2012 Annual Report on Drinking Water Quality

January 1 – December 31, 2012

Peterborough Water Treatment System

Drinking Water System Number 220000497
Municipal Drinking Water Licence 145-101, Issue 1
Owner: Peterborough Utilities Commission
Operating Authority: Peterborough Utilities Services Inc.

Peterborough Utilities Commission is the owner of the Peterborough Municipal Water System. Peterborough Utilities Services Inc. is under contract with the owners to operate and maintains the System, as the Operating Authority. We are committed to providing safe drinking water to all our customers. This report has been prepared in accordance with Section 11 of Ontario Regulation 170/03 and as mandated by the Safe Drinking Water Act 2002. Free copies of this report are available on our website www.peterboroughutilities.ca Further information on the Drinking Water Regulations can be found on the Ministry of the Environment website at www.ene.gov.on.ca.

Inside this Report

System Description

Raw Water

The source of raw (untreated) water for Peterborough's drinking water is the Otonabee River. The Otonabee River Water is of good quality and can be described as a moderately coloured water of low turbidity. The river water temperature ranges from 0°C (winter) to approximately 26°C (summer). The raw river water is what we call a surface water supply, which means that it is considered to be an unprotected source.

Accordingly, we assume that raw water always required full treatment at the Peterborough Water Treatment Plant to make it drinkable or potable.

The river water quality is monitored by staff at the plant as well as the Otonabee Region Conservation Authority (ORCA) and the Peterborough Health Unit (beaches only). The watershed is protected by planning and approvals processes through the City of Peterborough and ORCA. Since 1998, ORCA has monitored water quality in the Otonabee watershed under the Watershed 2000 Program and the Provincial Water Quality Monitoring Network.

Water Treatment Plant

The plant is located at 1230 Water Street North, Peterborough, adjacent the Riverview Park & Zoo. The plant was initially built in 1922 and expanded in 1952, 1965 and 1995. The conventional treatment process includes coagulation, flocculation, sedimentation, filtration and chlorine disinfection and a process waste treatment facility. Aluminum sulphate (alum) is used as the primary coagulant. The current rated capacity o the plant is 104 ML/day.

Water Storage Tanks and Reservoirs

Treated water is stored at various locations throughout the City in underground reservoirs and elevated storage tanks. Storage is used to supplement supply during times of high water demand and in emergency situations such as firefighting. The water storage capacity in the system is 48.2 ML.

Water Pumping Stations

There are three individual pressure zones in Peterborough. Water supply is pumped from the plant or from the Water Street Pumping Station. Approximately one half of the City's water supply is pumped using water-driven turbine pumps powered by the Otonabee River flow. There are four water booster pumping stations around the city, which pump water from lower pressure zones to higher pressure zones. Two of the most critical stations have diesel-powered backup in case of an electrical power outage.

Water Distribution Piping Systems

The water distribution system consists of approximately 415 kilometers of pipe (water mains), 2,182 hydrants and 26,831 individual water services. Hydrants are colour-coded according to the Ontario Fire Code requirements to indicate the available flow rate at a 20 p.s.i. residual pressure.

The following chemicals were used in the drinking water treatment process:

- Chlorine
- Alum (Aluminum Sulphate)
- BW46M (Sodium Silicate)
- Hydrofluosilicic Acid
- N Silicate (Sodium Silicate)

Legislation

Since the issuance of the Walkerton Reports I and II in 2002, many legislative and regulatory changes have occurred for those supplying drinking water in Ontario. The following are the primary pieces of legislation that have directly affected the operation of the City of Peterborough's municipal water system.

Safe Drinking Water Act

As recommended by Commissioner O'Connor in the Walkerton Inquiry Report Part 2, the government passed the Safe Drinking Water Act in 2002, which expands on existing policy and practice and introduced new features to protect drinking water in Ontario. The Act's purpose is to protect human health through the control and regulation of drinking-water systems and drinking-water testing. The Act also provides legislative authority to implement the recommendations made in Commissioner O'Connor's Walkerton Part One and Two Reports. As of August 2007, all 28 recommendations made in Part One, and all 93 in Part Two have been implemented. The Act also has the benefit of gathering in one place all legislation and regulations relating to the treatment and distribution of drinking water. Parts of the Act address:

- Accreditation of operating authorities
- Municipal drinking water systems
- Drinking water testing
- Inspections
- Compliance and Enforcement

Drinking Water Quality Management Standard (DWQMS)

On October 30, 2006, the finalized standard was issued on the Environmental Bill of Rights Registry. The purpose of this Standard is to assist owners and operating authorities in the effective management and operation of their municipal residential drinking water systems. This Standard outlines requirements for a Quality Management System (QMS) to ensure high quality drinking water. In the development of a QMS, the Operating Authority must create an Operational Plan; this document will define the QMS and will be subject to external audits for accreditation. Staff developed and implemented a QMS specific to the Peterborough municipal water system. That received full scope accreditation in June 2011.

