

## The Regional Municipality of Durham

### Oshawa Drinking Water System 2021 Annual Report

**Drinking Water System Number:** 220000772

**Municipal Drinking Water Licence 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 2021 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 and the Schedule 22 Summary Report are available at the Regional Municipality of Durham Headquarters office that is located at 605 Rossland Road East, Whitby. The annual report is also available on the [Region of Durham's website](http://www.durham.ca) at [www.durham.ca](http://www.durham.ca). Further information regarding the Drinking Water Regulations can be found on the [Ministry of the Environment, Conservation and Parks website](http://www.ontario.ca/ministry-environment-conservation-parks) at [www.ontario.ca/ministry-environment-conservation-parks](http://www.ontario.ca/ministry-environment-conservation-parks).

### Drinking Water System Process Description

#### General

The Oshawa Drinking Water System provides potable water to consumers in the City of Oshawa, Municipality of Clarington (Courtice urban area), Town of Whitby, Brooklin urban area, Town of Ajax, and City of Pickering. The water supply plant is a Class Four Water Treatment Plant with an approved capacity of 134,000 cubic metres per day (m<sup>3</sup>/d). The Oshawa Water Supply Plant feeds a Class Two Distribution Subsystem and Class Three Trunk Distribution Subsystem. The treatment and distribution systems are 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 processes:

- Zebra mussel control (chlorine),
- Screening,
- Low lift pumping,
- Coagulation (aluminum sulphate),
- Flocculation,
- Sedimentation,
- Filtration,
- Residual management,
- Disinfection (chlorine),

- Fluoridation (hydrofluosilicic acid),
- High lift pumping, and
- Distribution system.

### **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 free 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 occurs as the water passes through the flocculation tanks. Plant #1 has three sets of three stage, four cell hydraulic spiral upflow flocculation tanks with three trains of horizontal cross flow settling tanks. Plant #2 has three sets of two stage, three cell hydraulic spiral upflow flocculation tanks with three trains of horizontal cross flow settling tanks. Most of the particulate matter that is present in the raw water is deposited in the sedimentation tanks.

### **Filtration**

The water supply plant has a total of ten filters to remove flocculated particles, with six in Plant #1 and four in Plant #2. All ten filters are dual media filters, composed of anthracite and sand. Filter effluent turbidity and head loss are continually monitored to indicate filter effectiveness.

### **Residual Management**

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 settled solids are pumped to the sanitary sewer and the dechlorinated clear supernatant is discharged back to Lake Ontario.

### **Disinfection, Fluoridation, and High Lift Pumping**

Filtered water passes through the filter under-drain into the treated water clearwell and reservoir, and eventually to the high lift pump suction well. Disinfection is achieved 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 within the service area. The high lift pumps deliver treated water to the distribution system.

### **Distribution System**

The Oshawa/Whitby/Ajax distribution system delivers treated water through approximately 2,917 kilometres of watermains in multiple pressure zones and includes thirteen booster stations and eleven water storage facilities (ten inground reservoirs 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, Conservation and Parks (MECP) 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 major expenses for this drinking water system are as follows:

- Cathodic protection of watermains - \$334,208.00
- Rehabilitation of watermains (structural cement lining) - \$4,766,747.30
- Watermain replacement costs (multiple locations) - \$2,969,572.42
- Feedermain construction - \$7,002,034.55
- Hardware upgrades to the Supervisory Control and Data Acquisition system (Ajax, Oshawa and Whitby Systems combined for 2021) - \$13,668.42
- Settling tank mud valve & piping inspection at water supply plant - \$12,404.00
- Plant maintenance – cleaning out settling/mixing tanks due to leakage - \$19,912.16
- Plant 1 filter retrofit – Phase 2 - \$275,170.12
- Pump repairs at Taunton Road pumping station and water supply plant - \$32,699.88
- Pump replacements at Hortop pumping station and water supply plant - \$27,720.46
- Valve and supports replacement at water supply plant - \$16,841.28

