

The Corporation of the Municipality of Port Hope



Port Hope Water Treatment Plant

New Water Treatment Plant

2005 Annual Report



The Corporation of the Municipality of Port Hope
Department of Public Works, Water Department
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February 22, 2006

Municipality of Port Hope
P.O. Box 117
56 Queen Street
Port Hope, ON
L1A 3V9

Attention: Mr. Peter Angelo, P. Eng., Director of Municipal Engineering Services

Dear Mr. Angelo:

**RE: 2005 Annual Report – Port Hope Water Treatment Plant
Drinking-Water System Number - 260058006**

We are pleased to provide the *2005 Annual Report for Port Hope Water Treatment Plant* as outlined in Ontario Regulation 170/03, Section 11 made under the Safe Drinking Water Act.

This report covers the timeframe from August 23, 2005 (date of commissioning) to December 31, 2005 for the new facility only.

Sincerely,

Rick Trumper

Rick Trumper
Water Treatment Supervisor
Municipality of Port Hope

**Part III Form 2
Section 11. ANNUAL REPORT.**

Drinking-Water System Number:	260058006
Drinking-Water System Name:	Municipality of Port Hope Water Treatment Plant
Drinking-Water System Owner:	The Corporation Of the Municipality of Port Hope
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	August 23 – December 31, 2005

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [<input checked="" type="checkbox"/>] No []</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 []</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;"> Municipal Public Works Office, Municipalities Libraries, Municipal Administrative Office and the Water Treatment Plant. </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <input type="text"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <input 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 [] No []</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
None	

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

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 _____

Describe your Drinking-Water System

System Information

The Port Hope Water Treatment Plant (WTP) provides ultrafiltration water treatment for the Municipality of Port Hope. The WTP is located at 35 Marsh St, Municipality of Port Hope, County of Northumberland, Ontario. The Municipality is the Owner and Operator of the Water System that serves the Community of Port Hope with a population of 12,500. It is classed as a Large Municipal Residential system.

The following is a description of the components that in part makeup the Communities Water System.

Certificate of Approval

The water treatment plant is operated in accordance with Ontario Ministry of the Environment Certificate of Approval for Municipal Drinking Water Systems Number 5488-6DNHC4.

Raw Water Source

The water supply for the Port Hope Water Treatment plant is obtained from Lake Ontario. Lake Ontario water is of good quality and can be described as a large body of clear-coloured water of low turbidity. The Lake water (raw water) temperature ranges from 0°C (winter) to approximately 21°C (summer). The raw water is classified as a surface water supply, which means that it is considered to be an unprotected source. Raw Water requires full treatment at Port Hope's Water Treatment Plant to make it drinkable or potable.

Intake Structure

Raw water is taken into a 750-mm diameter intake pipe through the intake structure. The intake discharges to a raw water pumping station where it is coarse screened. The existing intake structure and 750 mm intake piping was retrofitted to include a 900 mm on shore addition. This will be utilized to draw water from Lake Ontario to the low lift pumping station.

Raw Water pumping

The raw water pumping station consists of several raw water chambers, one (1) raw water travelling screen and two (2) manually cleaned screens (i.e., for standby

purposes), three (3) low lift pumps (with provision for a fourth). During the Zebra Mussel season the raw water is dosed with chlorine for Zebra Mussel control. The raw water quality is monitored by Operations staff at the Treatment Plant.

Water Treatment

Raw water is treated by an ultrafiltration system this ultrafiltration process removes organics and solids, as well as safeguards against *giardia* and *cryptosporidium* contamination. The water treatment facilities consist of a Zenon ZeeWeed 1000 membrane ultrafiltration system which includes four (4) membrane tanks (each tank contains two (2) filtration cassettes with a total capacity for four cassettes) and associated cleaning and backwashing equipment. Disinfection at the plant is achieved through gas chlorination. Following ultrafiltration, filtered water is disinfected via a chlorine gas system (primary disinfection). Following disinfection the water is ready for consumption by consumers within the distribution and five (5) high lift pumps (with provision for a sixth) lift treated water to the distribution system. The Post-chlorination is used as required to maintain a fixed chlorine residual level leaving the plant. The current water treatment plant has a rated capacity of 20,000 m³/d. It is expected that this capacity will provide potable water servicing to the Municipality of Port Hope for a period greater than the 20 year planning period.

Water Storage Facilities

On site potable water storage consists of twined reservoirs that have a total rated capacity of 5000 m³.