Ontario Regulation 435/07: Financial Plans

In 2007, MOE developed the Financial Plans Regulation (O. Reg. 453/07) under the SDWA that prescribes the requirements for Financial Plans. The Financial Plans Regulation requires all owners of municipal residential drinking water systems to prepare Financial Plans that detail the system's financial information projected forward for at least six years. The Financial Plans must include income statements (which set out revenues and expenses), as well as balance sheets (which include financial assets, non-financial assets, total liabilities, cash flow, etc.). The Financial Plans must then be formally approved by the owner of the municipal system through a resolution of the municipal council. The Financial Plan requires regular updates before every license renewal application (every 5 years) the Financial Plan was then submitted to the Ministry of the Environment prior to the July 2010 deadline.

Adverse Water Quality Results

There were nine incidents of adverse drinking water quality in 2012. All incidences were reported to the MOE and appropriate corrective action was taken. Details and corrective action are described below;

Five of the adverse results were the presence of total coliform in the distribution samples. These samples were from Normandy, Southpark, Ravenwood (2) and Erskine Sampling Stations. These results were returned between July 3 and Aug 27, 2012. For each occurrence the distribution system was tested at the sample location, above and below the location. There were no confirmed total coliform result in any of the sampling stations and it is thought that the results were a laboratory error. We have worked with the lab to try and determine the cause if unusual adverse numbers.

January 30, 2012 the fluoride was recorded to be dosing above Maximum Acceptable Concentrations (MAC) at 1.5 mg/L, actual value was 1.76 mg/L. This spike was recorded by a grab sample taken just after the dosing process. Additionally the fluoride pump just started up, causing a momentary spike. The on-line recording of the fluoride level just before the water enters the distribution was 0.39 mg/L. In the future the staff will taper the fluoride feed to prevent such a spike in the dose.

On July 25 staff recorded a low chlorine residual result in the distribution system at Lansdowne and Clonsilla. The water main was flushed in the immediate area until chlorine residual readings were adequate. Staff placed a bleeder line in the area (near Canadian Tire west on Lansdowne St.) to prevent re-occurrence. The bleeder line was checked on August 7, and staff recorded another low chlorine residual at this location. Staff installed a second bleeder line to flush a greater volume of water. The water main was flushed in the

immediate area until chlorine residual readings were adequate..

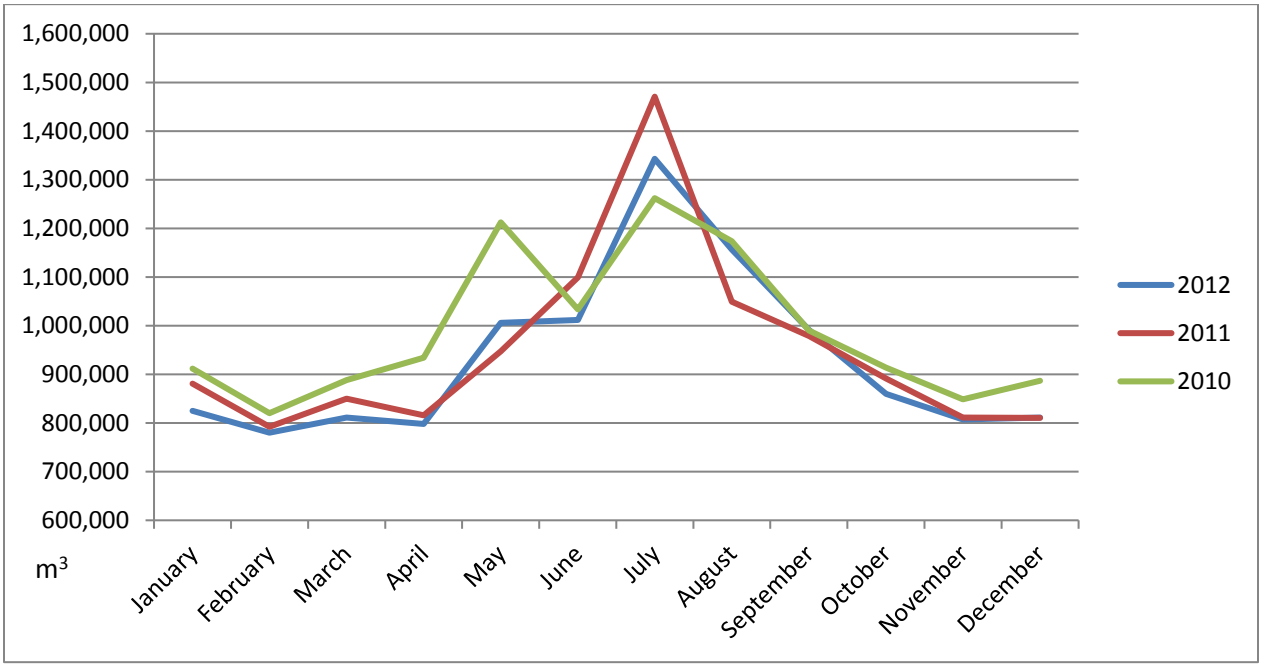
Further sampling at this location was acceptable.

