

**The Corporation of the Municipality of Port Hope**



**Port Hope Water Treatment Plant**

**New Treatment Plant  
DWSN 260058006**

**2006 Annual Report**



The Corporation of the Municipality of Port Hope  
Department of Public Works  
Water Treatment Division  
56 Queen Street, PO Box 117  
Port Hope ON L1A 3V9  
Tel: 905-885-2209  
Fax: 905-885-7509  
Email: [rtrumper@porthope.ca](mailto:rtrumper@porthope.ca)  
Web: [www.porthope.on.ca](http://www.porthope.on.ca)

February 14, 2007  
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: 2006 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 January 1, 2006 to December 31, 2006 for the new facility.

Sincerely,

Rick Trumper  
Water Treatment Supervisor  
Municipality of Port Hope

Part III Form 2  
Section 11. ANNUAL REPORT.

<b>Drinking-Water System Number:</b>	260058006
<b>Drinking-Water System Name:</b>	Municipality of Port Hope Water Treatment Plant
<b>Drinking-Water System Owner:</b>	The Corporation Of the Municipality of Port Hope
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	January 1, 2006 – 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 [x] No [ ]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [x] 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;"> <p>Municipal Public Works Office, Municipalities Libraries, Municipal Administrative Office and the Water Treatment Plant.</p> </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p>Number of Designated Facilities served:  <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div> </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: <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div></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>
---	---

**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 m<sup>3</sup>/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 m<sup>3</sup>.

Off site storage facilities include a Standpipe that can hold up to 1,205 M<sup>3</sup> and an underground reservoir that can hold up to 111 M<sup>3</sup>.

#### 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

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
May 18, 2006	Total Coliform	1	colony	resample	May 24, 2006
August 21, 2006	Cleaning solutions	visible	various	Flush and resample	August 26, 2006
August 23, 2005	Turbidity	>2	NTU	Install air removal equipment and slow down highlift pump starting.	January 29, 2007

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	52	0 - 14	0 - >2000	N/A	N/A
Treated	52	0 - 0	0 - 0	52	0 - 4
Distribution	318	0 - 0	0 - 1	318	0 - 23

**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	0.00 – 100.0
Treated Turbidity	8760	0.00 – 2.00
Primary Chlorine	8760	0.00 – 5.18
Secondary Chlorine	8760	0.40 – 4.95
Fluoride (If the DWS provides fluoridation)	N/A	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	Jan.1/06- Dec. 31/06 Twice Daily	8.20 – 24.70	mg/L
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Treated Sodium	Jan.1/06- Dec. 31/06 Twice Daily	8.15 – 25.30	mg/L
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Total Suspended Solids	Jan.1/06- Dec. 1/06 Monthly	2 - 57 AVG. 12.5	mg/L
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Raw Temperature	Jan. 1/06- Dec 31/06 Twice Daily	1.30 – 23.08	Celsius
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Treated Temperature	Jan. 1/06- Dec 31/06 Twice Daily	4.0 – 23.0	Celsius
Certificate of Approval 5488-6DNHC4, Aug. 24/05	Raw pH	Jan. 1/06- Dec 31/06 Continuous	7.11 – 8.94	pH

