2018 Annual Report on Drinking Water Quality

January 1 – December 31, 2018

Peterborough Water Treatment System

Drinking Water System Number 220000497
Municipal Drinking Water Licence 145-101, Issue 3
Owner: Peterborough Utilities Commission
Operating Authority: PUG Services Corp.

Peterborough Utilities Commission is the owner of the Peterborough Municipal Water System. PUG Services Corp. 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 requires 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, 1995 and 2016. The conventional treatment process includes coagulation, flocculation, sedimentation, filtration and chlorine disinfection and a process waste treatment facility to dewater the backwash sludge.

Aluminum sulphate (alum) is used as the primary coagulant. The current rated capacity of 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 461 kilometers of pipe (water mains), 2,292 hydrants and 27,229 individual water services. Hydrants are colour-coded according to the Ontario Fire Code requirements to indicate the available flow rate at a 20 psi residual pressure.

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

- Chlorine
- Alum (Aluminum Sulphate)
- Hydrofluosilicic Acid

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, which received full scope accreditation in June 2011.

Ontario Regulation 435/07: Financial Plans

In 2007, Ministry Of Environment, Conservation & Parks (MECP) 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 submitted to the MECP prior to the December 21, 2015 deadline.

Adverse Water Quality Results

There were two incidents of adverse drinking water quality in 2018. Both incidents were reported to the MECP and appropriate corrective action was taken. Details and corrective action are described below;

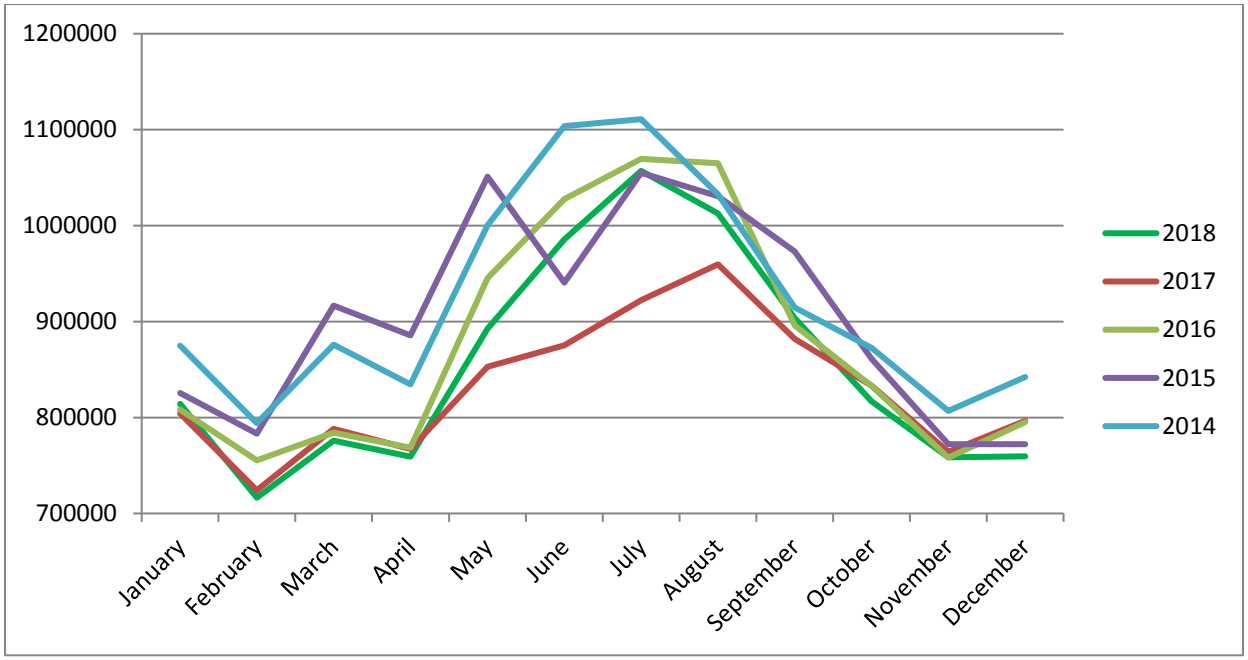
An adverse water quality sample was reported at the Southpark Sampling Station for 3 total coliforms Additional samples were re-submitted at the same location as well as additional samples above and below the original location. All follow-up samples reported zero total coliforms.

An adverse water quality sample was reported for a low chlorine residual in the distribution system, on Technology Drive. The distribution system was flushed to restore chlorine residual levels.

Water Usage

From January 1 to December 31, 2018, the Peterborough Water Treatment Plant produced a total of 10,252,181 cubic metres of water. This compares to 996,945 cubic metres from the previous year (an increase of 2.84%).

