2020 Annual Report on Drinking Water Quality

January 1 – December 31, 2020

Peterborough Water Treatment System

Drinking Water System Number 220000497
Municipal Drinking Water Licence 145-101, Issue 5
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 469 kilometers of pipe (water mains), 2,394 hydrants and 27,323 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

Woodland Acres Drinking Water System (# 210001503) receives drinking water from the Peterborough Drinking Water System, and is considered to be a connected system.

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).

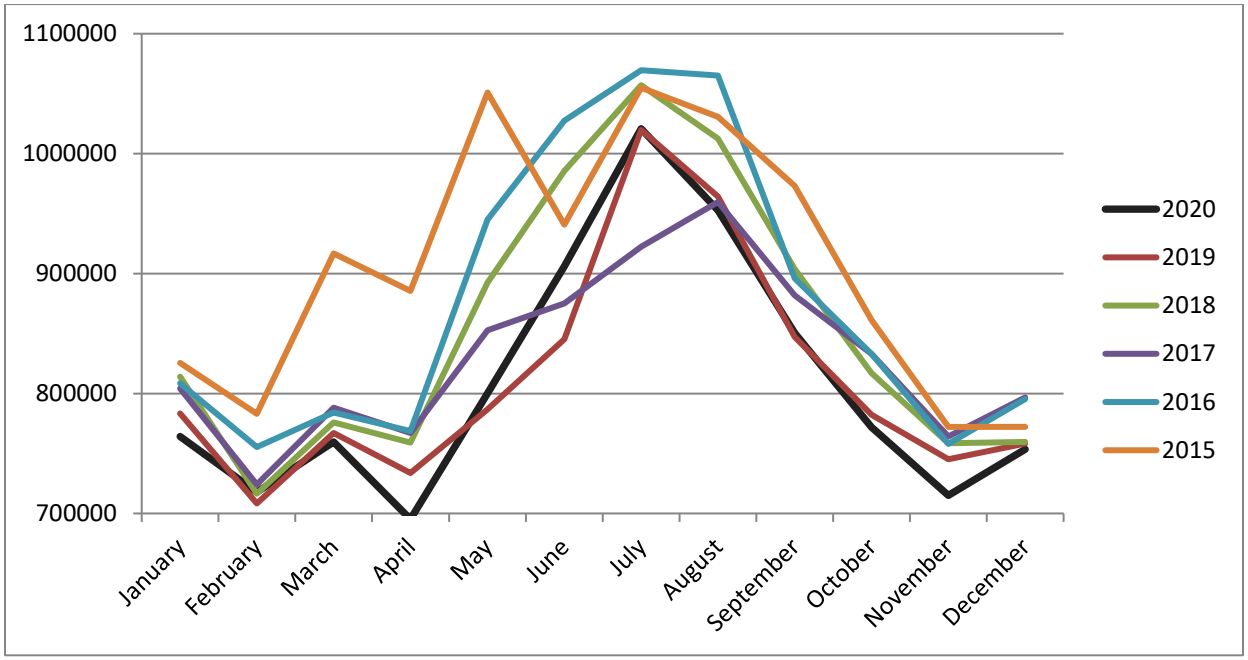
Adverse Water Quality Results

There were no incidents of adverse drinking water quality test results in 2020, under Schedule 16 of O. Reg. 170/03.

Water Usage

From January 1 to December 31, 2020, the Peterborough Water Treatment Plant produced 9,709,122 cubic metres of water. This compares to 9,741,716 cubic metres from the previous year (a decrease of less than 1%).

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	249	0 - 75	12-770	248	12 - 2190
Treated	250	0 - 0	0 - 0	249	0 - 17
Distribution	1284	0 - 0	0 - 0	1284	0 - 14