Total - \$15,470,978.59

## 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 in 2021 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
January 20	Total Coliforms (Distribution)	1 Colony Forming Units (CFU) per 100 Millilitres (mL)	Flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	January 20
February 18	Low Pressure (Distribution)	Less than 20 Pounds per Square Inch (PSI)	Pressure restored. Flushed, resampled. Results met ODWQS.	February 21
February 25	Low Pressure (Distribution)	Less than 20 PSI	Pressure restored. Flushed, resampled. Results met ODWQS.	February 26
May 27	Free Chlorine (Plant)	Less than 0.05 mg/L	Residual restored. Flushed, resampled. Results met ODWQS.	May 27
July 7	Total Coliforms & Escherichia Coli (Distribution)	Total Coliforms – No Data: Overgrown with Target Escherichia Coli – No Data: Overgrown with Target	Flushed, resampled. Results met ODWQS.	July 7 & July 9
August 15	Total Coliforms (Distribution)	1 CFU per 100 mL	Flushed, resampled. Results met ODWQS.	August 15

<b>August 23</b>	Total Coliforms (Distribution)	Presence (P)	Flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	August 23
<b>November 24</b>	Low Pressure (Distribution)	Less than 20 PSI	Pressure restored. Flushed, resampled. Results met ODWQS.	November 24

### Oshawa DWS Table 2

#### Microbiological 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
<b>Raw</b>	195	Non-Detect (ND) - 5	ND – 140
<b>Treated</b>	4	ND	ND
<b>Distribution</b>	255	ND	ND – 7 (3)*

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

### Oshawa DWS Table 3

#### Microbiological 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
<b>Treated</b>	195	Absence (A)	A
<b>Distribution</b>	683	A	A - Presence (1)*

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

#### Oshawa DWS Table 4

##### Microbiological Heterotrophic Plate Count (HPC) 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) - 130
Distribution	685	ND – 3,500

#### 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	0.000* – 2.000**	Nephelometric Turbidity Units (NTU)	Turbidity is a measure of particles in water.
Fluoride - Plant	Continuous	0.2 – 0.64***	Milligram per Litre (mg/L)	Fluoride is added to water to prevent tooth decay.
Free Chlorine - Plant	Continuous	0.98 – 2.89***	mg/L	Must be sufficient to ensure disinfection has been achieved.
Free Chlorine - Distribution	Continuous	0.20 – 2.30***	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 of zero due to new filters being installed.

\*\*Maximum range includes instantaneous spikes that do not fall under the parameters of an adverse.

\*\*\* 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	0.075-0.133	Not Applicable (N/A)	Becquerels per Litre (Bq/L)
Raw Water	Tritium	January - December	0-16	7,000*	Bq/L
Environmental Discharge (Backwash Supernatant)	Total Suspended Solids	January - December	6.3**	25**	Milligram per Litre (mg/L)
Environmental Discharge (Backwash Supernatant)	Total Chlorine Residual	January - December	0.002**	0.02**	mg/L
Raw Water	Microcystin (Total)	June - October	ND	1.5	Microgram per Litre (ug/L)
Treated Water*	Microcystin (Total)	June - October	ND	1.5	ug/L

\* Tritium does not have a Maximum Acceptable Concentration (MAC) for raw water. Treated water MAC of 7,000 Bq/L is provided as a guideline for interpretation of results only.

\*\* Results represent an annual average.

## Oshawa DWS Table 7

### Summary of Treated Water Chemical Parameter Testing Under Schedules 13 and 23 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources*
Antimony	14	Non-Detect (ND) - 0.0007	0.006	Milligram per Litre (mg/L)	No	Fire retardants, ceramics, electronics, solder.
Arsenic	14	ND - 0.0006	0.01	mg/L	No	Mining.
Barium	2	0.0188 – 0.0226	1.0	mg/L	No	Metal refineries, oil drilling.
Boron	2	0.023 – 0.0259	5.0	mg/L	No	Industrial.
Cadmium	14	ND	0.005	mg/L	No	Industrial.
Chromium	14	ND	0.05	mg/L	No	Industrial.
Total Haloacetic acids - Distribution (annual average)	12	17.0	80	Microgram per Litre (ug/L)	No	By-product of chlorination of drinking water.
Mercury	2	ND	0.001	mg/L	No	Industrial.
Selenium	14	ND	0.05	mg/L	No	Refineries, mines, chemical manufacturing.
Sodium	12	13.8 – 22.2	Not Applicable**	mg/L	Yes (1)***	Storm water runoff including road salt.
Total Trihalomethanes - Distribution (annual average)	12	34.4	100	ug/L	No	By-product of chlorination of drinking water.
Uranium	2	ND	0.02	mg/L	No	Power generation.
Nitrite	12	ND	1.0	mg/L	No	Agriculture runoff, landfill leachate and animal waste.
Nitrate	12	ND - 0.57	10.0	mg/L	No	Fertilizer.

\* Parameters may occur naturally in the environment.

