schedule 7 of O. Reg. 170/03.

Test	Number of Samples	Range of Results	Unit of Measure	Parameter Description
Turbidity - Filter Effluent	Continuous	0.014 - 1.999	Nephelometric Turbidity Units (NTU)	Turbidity is a measure of particles in water.
Fluoride - Plant	Continuous	0.19 - 1.02	milligrams per Litre (mg/L)	Fluoride is added to water to prevent tooth decay.
Free Chlorine - Plant	Continuous	0.25 - 2.01*	mg/L	Must be sufficient to ensure disinfection has been achieved.
Free Chlorine - Distribution	Continuous	0.09 - 4.46*	mg/L	Recommended level of at least 0.20 mg/L in the distribution system to maintain secondary disinfection, 0.05 mg/L is the minimum required.

*Results include all analyzers and grab samples.

Ajax DWS Table 6

Summary of Additional Testing and Sampling Carried Out in Accordance With the Requirement of an Approval, Order or Other Legal Instrument.

Type of Sample	Parameter	Date Sampled	Result	MAC	Unit of Measure
Raw Water	Gross Beta	January - December	0.09 - 0.12	N/A	Becquerels per Litre (Bq/L)
Raw Water	Tritium	January - December	1.0 - 9.9	N/A	Bq/L
Treated Water	Tritium	January - December	<5.0 - 12.0	7000	Bq/L
Environmental Discharge	Suspended Solids	January - December	6.8 - 14.4	25	Milligrams per Litre (mg/L)
Environmental Discharge	Chlorine Residual	January - December	0.00 - 0.52	N/A	mg/L

Ajax DWS Table 7

Summary of Treated Water Inorganic Parameters Tested Under Schedule 13 and 23 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources ¹
Antimony	14	Non-Detect (ND) - 0.0011	0.006	Milligram per Litre (mg/L)	No	Fire retardants, ceramics, electronics, solder.
Arsenic	14	ND - 0.0009	0.025	mg/L	No	Mining.
Barium	2	0.0208 - 0.0210	1.0	mg/L	No	Metal refineries, oil drilling.
Boron	2	0.02 - 0.03	5.0	mg/L	No	Industrial.
Cadmium	14	ND	0.005	mg/L	No	Industrial.
Chromium	14	ND - 0.0011	0.05	mg/L	No	Industrial.
Mercury	2	ND - 0.00004	0.001	mg/L	No	Industrial.
Selenium	14	ND - 0.001	0.01	mg/L	No	Refineries, mines, chemical manufacturing.
Sodium ²	12	16.5 - 18.6	20	mg/L	No	Runoff from road salt.
Uranium	2	ND - 0.0003	0.02	mg/L	No	Power generation.
Nitrite	12	ND	1.0	mg/L	No	Agriculture runoff, landfill leachate and animal waste.
Nitrate	12	0.147 - 0.432	10.0	mg/L	No	Fertilizer.

1 Parameters may occur naturally in the environment.

2 Sodium does not have a Maximum Acceptable Concentration (MAC); only an aesthetic objective of 200 mg/L Sodium results exceeding 20 mg/L are to be reported as per the Medical Officer of Health Schedule 16-3 (8) of O. Reg. 170/03.

Ajax DWS Table 8

Summary of Lead Testing Under Schedule 15.1 of O. Reg. 170/03.

Location Type	Number of Samples	Range of Lead Results milligram per litre	MAC	Number of Exceedences	pH	Alkalinity milligrams per litre
Plumbing	102	ND - 0.0016	0.01	0	7.26 - 8.05	N/A
Distribution	10	ND - 0.0056	0.01	0	7.39 - 8.01	82.0 - 91.5

