

Part III Form 2  
Section 11. ANNUAL REPORT.

<b>Drinking-Water System Number:</b>	220008890
<b>Drinking-Water System Name:</b>	Ajax Water Treatment Plant
<b>Drinking-Water System Owner:</b>	Regional Municipality of Durham
<b>Drinking-Water System Category:</b>	Large Municipal Residential System
<b>Period being reported:</b>	January 1 to December 31, 2006

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [<input checked="" type="checkbox"/>] No [ <input type="checkbox"/> ]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [<input checked="" type="checkbox"/>] No [ <input type="checkbox"/> ]</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Regional Municipality of Durham Works Department 605 Rossland Rd E. 5<sup>th</sup> Floor Whitby, Ontario L1N 6A3</p> </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p>Number of Designated Facilities served: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ <input type="checkbox"/> ] No [ <input type="checkbox"/> ]</p> <p>Number of Interested Authorities you report to: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ <input type="checkbox"/> ] No [ <input type="checkbox"/> ]</p>
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**Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report**

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

Drinking Water System Name	Drinking Water System Number

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?  
Yes [  ] No [  ]

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

- Public access/notice via the web**
- Public access/notice via Government Office** – Durham Region Works Dept.
- Public access/notice via a newspaper**
- Public access/notice via Public Request**
- Public access/notice via a Public Library**
- Public access/notice via other method** Bi-annual newsletter to Residents

**Describe your Drinking-Water System**

The **Ajax Water Treatment Plant** is a surface water treatment facility that supplies quality potable water to approximately 87,674 residents in the Town of Ajax and, approximately 100,354 in the City of Pickering. Raw water is drawn from Lake Ontario through a 2,100mm diameter intake pipe extending 2,506m into the lake. The intake structure has a diameter of 9m and draws water from approximately 18m away. The intake structure is located at a depth of 18m.

The **treatment plant** facility has a rated capacity of 163.5 ML/day (36 MIGD) and utilizes the following unit processes and systems: zebra mussel control, screening, pre-chlorination, low lift pumping, coagulation, flocculation, direct filtration, post-chlorination / dechlorination, water storage, and high lift pumping. The six (6) filters are dual media type with air scour backwash. Four (4) of the filters use Granulated Activated Carbon (GAC). The process is controlled and monitored by a SCADA (Supervisory Control and Data Acquisition) system.

The **distribution system** delivers the treated water through approximately 679 kilometres of watermains in six (6) pressure zones and includes three (3) reservoirs, one (1) elevated tank, and five (5) booster stations. Additional chlorination is applied at one (1) of the booster station facilities.

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

Sodium hypochlorite (disinfectant)  
 Aluminum sulphate (coagulant agent)  
 Hydrofluosilicic acid (fluoride)  
 Sodium bisulphite (dechlorination)  
 Sulfuric acid (zebra mussel control and pH adjustment)

**Were any significant expenses incurred to?**

- Install required equipment
- Repair required equipment
- Replace required equipment

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

Rehabilitation of Watermains (Cement Lining) - \$646,179  
 Cathodic Protection of Watermains - \$106,739  
 Leak Detection Survey of Watermains - \$3,460  
 Replaced Granular Activated Carbon (GAC) in Filter #6 - \$112,367  
 Calibration of all field Chlorine Residual Instruments - \$12,193  
 Installation of chlorine analyzer - \$11,436  
 Hydro Sub-Station Maintenance - \$19,830  
 Electrical breaker replacement - \$28,970  
 Pressure control calibrator - \$10,013  
 Fill valve pipe modifications - \$10,500

## Drinking-Water Systems Regulation O. Reg. 170/03

Fill valve actuator replacement and control changes at Cherrywood Reservoir/Pumping Station - \$21,149  
 Watermain Replacement Pickering - \$204,240  
 Finch Elevated Tank Structural investigation including interior/exterior recoating - \$246,597  
 Rosebank Reservoir Inspection and Cleaning - \$21,147