\*\* 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 to the Medical Officer of Health as per Schedule 16-3 (8) of O. Reg. 170/03.

\*\*\* Number in parenthesis represents number of exceedance(s). For Sodium, regulations require reporting when results exceed 20 mg/L if it has not been reported in the preceding 57 months.



**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 Exceedances	pH	Alkalinity Milligram per Litre
Plumbing	18	Non-Detect (ND) - 0.0027	0.01	0	7.15 - 7.90	Not Required
Distribution	8	ND - 0.0048	0.01	0	7.48 - 7.80	85.9 – 92.2

**Oshawa DWS Table 9**

**Summary of Treated Water Organic Parameter Testing 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 per Litre (ug/L)	No	Agricultural herbicide.
Atrazine + N-dealkylated metabolites	2	ND	5	ug/L	No	Agricultural herbicide.
Azinphos-methyl	2	ND	20	ug/L	No	Insecticide.
Benzene	2	ND	1	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.

Oshawa DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
<b>Carbofuran</b>	2	Non-Detect (ND)	90	Microgram per Litre (ug/L)	No	Agricultural insecticide.
<b>Carbon Tetrachloride</b>	2	ND	2	ug/L	No	Chemical and industrial activities.
<b>Chlorpyrifos</b>	2	ND	90	ug/L	No	Agricultural, household insecticide.
<b>Diazinon</b>	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
<b>Dicamba</b>	2	ND	120	ug/L	No	Agricultural herbicide
<b>1,2-Dichlorobenzene</b>	2	ND	200	ug/L	No	Chemical and industrial factories.
<b>1,4-Dichlorobenzene</b>	2	ND	5	ug/L	No	Chemical and industrial factories.
<b>1,2-Dichloroethane</b>	2	ND	5	ug/L	No	Industrial chemical factories.
<b>1,1-Dichloroethylene (vinylidene chloride)</b>	2	ND	14	ug/L	No	Industrial chemical factories.
<b>Dichloromethane</b>	2	ND	50	ug/L	No	Pharmaceutical and chemical factories.
<b>2,4-Dichlorophenol</b>	2	ND	900	ug/L	No	Industrial contamination, reaction with chlorine.
<b>2,4-Dichlorophenoxy acetic acid (2,4-D)</b>	2	ND	100	ug/L	No	Agricultural, residential herbicide.

Oshawa DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Diclofop-methyl	2	Non-Detect (ND)	9	Microgram per Litre (ug/L)	No	Agricultural herbicide.
Dimethoate	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
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.
Malathion	2	ND	190	ug/L	No	Pest control insecticide.
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	2	ND	100	ug/L	No	Agricultural herbicide.
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.

Oshawa DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Pentachlorophenol	2	Non-Detect (ND)	60	Microgram per Litre (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.
Terbufos	2	ND	1	ug/L	No	Agricultural insecticide.
Tetrachloroethylene (perchloroethylene)	2	ND	10	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.
Trifluralin	2	ND	45	ug/L	No	Agricultural herbicide.
Vinyl Chloride	2	ND	1	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 2021.

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

## The Regional Municipality of Durham

### Whitby Drinking Water System 2021 Annual Report

**Drinking Water System Number:** 220000754

**Municipal Drinking Water Licence 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 2021 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 and the Schedule 22 Summary Report are available at the Regional Municipality of Durham Headquarters office that is located at 605 Rossland Road East, Whitby. The annual report is also available on the [Region of Durham's website](http://www.durham.ca) at [www.durham.ca](http://www.durham.ca). Further information regarding the Drinking Water Regulations can be found on the [Ministry of the Environment, Conservation and Parks website](http://www.ontario.ca/ministry-environment-conservation-parks) at [www.ontario.ca/ministry-environment-conservation-parks](http://www.ontario.ca/ministry-environment-conservation-parks).

### Drinking Water System Process Description

#### General

The Whitby Drinking Water System provides potable water to consumers in the Town of Whitby, Brooklin urban area, City of Oshawa, Town of Ajax, City of Pickering and Municipality of Clarington (Courtice urban area). The water supply plant is a Class Three Water Treatment Plant with an approved capacity of 118,000 cubic metres per day (m<sup>3</sup>/d). The Whitby Water Supply Plant feeds a Class Two Distribution Subsystem and Class Three Trunk Distribution Subsystem. The treatment and distribution systems are 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 processes:

- Zebra mussel control (chlorine),
- Screening,
- Low lift pumping,
- Dechlorination (sodium bisulphite),
- Coagulation (aluminum sulphate),
- Flocculation,
- Filtration,
- Residual management,
- Disinfection (chlorine),

- Fluoridation (hydrofluosilicic acid),
- High lift pumping, and
- Distribution system.