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 – 1.82	NTU	0
Chlorine	8,760	0.798 – 2.40	mg/L	0
Fluoride	365	0.01 – 0.85 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 Quarter 4	0 2 1 2	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 29	<0.09	µg/L	0
Arsenic	Jan 29	<0.02	µg/L	0
Barium	Jan 29	26.2	µg/L	0
Boron	Jan 29	2	µg/L	0
Cadmium	Jan 29	<0.003	µg/L	0
Chromium	Jan 29	0.13	µg/L	0
Lead	Jan 29	<0.0005	µg/L	0
Mercury	Jan 29	<0.09	µg/L	0
Selenium	Jan 29	<0.04	µg/L	0
Sodium	Jan 29	10.0	mg/L	0
Uranium	Jan 29	0.030	µg/L	0
Nitrite	Jan 07 Apr 21 Jul 14 Oct 21	0.05 0.05 0.05 0.05	mg/L	0
Nitrate	Jan 07 Apr 21 Jul 14 Oct 21	0.09 0.32 0.07 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	Jan 29	0.02<MDL	µg/L	0
Atrazine + N-dealkylated metobolites	Jan 29	0.01<MDL	µg/L	0
Atrazine	Jan 29	0.01<MDL	µg/L	0
Azinphos-methyl	Jan 29	0.05<MDL	µg/L	0
Benzene	Jan 29	0.32<MDL	µg/L	0
Benzo(a)pyrene	Jan 29	0.004<MDL	µg/L	0
Bromoxynil	Jan 29	0.33<MDL	µg/L	0
Carbaryl	Jan 29	0.05<MDL	µg/L	0
Carbofuran	Jan 29	0.01<MDL	µg/L	0
Carbon Tetrachloride	Jan 29	0.16<MDL	µg/L	0

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Chlorpyrifos	Jan 29	0.02<MDL	µg/L	0
Diazinon	Jan 29	0.02<MDL	µg/L	0
Dicamba	Jan 29	0.20<MDL	µg/L	0
1,2-Dichlorobenzene	Jan 29	0.41<MDL	µg/L	0
1,4-Dichlorobenzene	Jan 29	0.36<MDL	µg/L	0
1,2-Dichloroethane	Jan 29	0.35<MDL	µg/L	0
1,1-Dichloroethylene (vinylidene chloride)	Jan 29	0.33<MDL	µg/L	0
Dichloromethane	Jan 29	0.35<MDL	µg/L	0
2-4 Dichlorophenol	Jan 29	0.15<MDL	µg/L	0
2,4-Dichlorophenoxy acetic acid (2,4-D)	Jan 29	0.19<MDL	µg/L	0
Diclofop-methyl	Jan 29	0.40<MDL	µg/L	0
Dimethoate	Jan 29	0.06<MDL	µg/L	0
Diquat	Jan 29	1<MDL	µg/L	0
Diuron	Jan 29	0.03<MDL	µg/L	0
Glyphosate	Jan 29	1<MDL	µg/L	0
HAA – Annual Average		72.50	µg/L	0
Malathion	Jan 29	0.02<MDL	µg/L	0
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	Jan 29	0.00012 <MDL	µg/L	0
Methoxychlor	Jan 29	<0.01	µg/L	0
Metolachlor	Jan 29	0.01<MDL	µg/L	0
Metribuzin	Jan 29	0.02<MDL	µg/L	0
Monochlorobenzene	Jan 29	0.3<MDL	µg/L	0
Paraquat	Jan 29	1<MDL	µg/L	0
Pentachlorophenol	Jan 29	0.15<MDL	µg/L	0
Phorate	Jan 29	0.01<MDL	µg/L	0
Picloram	Jan 29	1<MDL	µg/L	0
Polychlorinated Biphenyls(PCB)	Jan 29	0.04<MDL	µg/L	0
Prometryne	Jan 29	0.03<MDL	µg/L	0
Simazine	Jan 29	0.01<MDL	µg/L	0
THM - Annual Average		76.50	µg/L	0
Terbufos	Jan 29	0.01<MDL	µg/L	0
Tetrachloroethylene	Jan 29	0.35<MDL	µg/L	0
2,3,4,6-Tetrachlorophenol	Jan 29	0.20<MDL	µg/L	0
Trillate	Jan 29	0.01<MDL	µg/L	0
Trichloroethylene	Jan 29	0.44<MDL	µg/L	0
2,4,6-Trichlorophenol	Jan 29	0.25<MDL	µg/L	0
Trifluralin	Jan 29	0.02<MDL	µg/L	0
Vinyl Chloride	Jan 29	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 Schedule D of the Municipal Drinking Water Licence #145-101, Issue #5, dated November 7, 2019.

Location Type	Number of Samples	Range of Lead Results	Unit of Measure	Number of Exceedances
Plumbing	32	<0.0005 - 0.0262	mg/L	1 homes
Distribution	49	<0.0005 - 0.0005	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