<b>Certificate of Approval 5488-6DNHC4, Aug. 24/05</b>	<b>Treated pH</b>	<b>Jan. 1/06- Dec 31/06 Continuous</b>	<b>6.80 – 8.50</b>	pH
<b>Certificate of Approval 5488-6DNHC4, Aug. 24/05</b>	<b>Treated Arsenic</b>	<b>Jan. 1/06- Dec 31/06 Weekly</b>	<b>0.50 – 2.40</b>	ug/L
<b>Certificate of Approval 5488-6DNHC4, Aug. 24/05</b>	<b>Treated Uranium</b>	<b>Jan. 1/06- Dec 31/06 Weekly</b>	<b>0.26 – 0.57</b>	ug/L
<b>Certificate of Approval 5488-6DNHC4, Aug. 24/05</b>	<b>Treated Trihalomethanes</b>	<b>Jan. 1/06- Dec 31/06 Monthly</b>	<b>16 - 79</b>	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	Aug. 22/06	0.4	ug/L	no
Arsenic	Aug. 22/06	1.5	ug/L	no
Barium	Aug. 22/06	22.5	ug/L	no
Boron	Aug. 22/06	24	ug/L	no
Cadmium	Aug. 22/06	0.06 <MDL	ug/L	no
Chromium	Aug. 22/06	0.3	ug/L	no
Lead	Aug. 22/06	0.27	ug/L	no
Mercury	Aug. 22/06	0.02 <MDL	ug/L	no
Selenium	Aug. 22/06	3 <MDL	ug/L	no
Sodium	Aug. 22/06	12.6	mg/L	no
Uranium	Aug. 22/06	0.32	ug/L	no
Fluoride	Aug. 22/06	0.09	mg/L	no
Nitrite	Feb. 21/06 May 31/06 Aug. 29/06 Nov.28/06	0.005<MDL 0.005<MDL 0.005<MDL 0.005<MDL	mg/L	no
Nitrate	Feb. 21/06 May 31/06 Aug. 29/06 Nov.28/06	0.603 0.353 0.225 0.380	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	Aug. 22/06	0.11 <MDL	ug/L	no
Aldicarb	Aug. 22/06	0.30 <MDL	ug/L	no
Aldrin + Dieldrin	Aug. 22/06	0.067 <MDL	ug/L	no
Atrazine + N-dealkylated metabolites	Aug. 22/06	0.12 <MDL	ug/L	no
Azinphos-methyl	Aug. 22/06	0.21 <MDL	ug/L	no
Bendiocarb	Aug. 22/06	0.13 <MDL	ug/L	no
Benzene	Aug. 22/06	0.37 <MDL	ug/L	no
Benzo(a)pyrene	Aug. 22/06	0.004 <MDL	ug/L	no
Bromoxynil	Aug. 22/06	0.33 <MDL	ug/L	no
Carbaryl	Aug. 22/06	0.16 <MDL	ug/L	no
Carbofuran	Aug. 22/06	0.37 <MDL	ug/L	no
Carbon Tetrachloride	Aug. 22/06	0.41 <MDL	ug/L	no
Chlordane (Total)	Aug. 22/06	0.11 <MDL	ug/L	no
Chlorpyrifos	Aug. 22/06	0.18 <MDL	ug/L	no
Cyanazine	Aug. 22/06	0.18 <MDL	ug/L	no
Diazinon	Aug. 22/06	0.081 <MDL	ug/L	no
Dicamba	Aug. 22/06	0.20 <MDL	ug/L	no
1,2-Dichlorobenzene	Aug. 22/06	0.50 <MDL	ug/L	no
1,4-Dichlorobenzene	Aug. 22/06	0.21 <MDL	ug/L	no
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Aug. 22/06	0.14 <MDL	ug/L	no
1,2-Dichloroethane	Aug. 22/06	0.43 <MDL	ug/L	no
1,1-Dichloroethylene (vinylidene chloride)	Aug. 22/06	0.41 <MDL	ug/L	no
Dichloromethane	Aug. 22/06	0.34 <MDL	ug/L	no
2-4 Dichlorophenol	Aug. 22/06	0.15 <MDL	ug/L	no
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug. 22/06	0.19 <MDL	ug/L	no
Diclofop-methyl	Aug. 22/06	0.40 <MDL	ug/L	no
Dimethoate	Aug. 22/06	0.12 <MDL	ug/L	no
Dinoseb	Aug. 22/06	0.36 <MDL	ug/L	no
Diquat	Aug. 22/06	1.0 <MDL	ug/L	no
Diuron	Aug. 22/06	0.087 <MDL	ug/L	no
Glyphosate	Aug. 22/06	6.0 <MDL	ug/L	no
Heptachlor + Heptachlor Epoxide	Aug. 22/06	0.11 <MDL	ug/L	no
Lindane (Total)	Aug. 22/06	0.056 <MDL	ug/L	no
Malathion	Aug. 22/06	0.091 <MDL	ug/L	no
Methoxychlor	Aug. 22/06	0.14 <MDL	ug/L	no
Metolachlor	Aug. 22/06	0.092 <MDL	ug/L	no
Metribuzin	Aug. 22/06	0.12 <MDL	ug/L	no
Monochlorobenzene	Aug. 22/06	0.58 <MDL	ug/L	no
Paraquat	Aug. 22/06	1.0 <MDL	ug/L	no

Parathion	Aug. 22/06	0.18 <MDL	ug/L	no
Pentachlorophenol	Aug. 22/06	0.15 <MDL	ug/L	no
Phorate	Aug. 22/06	0.11 <MDL	ug/L	no
Picloram	Aug. 22/06	0.25 <MDL	ug/L	no
Polychlorinated Biphenyls(PCB)	Aug. 22/06	0.04 <MDL	ug/L	no
Prometryne	Aug. 22/06	0.23 <MDL	ug/L	no
Simazine	Aug. 22/06	0.15 <MDL	ug/L	no
THM (NOTE: show latest annual average)	Jan. 1/06 – Dec. 31/06	28.3	ug/L	no
Temephos	Aug. 22/06	0.31 <MDL	ug/L	no
Terbufos	Aug. 22/06	0.12 <MDL	ug/L	no
Tetrachloroethylene	Aug. 22/06	0.45 <MDL	ug/L	no
2,3,4,6-Tetrachlorophenol	Aug. 22/06	0.14 <MDL	ug/L	no
Triallate	Aug. 22/06	0.10 <MDL	ug/L	no
Trichloroethylene	Aug. 22/06	0.38 <MDL	ug/L	no
2,4,6-Trichlorophenol	Aug. 22/06	0.25 <MDL	ug/L	no
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Aug. 22/06	0.22 <MDL	ug/L	no
Trifluralin	Aug. 22/06	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)**