### **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 free 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.

### **Residual Management**

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 and the supernatant dechlorinated and discharged back to Lake Ontario.

### **Disinfection, Fluoridation and High Lift Pumping**

Treated water passes through the filters and the filter under-drain into the treated clearwell which feeds into the high lift suction well. Disinfection is achieved 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 within the service area. The high lift pumps deliver treated water to the distribution system.

## **Distribution System**

The Oshawa/Whitby/Ajax distribution system delivers treated water through approximately 2,917 kilometres of watermains in multiple pressure zones and includes thirteen booster stations and eleven water storage facilities (ten inground reservoirs 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, Conservation and Parks (MECP) 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 major expenses for this drinking water system are as follows:

Rehabilitation of watermains (structural cement lining) - \$443,602.31

Watermain replacement costs (multiple locations) - \$1,166,672.06

Cathodic protection of watermains - \$48,636.00

Removal, refurbishment, and reinstallation of pump at water supply plant - \$12,991.46

Pump replacement at water supply plant (multiple pumps) - \$25,912.96

Hardware upgrades to the Supervisory Control and Data Acquisition system (Ajax, Oshawa and Whitby Systems combined for 2021)- \$13,668.42

Total - \$1,711,483.21



## 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 in 2021 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
<b>March 24</b>	Lead (Distribution)	0.610 Milligrams per Litre (mg/L)	Flushed, resampled. Results received March 31 were Non-Detect (ND). Hydrant replaced, flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	March 24
<b>March 31</b>	Lead (Distribution)	0.0510 mg/L	Flushed, resampled. Results received March 31 were 0.0031 mg/L. Hydrant replaced, flushed, resampled. Results met ODWQS.	April 7
<b>April 14</b>	Coagulation (Plant)	Loss of coagulant feed, 1-Minute duration	Coagulant feed re-established. Distribution Bacteriological samples met ODWQS.	April 14
<b>August 24</b>	Total Coliforms (Distribution)	Presence (P)	Flushed, resampled. Results met ODWQS.	August 24
<b>August 24</b>	Total Coliforms (Distribution)	P	Flushed, resampled. Results met ODWQS.	August 24
<b>August 24</b>	Total Coliforms (Distribution)	P	Flushed, resampled. Results met ODWQS.	August 24
<b>December 12</b>	Fluoride (Plant)	Greater than (>) 1.5 mg/L	Distribution system was flushed at upstream and downstream locations of the POE.	December 12

## Whitby DWS Table 2

### Microbiological 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	195	Non-Detect (ND) - 1	ND – 62
Treated	4	ND	ND
Distribution	115	ND	ND

## Whitby DWS Table 3

### Microbiological 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	195	Absence (A)	A
Distribution	537	A	A – P (3)*

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

## Whitby DWS Table 4

### Microbiological Heterotrophic Plate Count (HPC) 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) - 86
Distribution	507	ND - 140

**Whitby DWS Table 5**

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

<b>Test</b>	<b>Number of Samples</b>	<b>Range of Results</b>	<b>Unit of Measure</b>	<b>Parameter Description</b>
<b>Turbidity - Filter Effluent</b>	Continuous	0.001 – 1.544*	Nephelometric Turbidity Units (NTU)	Turbidity is a measure of particles in water.
<b>Fluoride - Plant</b>	Continuous	0.2 – 2.022**	Milligram per Litre (mg/L)	Fluoride is added to water to prevent tooth decay.
<b>Free Chlorine - Plant</b>	Continuous	0.82 – 4.99**	mg/L	Must be sufficient to ensure disinfection has been achieved.
<b>Free Chlorine - Distribution</b>	Continuous	0.23 – 2.70**	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.

\* Maximum range includes instantaneous spikes that do not fall under the parameters of an adverse.

