



American Water Canada Corp.
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February 25, 2015

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

Attention: Shannon McGillivray, Chief Administrative Officer

**RE: Moosonee Drinking Water System
2014 Annual Report**

Dear Shannon,

Please find attached the 2014 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, 2015.

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

Sincerely,

AMERICAN WATER CANADA CORP.

Greg Prangley
Project Manager, Ontario Regional Projects

c. R. Grahlman, AWC Moosonee

2014 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, 2014

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

Generator repair \$17,737
Install high lift pump #1, remove pump #3 \$15,000
Repair HL pump #3; approx. \$14,000
Install HL pump #3, remove pump #2; approx. \$15,000
Purchase of two low lift pumps: \$1,600ea.

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
January 29, 2014	THM (4Q avg)	125.65µg/L	Flushed system and resampled	Jan. 30, 2014
January 31, 2014	Pressure (main break)	<20psi	Repaired break; repressurized. Precautionary BWA issued; resampled	Feb. 5, 2014
Feb. 9, 2014	Pressure (failure of backup genset)	<20psi	Precautionary BWA issued; Power restored, checked chlorine residuals in distribution system; collected bacteriological samples	Feb. 13, 2014
Feb. 12, 2014	Pressure (main break)	<20psi	Repaired break; repressurized. Precautionary BWA issued; resampled	Feb. 18, 2014
April 13, 2014	POE Chlorine analyzer failure	No readings	Hourly sampling until analyzer was reset as per manufacturer technician direction. Monitored results for several days after repairs	Apr. 24, 2014
April 14, 2014	THM (4Q avg)	127.0µg/L	Flushed system and resampled	April 14, 2014
May 16, 2014	Pressure (main break)	<20psi	Repaired break; repressurized. Precautionary BWA issued; resampled	May 18, 2014
July 14, 2014	THM (4Q avg)	112.6µg/L	Flushed system and resampled	July 24, 2014
August 28, 2014	Pressure (main break)	<20psi	PBWA issued; Repaired break, flushed system, samples taken in distribution system	Aug. 31, 2014
August 31, 2014	Pressure (main break)	<20psi	Repaired break; repressurized; Precautionary BWA issued; resampled	Sept. 2, 2014

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	51*	<2->200	2-300	n/a	n/a
Treated	51*	0	0	51*	<10-200
Distribution	136	0	0	52	<10-30

* Please note that Raw and Treated samples were missed during the week of Dec. 3. Please see Summary (Part 2) below

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	0.00-2.00*	NTU
Filter #2 effluent turbidity	8760	0.00-2.00*	NTU
Chlorine	8760	0.36-3.74**	mg/L
Fluoride (If the DWS provides fluoridation)	n/a	n/a	

* There were no incidents of water exceeding the regulatory limit (1.0NTU) entering the distribution system. All occurrences of greater than 1.0NTU were due to backwashing and calibrations. This flow goes to waste

** There were no instances where treated water going into the distribution system had a chlorine residual of less than 0.5mg/L. Low readings from SCADA were due to calibrations and system pH fluctuations.

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	10/14/2014	<0.5	µg/L	No
Arsenic	10/14/2014	<1	µg/L	No
Barium	10/14/2014	6.4	µg/L	No
Boron	10/14/2014	6.4	µg/L	No
Cadmium	10/14/2014	<0.1	µg/L	No
Chromium	10/14/2014	<1	µg/L	No
Lead-see results below				
Mercury	10/14/2014	<0.1	µg/L	No
Selenium	10/14/2014	<1	µg/L	No
Sodium	10/22/2013	14.9	mg/L	No
Uranium	10/14/2014	<1	µg/L	No
Fluoride	10/22/2013	<0.1	mg/L	No
Nitrite	01/21/2014	<0.05	mg/L	No
Nitrate	01/21/2014	<0.10	mg/L	No
Nitrite	04/01/2014	<0.05	mg/L	No
Nitrate	04/01/2014	0.18	mg/L	No
Nitrite	07/08/2014	<0.05	mg/L	No
Nitrate	07/08/2014	<0.10	mg/L	No
Nitrite	10/14/2014	<0.05	mg/L	No
Nitrate	10/14/2014	<0.10	mg/L	No

Summary of Lead Results during this reporting period (Winter: Dec. 15/13-April 15/14; Summer: June 15-Oct. 15/14)

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	n/a	No
Summer	No samples required	n/a	n/a	No