Off site storage facilities include a Standpipe that can hold up to 1,205 M³ and an underground reservoir that can hold up to 111 M³.

Process Wastewater System

In addition, the WTP provides residue management consisting of equalization storage and solids separation. Two (2) equalization tanks precede two (2) parallel tube settling units. Settled solids at the base of each wastewater clarifier are pumped via a sewage pumping station (located outside the WTP) to the sanitary sewer, while wastewater supernatant is dechlorinated prior to discharge to Lake Ontario.

Water Distribution System

Because of the Community's hilly terrain the Community has been divided into two pressure zones, Zone 1 is located in the lower parts of the Community while Zone 2 controls the higher area. A booster pumping station and an in-ground reservoir/pumping station are located in Zone 2 to maintain adequate pressures and flows in Zone 2. Zone 1 pressures are maintained via the Pumping Station at the Water Treatment Plant and the Standpipe located at the top of Zone 1.

Supervisory Control and Data Acquisition (SCADA)

This system consists of numerous computer systems that control and monitor the drinking water system and the water quality at all times. Operational staff controls these systems to insure their proper operation and water quality. All Operational Staff

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

for the Municipalities Water System are fully certified and Licensed by the Ministry of the Environment.

List all water treatment chemicals used over this reporting period

Chlorine

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

Construction of this Facility = \$18,000,000.00

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
Aug. 24/05	Turbidity	>1	NTU	Installation of equipment to remove entrained air from system.	outstanding
Aug. 26/05	Background	450	Colony	resample	Aug. 30/05
Dec.21/05	Permeate Turbidity	>1	NTU	Installation of equipment to remove entrained air from system.	February 21/06

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples (background)	Range of HPC Results (min #)-(max #)
Raw	19	0 - 13	0 -68	N/A	N/A
Treated	19	0	0	19	0/153
Distribution	103	0	0	103	0/450

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 #)
Raw Turbidity	8760	0 – 99.98
Treated Turbidity	8760	0 – 2.07
Primary Chlorine	8760	0 – 4.92
Secondary Chlorine	8760	0 – 1.91
Fluoride (If the DWS provides fluoridation)	N/A	

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 (Range)	Unit of Measure
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Raw Sodium	Aug 23- Dec 31/05 Twice Daily	8.62 – 18.62	mg/L
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Treated Sodium	Aug 23- Dec 31/05 Twice Daily	8.80 – 18.69	mg/L
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Total Suspended Solids	Aug 23- Nov 1/05 Monthly	0 –10 AVG. 4	mg/L
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Raw Temperature	Aug 23- Dec 31/05 Twice Daily	.56 - 23	Celsius
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Treated Temperature	Aug 23- Dec 31/05 Twice Daily	3 - 23	Celsius
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Raw pH	Aug 23- Dec 31/05 Continuous	7.54 – 8.59	pH

Certificate of Approval 5488-6DNHC4, Aug. 24/05	Treated pH	Aug 23- Dec 31/05 Continuous	7.13 – 7.97	pH
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Treated Arsenic	Aug 23- Dec 31/05 Weekly	2 <MDL	ug/L
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Treated Uranium Continuous	Aug 23- Dec 31/05	0.15 – 1.23	ug/L
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Treated Trihalomethanes Monthly	Aug 23- Dec 31/05	16 - 33	ug/L

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Dec. 13/05	0.6 <MDL	ug/L	no
Arsenic	Dec. 13/05	2 <MDL	ug/L	no
Barium	Dec. 13/05	23	ug/L	no
Boron	Dec. 13/05	21	ug/L	no
Cadmium	Dec. 13/05	0.1 <MDL	ug/L	no
Chromium	Dec. 13/05	3 <MDL	ug/L	no
Lead	July 26/05	0.6	ug/L	no
Mercury	Dec. 13/05	0.02 <MDL	ug/L	no
Selenium	Dec. 13/05	3 <MDL	ug/L	no
Sodium	Dec 13/05	13.3	mg/L	no
Uranium	Dec. 13/05	.41	ug/L	no
Fluoride	N/A	-	-	-
Nitrite	Nov. 30/05	0.005 <MDL	mg/L	no
Nitrate	Nov. 30/05	0.544	mg/L	no

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Dec. 13/05	0.11 <MDL	ug/L	no
Aldicarb	Dec. 13/05	0.30 <MDL	ug/L	no
Aldrin + Dieldrin	Dec. 13/05	0.067 <MDL	ug/L	no
Atrazine + N-dealkylated metabolites	Dec. 13/05	0.12 <MDL	ug/L	no