\*\* 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
<b>Raw Water</b>	Gross Beta	January - December	0.0107 -0.135	Not Applicable (N/A)	Becquerels per Litre (Bq/L)
<b>Raw Water</b>	Tritium	January - December	0.4 - 20.5	7,000*	Bq/L
<b>Environmental Discharge (Backwash Supernatant)</b>	Total Suspended Solids	January - December	12.2**	25**	Milligram per Litre (mg/L)
<b>Environmental Discharge (Backwash Supernatant)</b>	Total Chlorine Residual	January - December	0.017**	0.02**	mg/L
<b>Raw Water</b>	Microcystin (Total)	June - October	ND	1.5	Microgram per Litre (ug/L)
<b>Treated Water*</b>	Microcystin (Total)	June - October	ND	1.5	ug/L

\* Tritium does not have a Maximum Acceptable Concentration (MAC) for raw water. Treated water MAC of 7,000 Bq/L is provided as a guideline for interpretation of results only.

\*\* Results represent an annual average.

## Whitby DWS Table 7

### Summary of Treated Water Chemical Parameter Testing Under Schedules 13 and 23 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources*
<b>Antimony</b>	14	Non-Detect (ND)	0.006	Milligram per Litre (mg/L)	No	Fire retardants, ceramics, electronics, solder.
<b>Arsenic</b>	14	ND - 0.0005	0.01	mg/L	No	Mining.
<b>Barium</b>	2	0.0221– 0.0228	1.0	mg/L	No	Metal refineries, oil drilling.
<b>Boron</b>	2	0.0222 – 0.0245	5.0	mg/L	No	Industrial.
<b>Cadmium</b>	14	ND	0.005	mg/L	No	Industrial.
<b>Chromium</b>	14	ND	0.05	mg/L	No	Industrial.
<b>Total Haloacetic acids - Distribution (annual average)</b>	12	19.9	80	Microgram per Litre (ug/L)	No	By-product of chlorination of drinking water.
<b>Mercury</b>	2	ND	0.001	mg/L	No	Industrial.
<b>Selenium</b>	14	ND	0.05	mg/L	No	Refineries, mines, chemical manufacturing.
<b>Sodium</b>	12	13.9 – 18.5	Not Applicable**	mg/L	No	Storm water runoff including road salt.
<b>Total Trihalomethanes - Distribution (annual average)</b>	12	36.5	100	ug/L	No	By-product of chlorination of drinking water.
<b>Uranium</b>	2	ND	0.02	mg/L	No	Power generation.
<b>Nitrite</b>	12	ND	1.0	mg/L	No	Agriculture runoff, landfill leachate and animal waste.
<b>Nitrate</b>	12	ND – 0.57	10.0	mg/L	No	Fertilizer.

\* Parameters may occur naturally in the environment.

\*\* 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 to the Medical Officer of Health as per Schedule 16-3 (8) of O. Reg. 170/03 if it has not been reported in the preceding 57 months.

**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 Exceedances	pH	Alkalinity Milligram per Litre
Plumbing	36	Non-Detect (ND) - 0.0012	0.01	0	7.15 - 7.90	Not Required
Distribution	12	ND - 0.61	0.01	2	7.40 - 7.80	86.9 – 89.9

**Whitby DWS Table 9**

**Summary of Treated Water Organic Parameter Testing 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 per Litre (ug/L)	No	Agricultural herbicide.
Atrazine + N-dealkylated metabolites	2	ND	5	ug/L	No	Agricultural herbicide.
Azinphos-methyl	2	ND	20	ug/L	No	Insecticide.
Benzene	2	ND	1	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.

Whitby DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Carbofuran	2	Non-Detect (ND)	90	Microgram per Litre (ug/L)	No	Agricultural insecticide.
Carbon Tetrachloride	2	ND	2	ug/L	No	Chemical and industrial activities.
Chlorpyrifos	2	ND	90	ug/L	No	Agricultural, household insecticide.
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.
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.

Whitby DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Diclofop-methyl	2	Non-Detect (ND)	9	Microgram per Litre (ug/L)	No	Agricultural herbicide.
Dimethoate	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
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.
Malathion	2	ND	190	ug/L	No	Pest control insecticide.
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	2	ND	100	ug/L	No	Agricultural herbicide.
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.



Whitby DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Pentachlorophenol	2	Non-Detect (ND)	60	Microgram per Litre (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.
Terbufos	2	ND	1	ug/L	No	Agricultural insecticide.
Tetrachloroethylene (perchloroethylene)	2	ND	10	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.
Trifluralin	2	ND	45	ug/L	No	Agricultural herbicide.
Vinyl Chloride	2	ND	1	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 2021.