Only Alkalinity analysis was required in 2014

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	10/14/2014	ND	µg/L	NO
Aldicarb	10/14/2014	ND	µg/L	NO
Aldrin + Dieldrin	10/14/2014	ND	µg/L	NO
Atrazine + N-dealkylated metabolites	10/14/2014	ND	µg/L	NO
Azinphos-methyl	10/14/2014	ND	µg/L	NO
Bendiocarb	10/14/2014	ND	µg/L	NO
Benzene	10/14/2014	ND	µg/L	NO
Benzo(a)pyrene	10/14/2014	ND	µg/L	NO
Bromoxynil	10/14/2014	ND	µg/L	NO
Carbaryl	10/14/2014	ND	µg/L	NO
Carbofuran	10/14/2014	ND	µg/L	NO
Carbon Tetrachloride	10/14/2014	ND	µg/L	NO
Chlordane (Total)	10/14/2014	ND	µg/L	NO
Chlorpyrifos	10/14/2014	ND	µg/L	NO
Cyanazine	10/14/2014	ND	µg/L	NO
Diazinon	10/14/2014	ND	µg/L	NO
Dicamba	10/14/2014	ND	µg/L	NO
1,2-Dichlorobenzene	10/14/2014	ND	µg/L	NO
1,4-Dichlorobenzene	10/14/2014	ND	µg/L	NO
Dichlorodiphenyltrichloroethane (DDT) + metabolites	10/14/2014	ND	µg/L	NO
1,2-Dichloroethane	10/14/2014	ND	µg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	10/14/2014	ND	µg/L	NO
Dichloromethane	10/14/2014	ND	µg/L	NO
2,4-Dichlorophenol	10/14/2014	ND	µg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	10/14/2014	ND	µg/L	NO
Diclofop-methyl	10/14/2014	ND	µg/L	NO
Dimethoate	10/14/2014	ND	µg/L	NO
Dinoseb	10/14/2014	ND	µg/L	NO
Diquat	10/14/2014	ND	µg/L	NO
Diuron	10/14/2014	ND	µg/L	NO
Glyphosate	10/14/2014	ND	µg/L	NO
Heptachlor + Heptachlor Epoxide	10/14/2014	ND	µg/L	NO
Lindane (Total)	10/14/2014	ND	µg/L	NO

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

Malathion	10/14/2014	ND	µg/L	NO
Methoxychlor	10/14/2014	ND	µg/L	NO
Metolachlor	10/14/2014	ND	µg/L	NO
Metribuzin	10/14/2014	ND	µg/L	NO
Monochlorobenzene	10/14/2014	ND	µg/L	NO
Paraquat	10/14/2014	ND	µg/L	NO
Parathion	10/14/2014	ND	µg/L	NO
Pentachlorophenol	10/14/2014	ND	µg/L	NO
Phorate	10/14/2014	ND	µg/L	NO
Picloram	10/14/2014	ND	µg/L	NO
Polychlorinated Biphenyls(PCB)	10/14/2014	ND	µg/L	NO
Prometryn	10/14/2014	ND	µg/L	NO
Simazine	10/14/2014	ND	µg/L	NO
THM (NOTE: show latest annual average)	Q1-Q4 2014	72.8	µg/L	NO
Temephos	10/14/2014	ND	µg/L	NO
Terbufos	10/14/2014	ND	µg/L	NO
Tetrachloroethylene	10/14/2014	ND	µg/L	NO
2,3,4,6-Tetrachlorophenol	10/14/2014	ND	µg/L	NO
Triallate	10/14/2014	ND	µg/L	NO
Trichloroethylene	10/14/2014	ND	µg/L	NO
2,4,6-Trichlorophenol	10/14/2014	ND	µg/L	NO
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	10/14/2014	ND	µg/L	NO
Trifluralin	10/14/2014	ND	µg/L	NO
Vinyl Chloride	10/14/2014	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.)	2014 (Q1-Q4)	72.8	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:

- 1) Continuous monitoring equipment being utilized to fulfill O. Reg. 170/03 requirements was not performing tests for the parameters with at least the minimum frequency specified in Schedule 6 and/or was not recording data with the prescribed format
Actions Required: a) Outline the efforts undertaken to determine the cause of the hardware/software malfunction
 b) Outline actions to be implemented to ensure future malfunctions do not result in loss of continuous monitoring data
 c) The date by which the action(s) will have been completed

- 2) During the week of Dec. 3, raw and treated (not distribution) samples were missed
Actions Taken: Training with staff on sampling requirements was conducted. New Standard Operating Procedure created for bacteriological sampling

System Capability Assessment

Comparison of Flow Rates (m³/d):

Month	Average Flow	Maximum Flow	Max Instantaneous flow (L/s)
January	772	1115	15.1
February	791	915	16.3
March	890	1132	19.6
April	1028	1281	20.6
May	854	1032	16.0
June	757	1069	17.6
July	770	1029	14.4
August	773	1001	15.0
September	733	937	15.2
October	888	950	14.4
November	799	920	13.7
December	770	913	11.6
AVERAGE	819	n/a	n/a
MAXIMUM	1028	1281	20.6
SYSTEM CAPACITY	2998	2998	34.7 L/s
% CAPACITY	27.3%	42.7%	n/a