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

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
Mar 15	Low Pressure (Distribution)	--	--	Pressure restored to operational standards within one minute. Bacteriological samples were collected in affected area. Results of analyses performed on the samples met the Ontario Drinking Water Quality Standards.	Mar 15
Apr 27	Low Pressure (Distribution)	--	--	Pressure restored to operational standards. Bacteriological samples were collected in affected area. Results of analyses performed on the samples met the Ontario Drinking Water Quality Standards.	Apr 27
May 11	Chlorine Residual (Distribution)	0.00	mg/L	Continuous monitoring equipment was replaced. Chlorine residual was measured and verified to be above 0.05 mg/L as required by the Ontario Drinking Water Systems Regulation.	May 11
May 23	Chlorine Residual (Plant)	0.02	mg/L	Continuous monitoring equipment repaired and calibrated. Chlorine residual was verified to have remained within operational standards. Primary disinfection was achieved.	May 23
May 25	Heterotrophic Bacteria (Distribution)	850	CFU/mL	Resamples were taken upstream, downstream and at the location that gave rise to the adverse. Results of the analyses performed on the resamples met the Ontario Drinking Water Quality Standards.	May 25

## Drinking-Water Systems Regulation O. Reg. 170/03

May 26	Chlorine Residual (Plant)	0.00	mg/L	Continuous monitoring equipment calibrated. Chlorine residual was verified to have remained within operational standards. Primary disinfection achieved.	May 26
May 30	Fluoride (Plant)	2.000	mg/L	Paused fluoridation immediately upon receiving alarm. Samples were collected in vicinity of the water treatment plant and analyzed for fluoride concentration. Results of analysis performed on the samples were well within the Ontario Drinking Water Quality Standards. Fluoridation resumed to normal operating standards that day.	May 30
Jun 22	Low Pressure Chlorine Residual (Distribution)	-- 0.00	-- mg/L	Pressure restored within one minute. Affected area flushed until chlorine residual restored, bacteriological samples were taken. Results of analyses performed on the samples met the Ontario Drinking Water Quality Standards. Results of chlorine residuals achieved met the Ontario Drinking Water System Regulation.	Jun 22
Jun 22	Total Coliforms (Distribution)	Presence	--	Resamples were taken upstream, downstream and at the location that gave rise to the adverse. Results of the analyses performed on the resamples met the Ontario Drinking Water Quality Standards.	Jun 22
Sep 01	Total Coliforms (Distribution)	Presence	--	Resamples were taken upstream, downstream and at the location that gave rise to the adverse. Results of the analyses performed on the resamples met the Ontario Drinking Water Quality Standards.	Sep 01
Sep 06	Low Pressure (Distribution)	--	--	Power fluctuation caused pump shut down. Pressure restored within one minute. Affected area flushed and bacteriological samples were taken. Results of	Sep 06

## Drinking-Water Systems Regulation O. Reg. 170/03

				analyses performed on the samples met the Ontario Drinking Water Quality Standards.
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**Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.**

	Number of Samples	Range of E.Coli Results MF	Range of Total Coliform Results MF	E.Coli Results P/A	Total Coliform Results P/A	Number of HPC Samples	Range of HPC Results (min #)-(max #)	Number of BKG Samples	Range of BKG Results (min #)-(max #)
<b>Raw</b>	207	<1-5	<1-320	--	--	--	--	207	<1-3200M
<b>Treated</b>	207	--	--	A	A	172	<1-320	35	<1-<1
<b>Distribution</b>	1661	--	--	A	P (2)*	697	<1-850(1)*	98	<1-2
	24	<1-<1	<1-<1						

MF: Membrane Filter; P/A Presence/Absence; BKG: Background Bacteria; HPC: Heterotrophic Bacteria; M: Estimated Count  
 \*Number in parentheses represents number of exceedance(s).

**Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.**

	Number of Grab Samples	Range of Results (min #)-(max #)
<b>Turbidity – filter effluent</b>	8760	0.002-0.497 NTU
<b>Free Chlorine – Plant</b>	8760	0.02-1.30
<b>Free Chlorine - Distribution</b>	2799	0.00-2.6
<b>Fluoride (If the DWS provides fluoridation)</b>	8760	0.15-0.73

***NOTE:** For continuous monitors use 8760 as the number of samples.*

***NOTE:** Record the unit of measure if it is **not** milligrams per litre.*

**Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
December 16, 2004 May 25, 2006	Raw Water			
	Gross Beta	Jan 01 – Dec 31	0.07-0.11	Bq/L
	Tritium	Jan 01 – Dec 31	2.9-12.0	Bq/L
	Treated Water*			
	Gross Alpha	Jan 01 – Dec 01	<0.04-<0.04	Bq/L
	Gross Beta	Jan 01 – Dec 01	0.06-0.07	Bq/L
	Tritium	Jan 01 – Dec 01	<5-15	Bq/L
	Cesium-134	Jan 01 – Dec 01	<0.3	Bq/L
	Cesium-137	Jan 01 – Dec 01	<0.3	Bq/L
	Cobalt-60	Jan 01 – Dec 01	<0.3	Bq/L
	Iodine-131	Jan 01 – Dec 01	<0.3	Bq/L
	Cyanide	May 10	<0.002	mg/L
	Residue Management			
	Chlorine Residual	Jan 19 – Dec 08	0.00-0.27	mg/L
	Suspended Solids	Jan 19 – Dec 08	0.9-14.0	mg/L

To date, the treated water radionuclides results for December have not been received. The results will be updated as the information becomes available.

**Summary of Inorganic parameters tested during this reporting period or the most recent sample results**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance	Number of Samples
Antimony	Feb 13 – Nov 01	<0.0004-0.0006	mg/L	No	4
Arsenic	Feb 13 – Nov 01	<0.0004-0.0007	mg/L	No	4
Barium	May 10, Nov 01	0.0203-0.0219	mg/L	No	2
Boron	May 10, Nov 01	0.015-0.025	mg/L	No	2
Cadmium	Feb 13 – Nov 01	<0.0001	mg/L	No	4
Chromium	Feb 13 – Nov 01	<0.0003-0.0025	mg/L	No	4
Lead - Distribution	Mar 09 – Sep 12	<0.0007	mg/L	No	3
Mercury	May 10, Nov 01	<0.01	ug/L	No	2
Selenium	Feb 13 – Nov 01	<0.002	mg/L	No	4
Sodium	Feb 13 – Nov 01	16.1-17.8	mg/L	No	4
Uranium	May 10, Nov 01	<0.002	mg/L	No	2
Nitrite	Jan 07 – Dec 05	<0.02-<0.05	mg/L	No	16
Nitrate	Jan 07 – Dec 05	0.14-0.59	mg/L	No	16

**Summary of Organic parameters sampled during this reporting period or the most recent sample results**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance	Number of Samples
Alachlor	Aug 09, Nov 22	<0.4	ug/L	No	2
Aldicarb	Aug 09, Nov 22	<3.5	ug/L	No	2
Aldrin + Dieldrin	Aug 09, Nov 22	<0.006	ug/L	No	2