<b>Parameter</b>	<b>Result</b>	<b>Unit of Measure</b>	<b>Date of Sample</b>
<b>Lead</b>	0.61	Milligrams per Litre (mg/L)	March 11, 2021
<b>Lead</b>	0.051	mg/L	March 19, 2021

## The Regional Municipality of Durham

### Ajax Drinking Water System 2021 Annual Report

**Drinking Water System Number:** 220008890

**Municipal Drinking Water Licence 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 2021 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 and the Schedule 22 Summary Report are available at the Regional Municipality of Durham Headquarters office that is located at 605 Rossland Road East, Whitby. The annual report is also available on the [Region of Durham's website](http://www.durham.ca) at [www.durham.ca](http://www.durham.ca). Further information regarding the Drinking Water Regulations can be found on the [Ministry of the Environment, Conservation and Parks website](http://www.ontario.ca/ministry-environment-conservation-parks) at [www.ontario.ca/ministry-environment-conservation-parks](http://www.ontario.ca/ministry-environment-conservation-parks).

### 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 a limited amount of water to the Town of Whitby, Brooklin urban area, City of Oshawa, and Municipality of Clarington (Courtice). The water supply plant is a Class Four Water Treatment Plant with a rated capacity of 163,500 cubic metres per day (m<sup>3</sup>/d). Ajax Water Supply Plant supplies a Class Two Distribution Subsystem, and a Class Three Trunk Distribution Subsystem. The treatment and distribution systems are 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 processes:

- Zebra mussel control (sodium hypochlorite),
- Screening,
- Low lift pumping,
- pH adjustment (sulphuric acid),
- Coagulation (aluminum sulphate),
- Flocculation,
- Filtration,
- Residual management,

- Disinfection (sodium hypochlorite),
- Dechlorination (sodium bisulphite),
- Fluoridation (hydrofluosilicic acid),
- High lift pumping, and
- Distribution system.

### **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 free 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 mechanical mixing and 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.

### **Residual Management**

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 and the dechlorinated clear supernatant is discharged back to Lake Ontario.

### **Disinfection, Fluoridation and High Lift Pumping**

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. Disinfection is achieved by the addition of chlorine at multiple application points

throughout the plant. Sodium bisulphite, 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 within the service area. The high lift pumps deliver treated water to the distribution system.

### **Distribution System**

The Oshawa/Whitby/Ajax distribution system delivers treated water through approximately 2,917 kilometres of watermains in multiple pressure zones and includes thirteen booster stations and eleven water storage facilities (ten inground reservoirs 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, Conservation and Parks (MECP) 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 major expenses for this drinking water system are as follows:

Cathodic protection of watermains - \$151,013.00

Feedermain construction - \$14,741.08

Construction costs for the Seaton Zone 4 Reservoir and Zone 5 Pumping Station (2021 costs) - \$12,032,261

HACH DR6000 Spectrophotometer at water supply plant - \$11,882.00

Watermain replacement costs (multiple locations) - \$425,205.19

Pickering Bulk Filling Station (2021 Costs) - \$270,634.32

Pump rehabilitation at water supply plant - \$24,009.42

Pump replacement at water supply plant - \$16,975.32

Replacement parts at water supply plant and Cherrywood Pumping Station- \$199,502.39

Hardware upgrades to the Supervisory Control and Data Acquisition system (Ajax, Oshawa and Whitby Systems combined for 2021)- \$13,668.42

Server upgrades to the Supervisory Control and Data Acquisition system at water supply plant - \$95,989.20

Total - \$13,255,881.48

## 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 in 2021 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
<b>April 27</b>	Low Pressure (Distribution)	Less than 20 Pounds per Square Inch (PSI)	Pressure restored. Flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	April 27
<b>April 27</b>	Low Pressure (Distribution)	Less than 20 PSI	Pressure restored. Flushed, resampled. Results met ODWQS.	April 27
<b>April 30</b>	Coagulation (Plant)	Loss of coagulant feed, 2-Minute duration	Coagulant feed re-established.	April 30
<b>June 4</b>	Total Coliforms (Distribution)	1 Colony Forming Units (CFU) per 100 Millilitres (mL)	Flushed, resampled. Results met ODWQS.	June 4 & 6
<b>July 10</b>	Total Coliforms (Distribution)	2 CFU per 100 mL	Flushed, resampled. Results met ODWQS.	June 10
<b>August 23</b>	Low Pressure (Distribution)	Less than 20 PSI	Pressure restored. Flushed, resampled. Results met ODWQS.	August 23
<b>October 7</b>	Low Pressure (Distribution)	Less than 20 PSI	Pressure restored. Flushed, resampled. Results met ODWQS.	October 7
<b>October 24</b>	Total Coliforms (Distribution)	3 CFU per 100 mL	Flushed, resampled. Results met ODWQS.	October 24

