



February 24, 2020

Town of Moosonee
P.O. Box 727
5 First Avenue
Moosonee, ON
P0L 1Y0

Attention: Trevor Keefe, Public Works Manager

**RE: Moosonee Drinking Water System
2019 Annual Report**

Trevor,

Please find attached the 2019 Annual Operations Report for the Moosonee drinking water system, in accordance with Section 11(1) of O. Reg. 170/03. This report covers the period from January 1 to December 31 and meets the requirement of being prepared by February 28 of this year.

Please ensure that a copy of this report is given, without charge, to every person who requests a copy. In addition, please make certain that effective steps are taken to advise residents that copies of the report are available, and of how a copy can be obtained.

Finally, as per Schedule 22 of O. Reg. 170/03, please ensure that a copy of the report is given to the members of municipal council no later than March 31, 2020.

If you have any questions regarding the report, we would be pleased to address them and you should contact the undersigned accordingly.

Sincerely,

VEOLIA WATER CANADA INC.

A handwritten signature in black ink, appearing to read "G Prangley", written over a light blue horizontal line.

Greg Prangley
Project Manager

c. K. Zhang, Moosonee operations

2019 ANNUAL REPORT FOR WATER SYSTEMS

Part 1 – ANNUAL REPORT (as required by O. Reg. 170/03, Section 11)

Drinking-Water System Number:	260007114
Drinking-Water System Name:	Moosonee Drinking Water System
Drinking-Water System Owner:	Corporation of the Town of Moosonee
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1-December 31, 2019

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Complete if your Category is Large Municipal Residential or Small Municipal Residential	Complete for all other Categories
Does your Drinking-Water System serve more than 10,000 people? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Number of Designated Facilities served: n/a
Is your annual report available to the public at no charge on a web site on the Internet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Did you provide a copy of your annual report to all Designated Facilities you serve? <input type="checkbox"/> Yes <input type="checkbox"/> No
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection. Municipal Office 5 First Avenue Moosonee, ON Tel: (705)336-2993	Number of Designated Facilities served: n/a Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? <input type="checkbox"/> Yes <input type="checkbox"/> No

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
n/a	

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?

n/a

Indicate how you notified system users that your annual report is available, and is free of charge.

<input type="checkbox"/> Public access/notice via the web	<input checked="" type="checkbox"/> Public access/notice via Government Office	<input checked="" type="checkbox"/> Public access/notice via a newspaper
<input checked="" type="checkbox"/> Public access/notice via Public Request	<input type="checkbox"/> Public access/notice via a Public Library	<input checked="" type="checkbox"/> Public access/notice via other method local bulletin boards and the community television channel_

Describe your Drinking Water System

Surface water supply from the Moose River. Water treatment plant rated at 3000 m ³ /day consisting of a dual train package unit with in-line flash mixing, two-stage flocculation, upflow solids contact clarifier

with automatic sludge withdrawal, and dual media filters with air scour/water backwash. There are separate chemical feed systems for primary coagulant, coagulant aid, disinfection and pH adjustment. Sludge is gravity settled in the clarifier then thickened and dewatered in a sludge bagging system for disposal at the local landfill. There is a 2140 m³ reservoir for treated water storage.

List all water treatment chemicals used over this reporting period

Coagulant - polyaluminum chloride
 Coagulant aid - polymer
 Disinfection – sodium hypochlorite
 pH adjustment – caustic soda

Please provide a brief description and a breakdown of monetary expenses incurred

**Note that this does not including anything within the 2019 capital funding (SCF) project*
 Flow meter calibrations (Lakeside Controls) \$6948
 Chemical pump parts \$1126.50
 Process Chemicals \$102678.19
 QMS audit \$2846.25

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	Corrective Action	Corrective Action Date
July 15, 2019	Total Coliforms (distribution)	5 counts	Resample and test	July 21, 2019
October 3, 2019	Total Coliforms (distribution)	8 counts	Resample and test, pipes flushed	Oct. 6, 2019

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 Results (min #) - (max #)	Range of Total Coliform Results (min #) - (max #)	Number of HPC Samples	Range of HPC Results (min #) - (max #)
Raw	53	<2-25*	18-254*	n/a	n/a
Treated	53	0	0-8**	53	<1-50
Distribution	110	0	0	54	<1-50

*note that samples from April 30, May 7, 13, 21, June 17, and July 23 were "overgrown" for both E. coli and coliforms

** see AWQI section for details

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 #)	Units
Filter #1 effluent turbidity	8760	0.02-2.0*	NTU
Filter #2 effluent turbidity	8760	0.00-2.00*	NTU
Chlorine (POE)	8760	0.46-2.40	mg/L
Chlorine (distribution)	425	0.20-1.27	mg/L
Fluoride (If the DWS provides fluoridation)	n/a	n/a	

Any incidents of water exceeding the regulatory limit (1.0NTU) entering the distribution system were for less than 15 mins. Most occurrences of greater than 1.0NTU were due to backwashing and calibrations. This flow goes to waste

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	Unit of Measure
None				

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	11/26/2019	<0.5	µg/L	No
Arsenic	11/26/2019	<1	µg/L	No
Barium	11/26/2019	9.0	µg/L	No
Boron	11/26/2019	9.0	µg/L	No
Cadmium	11/26/2019	<0.1	µg/L	No
Chromium	11/26/2019	1	µg/L	No
Lead-see results below				
Mercury	11/26/2019	<0.1	µg/L	No
Selenium	11/26/2019	<1	µg/L	No
Sodium	11/26/2019	9.84	mg/L	No
Uranium	11/26/2019	<1	µg/L	No
Fluoride	11/26/2019	ND	mg/L	No
Nitrite	02/12/2019	<0.02	mg/L	No
Nitrate	02/12/2019	<0.008	mg/L	No
Nitrite	05/21/2019	<0.05	mg/L	No
Nitrate	05/21/2019	<0.05	mg/L	No
Nitrite	08/13/2019	<0.05	mg/L	No
Nitrate	08/13/2019	<0.05	mg/L	No
Nitrite	11/26/2019	<0.05	mg/L	No
Nitrate	11/26/2019	<0.05	mg/L	No