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	232	0 - 120	0-580	244	0 - 850
Treated	233	0 - 0	0 - 0	244	0 - 5
Distribution	1245	0 - 0	0 - 0	1457	0 - 29

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	0.02 – 1.12	NTU	0
Chlorine	8,760	0.63 – 2.66	mg/L	0
Fluoride	365	0.01 – 0.76 LIMS	mg/L	0

Additional Sampling

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure	Number of Exceedances
Aug 16, 2006	Suspended Solids waste process	Quarter 1 Quarter 2 Quarter 3 Quarter4	1 4 1 0	mg/L	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Antimony	Jan 11	<0.02	µg/L	0
Arsenic	Jan 11	<0.02	µg/L	0
Barium	Jan 11	23.7	µg/L	0
Boron	Jan 11	17	µg/L	0
Cadmium	Jan 11	0.004	µg/L	0
Chromium	Jan 11	0.08	µg/L	0
Lead	Jan 11	0.0010	µg/L	0
Mercury	Jan 11	0.01 <MDL	µg/L	0
Selenium	Jan 11	0.04	µg/L	0
Sodium	March 21	6.7	mg/L	0
Uranium	Jan 11	0.03	µg/L	0
Nitrite	Jan 16 Apr 17 Jul 10 Oct 23	0.05 0.05 0.05 0.05	mg/L	0
Nitrate	Jan 16 Apr 17 Jul 10 Oct 23	0.12 0.22 0.05 0.05	mg/L	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Alachlor	Aug 28	0.02<MDL	µg/L	No
Atrazine + N-dealkylated metobolites	Jan 11	0.01<MDL	µg/L	0
Atrazine	Jan 11	0.01<MDL	µg/L	0
Azinphos-methyl	Jan 11	0.05<MDL	µg/L	0
Benzene	Jan 11	0.32<MDL	µg/L	0
Benzo(a)pyrene	Jan 11	0.004<MDL	µg/L	0
Bromoxynil	Jan 11	0.33<MDL	µg/L	0
Carbaryl	Jan 11	0.05<MDL	µg/L	0
Carbofuran	Jan 11	0.01<MDL	µg/L	0

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Carbon Tetrachloride	Jan 11	0.16<MDL	µg/L	0
Chlorpyrifos	Jan 11	0.02<MDL	µg/L	0
Diazinon	Jan 11	0.02<MDL	µg/L	0
Dicamba	Jan 11	0.20<MDL	µg/L	0
1,2-Dichlorobenzene	Jan 11	0.41<MDL	µg/L	0
1,4-Dichlorobenzene	Jan 11	0.36<MDL	µg/L	0
1,2-Dichloroethane	Jan 11	0.35<MDL	µg/L	0
1,1-Dichloroethylene (vinylidene chloride)	Jan 11	0.33<MDL	µg/L	0
Dichloromethane	Jan 11	0.35<MDL	µg/L	0
2-4 Dichlorophenol	Jan 11	0.15<MDL	µg/L	0
2,4-Dichlorophenoxy acetic acid (2,4-D)	Jan 11	0.19<MDL	µg/L	0
Diclofop-methyl	Jan 11	0.40<MDL	µg/L	0
Dimethoate	Jan 11	0.03<MDL	µg/L	0
Diquat	Jan 11	1<MDL	µg/L	0
Diuron	Jan 11	0.03<MDL	µg/L	0
Glyphosate	Jan 11	1<MDL	µg/L	0
Malathion	Jan 11	0.02<MDL	µg/L	0
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	Jan 11	0.00012 <MDL	µg/L	0
Metolachlor	Jan 11	0.01<MDL	µg/L	0
Metribuzin	Jan 11	0.02<MDL	µg/L	0
Monochlorobenzene	Jan 11	0.3<MDL	µg/L	0
Paraquat	Jan 11	1<MDL	µg/L	0
Pentachlorophenol	Jan 11	0.15<MDL	µg/L	0
Phorate	Jan 11	0.01<MDL	µg/L	0
Picloram	Jan 11	1<MDL	µg/L	0
Polychlorinated Biphenyls(PCB)	Jan 11	0.04<MDL	µg/L	0
Prometryne	Jan 11	0.03<MDL	µg/L	0
Simazine	Jan 11	0.01<MDL	µg/L	0
THM - Annual Average		76.75	µg/L	0
Terbufos	Jan 11	0.01<MDL	µg/L	0
Tetrachloroethylene	Jan 11	0.35<MDL	µg/L	0
2,3,4,6-Tetrachlorophenol	Jan 11	0.20<MDL	µg/L	0
Trillate	Jan 11	0.01<MDL	µg/L	0
Trichloroethylene	Jan 11	0.44<MDL	µg/L	0
2,4,6-Trichlorophenol	Jan 11	0.25<MDL	µg/L	0
Trifluralin	Jan 11	0.02<MDL	µg/L	0
Vinyl Chloride	Jan 11	0.17<MDL	µg/L	0

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	112	0.0005 - 0.0119	mg/L	8 homes
Distribution	129	<0.0005 - 0.0011	mg/L	0

Questions or comments

Please contact us either by mail, phone or email.

PUG Services Corp.

1867 Ashburnham Drive, Peterborough, ON K9L 1P8

705-748-9300 ext. 1258

Patricia Skopelianos, Water Quality Manager

pskopelianos@peterboroughutilities.ca