### Ajax DWS Table 2

#### Microbiological 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	195	Non-Detect (ND) - 27	ND - 4
Treated	10	ND	ND
Distribution	121	ND	ND - 3 (3)*

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

### Ajax DWS Table 3

#### Microbiological 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	195	Absence (A)	A
Distribution	817	A	A

### Ajax DWS Table 4

#### Microbiological Heterotrophic Plate Count (HPC) 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	205	Non-Detect (ND) – 87
Distribution	716	ND – 1,100

## 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
<b>Turbidity - Filter Effluent</b>	Continuous	0.001 – 2.005*	Nephelometric Turbidity Units (NTU)	Turbidity is a measure of particles in water.
<b>Fluoride - Plant</b>	Continuous	0.2 – 1.011**	Milligram per Litre (mg/L)	Fluoride is added to water to prevent tooth decay.
<b>Free Chlorine - Plant</b>	Continuous	0.75 – 2.07**	mg/L	Must be sufficient to ensure disinfection has been achieved.
<b>Free Chlorine - Distribution</b>	Continuous	0.22 – 3.60**	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.

\* Maximum range includes instantaneous spikes that do not fall under the parameters of an adverse.

\*\* 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 - 0.144	Not Applicable (N/A)	Becquerels per Litre (Bq/L)
Raw Water	Tritium	January - December	0.7 – 10	7,000*	Bq/L
Environmental Discharge (Backwash Supernatant)	Total Suspended Solids	January - December	12.6**	25**	Milligram per Litre (mg/L)
Environmental Discharge (Backwash Supernatant)	Total Chlorine Residual	January - December	0.014**	0.02**	mg/L
Raw Water	Microcystin (Total)	June - October	ND	1.5	Microgram per Litre (ug/L)
Treated Water	Microcystin (Total)	June - October	ND	1.5	ug/L

\* Tritium does not have a Maximum Acceptable Concentration (MAC) for raw water. Treated water MAC of 7,000 Bq/L is provided as a guideline for interpretation of results only.

\*\* Results represent an annual average.

## Ajax DWS Table 7

### Summary of Treated Water Chemical Parameter Testing Under Schedules 13 and 23 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources*
<b>Antimony</b>	14	Non-Detect (ND) - 0.0007	0.006	Milligram per Litre (mg/L)	No	Fire retardants, ceramics, electronics, solder.
<b>Arsenic</b>	14	ND - 0.0007	0.01	mg/L	No	Mining.
<b>Barium</b>	2	0.0196 – 0.0201	1.0	mg/L	No	Metal refineries, oil drilling.
<b>Boron</b>	2	0.0244 - 0.0276	5.0	mg/L	No	Industrial.
<b>Cadmium</b>	14	ND	0.005	mg/L	No	Industrial.
<b>Chromium</b>	14	ND	0.05	mg/L	No	Industrial.
<b>Total Haloacetic acids - Distribution (annual average)</b>	12	12.6	80	Microgram per Litre (ug/L)	No	By-product of chlorination of drinking water.
<b>Mercury</b>	2	ND	0.001	mg/L	No	Industrial.
<b>Selenium</b>	14	ND	0.05	mg/L	No	Refineries, mines, chemical manufacturing.
<b>Sodium</b>	12	16.6 – 21.5	Not Applicable**	mg/L	No	Storm water runoff including road salt.
<b>Total Trihalomethane - Distribution (annual average)</b>	12	30.1	100	ug/L	No	By-product of chlorination of drinking water.
<b>Uranium</b>	2	ND	0.02	mg/L	No	Power generation.
<b>Nitrite</b>	12	ND	1.0	mg/L	No	Agriculture runoff, landfill leachate and animal waste.
<b>Nitrate</b>	12	ND – 0.53	10.0	mg/L	No	Fertilizer.

\* Parameters may occur naturally in the environment.

\*\* 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 to the Medical Officer of Health as per Schedule 16-3 (8) of O. Reg. 170/03 if it has not been reported in the preceding 57 months.

### 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 Exceedances	pH	Alkalinity Milligram per Litre
Plumbing	8	Non-Detect (ND)	0.01	0	7.60 - 7.70	Not Required
Distribution	1	ND	0.01	0	7.60	87.9

### Ajax DWS Table 9

#### Summary of Treated Water Organic Parameter Testing 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 per Litre (ug/L)	No	Agricultural herbicide.
Atrazine + N-dealkylated metabolites	2	ND	5	ug/L	No	Agricultural herbicide.
Azinphos-methyl	2	ND	20	ug/L	No	Insecticide.
Benzene	2	ND	1	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	2	ug/L	No	Chemical and industrial activities.