On August 31 a low chlorine residual result was recorded (customer complaint) in the distribution system at Trentway Vista. The water main was flushed in the immediate area until chlorine residual readings were adequate.

Water Usage

From January 1 to December 31, 2012, the Peterborough water Treatment Plant produced a total of 11,200,825 cubic metres of water. This compares to 11,398,571 cubic metres from the previous year (a decrease of 1.76%).

2012 Monthly Water Consumption



Water Quality

Microbiological Parameters Sampling Summary – Schedule 10, O Reg. 170/03

	Number of Samples	Range of E.Coli Results	Range of Total Coliform Results	Number of HPC Samples	Range of HPC Results
Raw	247	0 - 370	0 - 2118	247	0 - 14500
Treated	247	0 - 0	0 - 0	247	0 - 48
Distribution	1451	0 - 0	0 - 1	1451	0 - 60

Operational Sampling Summary - Schedule 7, O Reg. 170/03

	Number of Grab Samples	Range of Results	Unit of Measure	Number of Exceedances
Turbidity	11 x 8,760	0.01 – 2.00	NTU	
Chlorine	8,760	0.83 – 1.87	mg/L	
Fluoride	8,760	0.20 – 1.74*	mg/L	1*

* see adverse result description on page 4.

Additional Sampling

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
Aug 16, 2006	Suspended Solids waste process	Jan 17 Apr 19 Jul 12 Oct 18	11.38 6.64 4.50 6.27	mg/L

Inorganic Sampling Summary – Schedule 23, O Reg. 170/03

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Antimony	Jan 10	0.03	µg/L	No
Arsenic	Jan 10	0.4	µg/L	No
Barium	Jan 10	27.9	µg/L	No
Boron	Jan 10	7.8	µg/L	No
Cadmium	Jan 10	0.074	µg/L	No
Chromium	Jan 10	0.8	µg/L	No
*Lead	Jan 10	0.02	µg/L	No
Mercury	Jan 10	0.02 <MDL	µg/L	No
Selenium	Jan 10	1 <MDL	µg/L	No
Sodium	Jan 10	9.64	mg/L	No
Uranium	Jan 10	0.056	µg/L	No
Fluoride	Annual Average	0.55	mg/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Nitrite	Jan 17 Apr 19 Jul 12 Oct 18	0.005<MDL 0.005<MDL 0.05 0.05	mg/L	No
Nitrate	Jan 17 Apr 19 Jul 12 Oct 18	0.230 0.099 0.05 0.05	mg/L	No