Ajax DWS Table 9

Summary of Treated Water Organic Parameters Tested Under Schedule 24 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Alachlor	2	Non-Detect (ND)	5	microgram/litre (ug/L)	No	Agricultural herbicide.
Aldicarb	2	ND	9	ug/L	No	Agricultural insecticide.
Aldrin + Dieldrin	2	ND	0.7	ug/L	No	Residue from banned insecticide.
Atrazine + N-dealkylated metabolites	2	ND	5	ug/L	No	Agricultural herbicide.
Azinphos-methyl	2	ND	20	ug/L	No	Insecticide.
Bendiocarb	2	ND	40	ug/L	No	Insecticide.
Benzene	2	ND	5	ug/L	No	Plastics manufacturing, leaking fuel tanks.
Benzo(a)pyrene	2	ND	0.01	ug/L	No	Formed from the incomplete burning of organic matter.
Bromoxynil	2	ND	5	ug/L	No	Agricultural herbicide.
Carbaryl	2	ND	90	ug/L	No	Agricultural, forestry, household insecticide.
Carbofuran	2	ND	90	ug/L	No	Agricultural insecticide.
Carbon Tetrachloride	2	ND	5	ug/L	No	Chemical and industrial activities.
Chlordane (Total)	2	ND	7	ug/L	No	Residue from banned insecticide.
Chlorpyrifos	2	ND	90	ug/L	No	Agricultural, household insecticide.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Cyanazine	2	Non-Detect (ND)	10	ug/L	No	Agricultural, residential herbicide.
Diazinon	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Dicamba	2	ND	120	ug/L	No	Agricultural herbicide.
1,2-Dichlorobenzene	2	ND	200	ug/L	No	Chemical and industrial factories.
1,4-Dichlorobenzene	2	ND	5	ug/L	No	Chemical and industrial factories.
Dichlorodiphenyltrichloroethane (DDT) + metabolites	2	ND	30	ug/L	No	Residue from banned insecticide.
1,2-Dichloroethane	2	ND	5	ug/L	No	Industrial chemical factories.
1,1-Dichloroethylene (vinylidene chloride)	2	ND	14	ug/L	No	Industrial chemical factories.
Dichloromethane	2	ND	50	ug/L	No	Pharmaceutical and chemical factories.
2,4-dichlorophenol	2	ND	900	ug/L	No	Industrial contamination, reaction with chlorine.
2,4-Dichlorophenoxy acetic acid (2,4-D)	2	ND	100	ug/L	No	Agricultural, residential herbicide.
Diclofop-methyl	2	ND	9	ug/L	No	Agricultural herbicide.
Dimethoate	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Dinoseb	2	Non-Detect (ND)	10	ug/L	No	Herbicide residue.
Diquat	2	ND	70	ug/L	No	Agricultural, aquatic herbicide.
Diuron	2	ND	150	ug/L	No	Agricultural, industrial herbicide.
Glyphosate	2	ND	280	ug/L	No	Agricultural, forestry, household herbicide.
Heptachlor + Heptachlor Epoxide	2	ND	3	ug/L	No	Residue from banned insecticide.
Lindane (Total)	2	ND	4	ug/L	No	Agricultural, pharmaceutical insecticide.
Malathion	2	ND	190	ug/L	No	Pest control insecticide.
Methoxychlor	2	ND	900	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Metolachlor	2	ND	50	ug/L	No	Agricultural herbicide.
Metribuzin	2	ND	80	ug/L	No	Agricultural herbicide.
Monochlorobenzene	2	ND	80	ug/L	No	Industrial and agricultural chemical factories and dry cleaning facilities.
Paraquat	2	ND	10	ug/L	No	Agricultural, aquatic herbicide.
Parathion	2	ND	50	ug/L	No	Agricultural insecticide.
Pentachlorophenol	2	ND	60	ug/L	No	Pesticide, wood preservative residue.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Phorate	2	Non-Detect (ND)	2	ug/L	No	Agricultural insecticide.
Picloram	2	ND	190	ug/L	No	Industrial herbicide.
Polychlorinated Biphenyls (PCB)	2	ND	3	ug/L	No	Residue from various industrial uses.
Prometryne	2	ND	1	ug/L	No	Agricultural herbicide.
Simazine	2	ND	10	ug/L	No	Agricultural herbicide.
Trihalomethane (THM) - Distribution (annual average)	12	31.9	100	ug/L	No	By-product of chlorination of drinking water.
Temephos	2	ND	280	ug/L	No	Insecticide for mosquito, black fly control.
Terbufos	2	ND	1	ug/L	No	Agricultural insecticide.
Tetrachloroethylene	2	ND	30	ug/L	No	Leaching from PVC pipes; discharge from factories; dry cleaners and auto shops (metal degreaser).
2,3,4,6 - Tetrachlorophenol	2	ND	100	ug/L	No	Wood preservative.
Triallate	2	ND	230	ug/L	No	Agricultural herbicide.
Trichloroethylene	2	ND	5	ug/L	No	Metal degreasing sites and other factories.
2,4,6-Trichlorophenol	2	ND	5	ug/L	No	Pesticide manufacturing.
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	2	ND	280	ug/L	No	Industrial herbicide residue.
Trifluralin	2	ND	45	ug/L	No	Agricultural herbicide.
Vinyl Chloride	2	ND	2	ug/L	No	Leaching from PVC pipes; discharge from plastics factories.

Ajax DWS Table 10

Inorganic or Organic Parameter(s) that Exceed Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards. No inorganic or organic parameters exceeded half the maximum allowable concentration in 2015.

Parameter	Result	Unit of Measure	Date of Sample
Not Applicable (N/A)	N/A	N/A	N/A