Azinphos-methyl	Dec. 13/05	0.21 <MDL	ug/L	no
Bendiocarb	Dec. 13/05	0.13 <MDL	ug/L	no
Benzene	Dec. 13/05	0.36 <MDL	ug/L	no
Benzo(a)pyrene	Dec. 13/05	0.004 <MDL	ug/L	no
Bromoxynil	Dec. 13/05	0.094 <MDL	ug/L	no
Carbaryl	Dec. 13/05	0.16 <MDL	ug/L	no
Carbofuran	Dec. 13/05	0.37 <MDL	ug/L	no
Carbon Tetrachloride	Dec. 13/05	0.34 <MDL	ug/L	no
Chlordane (Total)	Dec. 13/05	0.11 <MDL	ug/L	no
Chlorpyrifos	Dec. 13/05	0.18 <MDL	ug/L	no
Cyanazine	Dec. 13/05	0.18 <MDL	ug/L	no
Diazinon	Dec. 13/05	0.081 <MDL	ug/L	no
Dicamba	Dec. 13/05	0.17 <MDL	ug/L	no
1,2-Dichlorobenzene	Dec. 13/05	0.56 <MDL	ug/L	no
1,4-Dichlorobenzene	Dec. 13/05	0.25 <MDL	ug/L	no
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Dec. 13/05	0.14 <MDL	ug/L	no
1,2-Dichloroethane	Dec. 13/05	0.32 <MDL	ug/L	no
1,1-Dichloroethylene (vinylidene chloride)	Dec. 13/05	0.52 <MDL	ug/L	no
Dichloromethane	Dec. 13/05	1.17 <MDL	ug/L	no
2-4 Dichlorophenol	Dec. 13/05	0.15 <MDL	ug/L	no
2,4-Dichlorophenoxy acetic acid (2,4-D)	Dec. 13/05	0.19 <MDL	ug/L	no
Diclofop-methyl	Dec. 13/05	0.13 <MDL	ug/L	no
Dimethoate	Dec. 13/05	0.12 <MDL	ug/L	no
Dinoseb	Dec. 13/05	0.084 <MDL	ug/L	no
Diquat	Dec. 13/05	1.0 <MDL	ug/L	no
Diuron	Dec. 13/05	0.087 <MDL	ug/L	no
Glyphosate	Dec. 13/05	6.0 <MDL	ug/L	no
Heptachlor + Heptachlor Epoxide	Dec. 13/05	0.11 <MDL	ug/L	no
Lindane (Total)	Dec. 13/05	0.056 <MDL	ug/L	no
Malathion	Dec. 13/05	0.091 <MDL	ug/L	no
Methoxychlor	Dec. 13/05	0.14 <MDL	ug/L	no
Metolachlor	Dec. 13/05	0.092 <MDL	ug/L	no
Metribuzin	Dec. 13/05	0.12 <MDL	ug/L	no
Monochlorobenzene	Dec. 13/05	0.46 <MDL	ug/L	no
Paraquat	Dec. 13/05	1.0 <MDL	ug/L	no
Parathion	Dec. 13/05	0.18 <MDL	ug/L	no
Pentachlorophenol	Dec. 13/05	0.15 <MDL	ug/L	no
Phorate	Dec. 13/05	0.11 <MDL	ug/L	no
Picloram	Dec. 13/05	0.20 <MDL	ug/L	no
Polychlorinated Biphenyls(PCB)	Dec. 13/05	0.04 <MDL	ug/L	no
Prometryne	Dec. 13/05	0.23 <MDL	ug/L	no
Simazine	Dec. 13/05	0.15 <MDL	ug/L	no

THM (NOTE: show latest annual average)	Feb. 22/05 – Nov. 29/05	26	ug/L	no
Temephos	Dec. 13/05	0.31 <MDL	ug/L	no
Terbufos	Dec. 13/05	0.12 <MDL	ug/L	no
Tetrachloroethylene	Dec. 13/05	0.48 <MDL	ug/L	no
2,3,4,6-Tetrachlorophenol	Dec. 13/05	0.14 <MDL	ug/L	no
Triallate	Dec. 13/05	0.10 <MDL	ug/L	no
Trichloroethylene	Dec. 13/05	0.54 <MDL	ug/L	no
2,4,6-Trichlorophenol	Dec. 13/05	0.25 <MDL	ug/L	no
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Dec. 13/05	0.14 <MDL	ug/L	no
Trifluralin	Dec. 13/05	0.12 <MDL	ug/L	no

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

(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)