Summary of Lead Results during this reporting period (Winter: Dec. 15/18-April 15/19; Summer: June 15-Oct. 15/19)

Sampling Period	Range of Results (µg/L) from Residential Samples (# of Samples taken)	Non-residential locations	Distribution System	Any Adverse Water Quality Incidents?
Winter	No samples required	n/a	<0.1-6.7	No
Summer	No samples required	n/a	<0.1-0.1	No

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	11/26/2019	ND	µg/L	NO
Atrazine + N-dealkylated metabolites	11/26/2019	ND	µg/L	NO
Azinphos-methyl	11/26/2019	ND	µg/L	NO
Benzene	11/26/2019	ND	µg/L	NO
Benzo(a)pyrene	11/26/2019	ND	µg/L	NO
Bromoxynil	11/26/2019	ND	µg/L	NO
Carbaryl	11/26/2019	ND	µg/L	NO
Carbofuran	11/26/2019	ND	µg/L	NO
Carbon Tetrachloride	11/26/2019	ND	µg/L	NO
Chlorpyrifos	11/26/2019	ND	µg/L	NO
Diazinon	11/26/2019	ND	µg/L	NO
Dicamba	11/26/2019	ND	µg/L	NO
1,2-Dichlorobenzene	11/26/2019	ND	µg/L	NO
1,4-Dichlorobenzene	11/26/2019	ND	µg/L	NO
1,2-Dichloroethane	11/26/2019	ND	µg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	11/26/2019	ND	µg/L	NO
Dichloromethane	11/26/2019	ND	µg/L	NO
2-4 Dichlorophenol	11/26/2019	ND	µg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	11/26/2019	ND	µg/L	NO
Diclofop-methyl	11/26/2019	ND	µg/L	NO
Dimethoate	11/26/2019	ND	µg/L	NO
Diquat	11/26/2019	ND	µg/L	NO
Diuron	11/26/2019	ND	µg/L	NO
Glyphosate	11/26/2019	ND	µg/L	NO
HAA	Q1-Q4 2019	65.5	µg/L	N/A (limit of 80 goes into effect Jan. 1/2020)
Malathion	11/26/2019	ND	µg/L	NO
MCPA	11/26/2019	ND	µg/L	NO
Metolachlor	11/26/2019	ND	µg/L	NO
Metribuzin	11/26/2019	ND	µg/L	NO
Monochlorobenzene	11/26/2019	ND	µg/L	NO
Paraquat	11/26/2019	ND	µg/L	NO
Pentachlorophenol	11/26/2019	ND	µg/L	NO
Phorate	11/26/2019	ND	µg/L	NO
Picloram	11/26/2019	ND	µg/L	NO
Polychlorinated Biphenyls(PCB)	11/26/2019	ND	µg/L	NO
Prometryn	11/26/2019	ND	µg/L	NO
Simazine	11/26/2019	ND	µg/L	NO
THM (NOTE: show latest annual average)	Q1-Q4 2019	64.4	µg/L	NO
Terbufos	11/26/2019	ND	µg/L	NO

Tetrachloroethylene	11/26/2019	ND	µg/L	NO
2,3,4,6-Tetrachlorophenol	11/26/2019	ND	µg/L	NO
Triallate	11/26/2019	ND	µg/L	NO
Trichloroethylene	11/26/2019	ND	µg/L	NO
2,4,6-Trichlorophenol	11/26/2019	ND	µg/L	NO
Trifluralin	11/26/2019	ND	µg/L	NO
Vinyl Chloride	11/26/2019	ND	µg/L	NO

ND=Non-detect (below measurable limit)

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Total THMs (annual avg.)	2019 (Q1-Q4)	64.4	µg/L	100

Part 2 – SUMMARY REPORT (as required by O. Reg. 170/03, Schedule 22)

Non-Compliance with Legislations, Regulations, Approvals & Orders

During this period, the Facility was operated in full compliance with the Act, the regulations and the Facility's approval, save and except for the following:

None

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES AS PER 2019 MOE INSPECTION

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

1. No harmful algal bloom plan in place
Recommendation: Prepare a harmful algal bloom plan that may include details related to: visual monitoring, reporting, sampling plan, staff training
2. Permit to Take Water expires Feb. 10, 2020
3. Retain the services of a knowledgeable contractor to repair the sludge bagger system
4. Update the WTP Operations Manual
5. Remove or relocate the chlorine injection point currently upstream of the analyzer measuring primary disinfection

System Capability Assessment

Comparison of Flow Rates (m³/d):

Month	Average Flow	Maximum Flow	Max Instantaneous flow (L/s)
January	697	879	19.4
February	748	806	15.7
March	785	1305	41.1
April	688	726	15.0
May	656	699	22.1
June	667	780	63.5
July	659	756	52.2
August	630	728	27.3
September	647	694	53.6
October	636	709	63.3
November	576	632	45.0
December	600	730	24.0
AVERAGE	665	n/a	n/a
MAXIMUM	n/a	1797	63.5
SYSTEM CAPACITY	2998	2998	-
% CAPACITY	22.2%	43.5%	n/a