Organic Sampling Summary - Schedule 24, o Reg. 170/03

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Alachlor	Jan 10	0.02<MDL	µg/L	No
Aldicarb	Jan 10	0.01<MDL	µg/L	No
Aldrin + Dieldrin	Jan 10	0.01<MDL	µg/L	No
Atrazine + N-dealkylated metobolites	Jan 10	0.01<MDL	µg/L	No
Azinphos-methyl	Jan 10	0.02<MDL	µg/L	No
Bendiocarb	Jan 10	0.01<MDL	µg/L	No
Benzene	Jan 10	0.32<MDL	µg/L	No
Benzo(a)pyrene	Jan 10	0.004<MDL	µg/L	No
Bromoxynil	Jan 10	0.33<MDL	µg/L	No
Carbaryl	Jan 10	0.01<MDL	µg/L	No
Carbofuran	Jan 10	0.01<MDL	µg/L	No
Carbon Tetrachloride	Jan 10	0.16<MDL	µg/L	No
Chlordane (Total)	Jan 10	0.01<MDL	µg/L	No
Chlorpyrifos	Jan 10	0.02<MDL	µg/L	No
Cyanazine	Jan 10	0.03<MDL	µg/L	No
Diazinon	Jan 10	0.02<MDL	µg/L	No
Dicamba	Jan 10	0.20<MDL	µg/L	No
1,2-Dichlorobenzene	Jan 10	0.41<MDL	µg/L	No
1,4-Dichlorobenzene	Jan 10	0.36<MDL	µg/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Jan 10	0.01<MDL	µg/L	No
1,2-Dichloroethane	Jan 10	0.35<MDL	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	Jan 10	0.33<MDL	µg/L	No
Dichloromethane	Jan 10	0.35<MDL	µg/L	No
2-4 Dichlorophenol	Jan 10	0.15<MDL	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Jan 10	0.19<MDL	µg/L	No
Diclofop-methyl	Jan 10	0.40<MDL	µg/L	No
Dimethoate	Jan 10	0.03<MDL	µg/L	No
Dinoseb	Jan 10	0.36<MDL	µg/L	No
Diquat	Jan 10	1<MDL	µg/L	No
Diuron	Jan 10	0.003<MDL	µg/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Glyphosate	Jan 10	6<MDL	µg/L	No
Heptachlor + Heptachlor Epoxide	Jan 10	0.01<MDL	µg/L	No
Lindane (Total)	Jan 10	0.01<MDL	µg/L	No
Malathion	Jan 10	0.02<MDL	µg/L	No
Methoxychlor	Jan 10	0.01<MDL	µg/L	**No**
Metolachlor	Jan 10	0.01<MDL	µg/L	No
Metribuzin	Jan 10	0.02<MDL	µg/L	No
Monochlorobenzene	Jan 10	0.3<MDL	µg/L	No
Paraquat	Jan 10	1<MDL	µg/L	No
Parathion	Jan 10	0.02<MDL	µg/L	No
Pentachlorophenol	Jan 10	0.15<MDL	µg/L	No
Phorate	Jan 10	0.01<MDL	µg/L	No
Picloram	Jan 10	0.25<MDL	µg/L	No
Polychlorinated Biphenyls(PCB)	Jan 10	0.04<MDL	µg/L	No
Prometryne	Jan 10	0.03<MDL	µg/L	No
Simazine	Jan 10	0.01<MDL	µg/L	No
THM (NOTE: show latest annual average)	Jan 17 Apr 19 Jul 12 Oct 18	68.5	µg/L	No
Temephos	Jan 10	0.01<MDL	µg/L	No
Terbufos	Jan 10	0.01<MDL	µg/L	No
Tetrachloroethylene	Jan 10	0.35<MDL	µg/L	No
2,3,4,6-Tetrachlorophenol	Jan 10	0.14<MDL	µg/L	No
2,4,6-Trichlorophenol	Jan 10	0.25<MDL	µg/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Jan 10	0.22<MDL	µg/L	No
Trifluralin	Jan 10	0.02<MDL	µg/L	No
Vinyl Chloride	Jan 10	0.17<MDL	µg/L	No

Lead Sampling Summary – Schedule 15.1, O Reg. 170/03

The Peterborough Municipal Water Treatment System was granted relief from regulatory lead sampling in Schedule 15.1 of O. Reg. 170/03, as described in Certificate of Approval PB220000497RR-01, dated March, 22 2011.

Location Type	Number of Samples	Range of Lead Results	Unit of Measure	Number of Exceedances
Plumbing	2	0.26 – 1.17	mg/L	0
Distribution	2	0.0 – 0.17	mg/L	0

Questions or comments

Please contact us either by mail, phone or email.

Peterborough Utilities Services Inc.

1867 Ashburnham Drive, Peterborough, ON K9L 1P8

705-748-9300 ext 1258

Patricia Skopelianos, Water Quality Coordinator

pskopelianos@peterboroughutilities.ca