Ajax DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
<b>Chlorpyrifos</b>	2	Non-Detect (ND)	90	Microgram per Litre (ug/L)	No	Agricultural, household insecticide.
<b>Diazinon</b>	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
<b>Dicamba</b>	2	ND	120	ug/L	No	Agricultural herbicide
<b>1,2-Dichlorobenzene</b>	2	ND	200	ug/L	No	Chemical and industrial factories.
<b>1,4-Dichlorobenzene</b>	2	ND	5	ug/L	No	Chemical and industrial factories.
<b>1,2-Dichloroethane</b>	2	ND	5	ug/L	No	Industrial chemical factories.
<b>1,1-Dichloroethylene (vinylidene chloride)</b>	2	ND	14	ug/L	No	Industrial chemical factories.
<b>Dichloromethane</b>	2	ND	50	ug/L	No	Pharmaceutical and chemical factories.
<b>2,4-Dichlorophenol</b>	2	ND	900	ug/L	No	Industrial contamination, reaction with chlorine.
<b>2,4-Dichlorophenoxy acetic acid (2,4-D)</b>	2	ND	100	ug/L	No	Agricultural, residential herbicide.
<b>Diclofop-methyl</b>	2	ND	9	Ug/L	No	Agricultural herbicide.
<b>Dimethoate</b>	2	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.

Ajax DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
<b>Diquat</b>	2	Non-Detect (ND)	70	Microgram per Litre (ug/L)	No	Agricultural, aquatic herbicide.
<b>Diuron</b>	2	ND	150	ug/L	No	Agricultural, industrial herbicide.
<b>Glyphosate</b>	2	ND	280	ug/L	No	Agricultural, forestry, household herbicide.
<b>Malathion</b>	2	ND	190	ug/L	No	Pest control insecticide.
<b>2-Methyl-4-chlorophenoxyacetic acid (MCPA)</b>	2	ND	100	ug/L	No	Agricultural herbicide.
<b>Metolachlor</b>	2	ND	50	ug/L	No	Agricultural herbicide.
<b>Metribuzin</b>	2	ND	80	ug/L	No	Agricultural herbicide.
<b>Monochlorobenzene</b>	2	ND	80	ug/L	No	Industrial and agricultural chemical factories and dry cleaning facilities.
<b>Paraquat</b>	2	ND	10	ug/L	No	Agricultural, aquatic herbicide.
<b>Pentachlorophenol</b>	2	ND	60	ug/L	No	Pesticide, wood preservative residue.
<b>Phorate</b>	2	ND	2	ug/L	No	Agricultural insecticide.
<b>Picloram</b>	2	ND	190	ug/L	No	Industrial herbicide.

Ajax DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
<b>Polychlorinated Biphenyls(PCB)</b>	2	Non-Detect (ND)	3	Microgram per Litre (ug/L)	No	Residue from various industrial uses.
<b>Prometryne</b>	2	ND	1	ug/L	No	Agricultural herbicide.
<b>Simazine</b>	2	ND	10	ug/L	No	Agricultural herbicide.
<b>Terbufos</b>	2	ND	1	ug/L	No	Agricultural insecticide.
<b>Tetrachloroethylene (perchloroethylene)</b>	2	ND	10	ug/L	No	Leaching from PVC pipes; discharge from factories; dry cleaners and auto shops (metal degreaser).
<b>2,3,4,6 - Tetrachlorophenol</b>	2	ND	100	ug/L	No	Wood preservative.
<b>Triallate</b>	2	ND	230	ug/L	No	Agricultural herbicide.
<b>Trichloroethylene</b>	2	ND	5	ug/L	No	Metal degreasing sites and other factories.
<b>2,4,6-Trichlorophenol</b>	2	ND	5	ug/L	No	Pesticide manufacturing.
<b>Trifluralin</b>	2	ND	45	ug/L	No	Agricultural herbicide.
<b>Vinyl Chloride</b>	2	ND	1	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.**

<b>Parameter</b>	<b>Result</b>	<b>MAC</b>	<b>Unit of Measure</b>	<b>Date of Sample</b>
<b>Not Applicable (N/A)</b>	N/A	N/A	N/A	N/A