# Drinking-Water Systems Regulation O. Reg. 170/03

Atrazine + N-dealkylated metabolites	Aug 09, Nov 22	<0.1	ug/L	No	2
Azinphos-methyl	Aug 09, Nov 22	<0.2	ug/L	No	2
Bendiocarb	Aug 09, Nov 22	<3.0	ug/L	No	2
Benzene	Aug 09, Nov 22	<0.1	ug/L	No	2
Benzo(a)pyrene	Aug 09, Nov 22	<0.01-<0.001	ug/L	No	2
Bromoxynil	Aug 09, Nov 22	<0.4	ug/L	No	2
Carbaryl	Aug 09, Nov 22	<0.2	ug/L	No	2
Carbofuran	Aug 09, Nov 22	<4.0	ug/L	No	2
Carbon Tetrachloride	Aug 09, Nov 22	<0.2	ug/L	No	2
Chlordane (Total)	Aug 09, Nov 22	<0.006	ug/L	No	2
Chlorpyrifos	Aug 09, Nov 22	<0.2	ug/L	No	2
Cyanazine	Aug 09, Nov 22	<0.2	ug/L	No	2
Diazinon	Aug 09, Nov 22	<0.2	ug/L	No	2
Dicamba	Aug 09, Nov 22	<0.4	ug/L	No	2
1,2-Dichlorobenzene	Aug 09, Nov 22	<0.1	ug/L	No	2
1,4-Dichlorobenzene	Aug 09, Nov 22	<0.1	ug/L	No	2
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Aug 09, Nov 22	<0.008	ug/L	No	2
1,2-Dichloroethane	Aug 09, Nov 22	<0.1	ug/L	No	2
1,1-Dichloroethylene (vinylidene chloride)	Aug 09, Nov 22	<0.3	ug/L	No	2
Dichloromethane	Aug 09, Nov 22	<0.5	ug/L	No	2
2,4-Dichlorophenol	Aug 09, Nov 22	<0.4	ug/L	No	2
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug 09, Nov 22	<0.6-<0.8	ug/L	No	2
Diclofop-methyl	Aug 09, Nov 22	<0.4	ug/L	No	2
Dimethoate	Aug 09, Nov 22	<0.3	ug/L	No	2
Dinoseb	Aug 09, Nov 22	<0.5	ug/L	No	2
Diquat	Aug 09, Nov 22	<0.1	ug/L	No	2
Diuron	Aug 09, Nov 22	<0.2	ug/L	No	2
Glyphosate	Aug 09, Nov 22	<2.0	ug/L	No	2
Heptachlor + Heptachlor Epoxide	Aug 09, Nov 22	<0.008	ug/L	No	2
Lindane (Total)	Aug 09, Nov 22	<0.005	ug/L	No	2
Malathion	Aug 09, Nov 22	<0.2	ug/L	No	2
Methoxychlor	Aug 09, Nov 22	<0.009	ug/L	No	2
Metolachlor	Aug 09, Nov 22	<0.2	ug/L	No	2
Metribuzin	Aug 09, Nov 22	<0.08	ug/L	No	2
Monochlorobenzene	Aug 09, Nov 22	<0.1	ug/L	No	2
Paraquat	Aug 09, Nov 22	<0.1	ug/L	No	2
Parathion	Aug 09, Nov 22	<0.2	ug/L	No	2
Pentachlorophenol	Aug 09, Nov 22	<0.4	ug/L	No	2
Phorate	Aug 09, Nov 22	<0.2	ug/L	No	2
Picloram	Aug 09, Nov 22	<0.7	ug/L	No	2
Polychlorinated Biphenyls(PCB)	Aug 09, Nov 22	<0.02	ug/L	No	2
Prometryne	Aug 09, Nov 22	<0.08	ug/L	No	2
Simazine	Aug 09, Nov 22	<0.08	ug/L	No	2
THM – Distribution (NOTE: show latest annual average)	Jan 03 – Dec 05	28	ug/L	No	15

## Drinking-Water Systems Regulation O. Reg. 170/03

Temephos	Aug 09, Nov 22	<3	ug/L	No	2
Terbufos	Aug 09, Nov 22	<0.2	ug/L	No	2
Tetrachloroethylene	Aug 09, Nov 22	<0.3	ug/L	No	2
2,3,4,6-Tetrachlorophenol	Aug 09, Nov 22	<0.5	ug/L	No	2
Triallate	Aug 09, Nov 22	<2.0	ug/L	No	2
Trichloroethylene	Aug 09, Nov 22	<0.1	ug/L	No	2
2,4,6-Trichlorophenol	Aug 09, Nov 22	<0.5	ug/L	No	2
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Aug 09, Nov 22	<0.5	ug/L	No	2
Trifluralin	Aug 09, Nov 22	<0.006	ug/L	No	2
Vinyl Chloride	Aug 09, Nov 22	<0.2	ug/L	No	2

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

Parameter	Result Value	Unit of Measure	Date of Sample
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**(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)**