



OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	220003582
Drinking-Water System Name:	Cardinal Water System
Drinking-Water System Owner:	Township of Edwardsburgh Cardinal
Drinking-Water System Category:	Large Municipal, Residential
Period being reported:	January 1, 2018 to December 31, 2018

<p align="center"><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [] No [X]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Cardinal Wastewater Treatment Plant 4000 John St Cardinal, Ontario K0E 1E0 </div>	<p align="center"><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
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Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

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

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?
Yes [] No []



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

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method _____

Describe your Drinking-Water System

This is a surface water treatment plant that receives its source water supply from the St. Lawrence River. Treatment consists of pre-chlorination, basket screens, chemically assisted coagulation and flocculation, 4 rapid dual media filters (anthracite coal and sand) for physical removal of turbidity, ultraviolet irradiation (primary disinfection) followed by post chlorination (secondary disinfection). Parameters such as uv intensity, chlorine residual, pH, filter and potable turbidity are continuously monitored. All process and security alarms are monitored 24/7 by Falcon Security. The distribution system includes an elevated storage tank, 6 sample stations, 82 hydrants and a mix of distribution material piping.

List all water treatment chemicals used over this reporting period:

Sodium Hypochlorite – ANSI/NSF 60
 SternPAC (Aluminum chloride hydroxide sulphate) –ANSI/NSF 60

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

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

Walker Street main and service replacement - \$253,740.00
 Filter Panel Upgrade - \$47,739.00
 Five water main breaks (excluding in-house labour)- \$23,880.00
 Rebuild of High Lift Pump - \$10,875.00

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	Unit of Measure	Corrective Action	Corrective Action Date

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 Or Fecal Results (min)-(max)	Range of Total Coliform Results (min)-(max)	Number of HPC Samples	Range of HPC Results (min)-(max)
Raw	52	0-13	2-36	N/A	N/A
Treated	52	0-0	0-0	52	<2-2
Distribution	187	0-0	0-0	156	<2-64

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report:

Parameter	Number of Grab Samples	Range of Results (min #)-(max #)
Potable Turbidity		
Continuous	8760	0.06-0.20
Grab	365	0.04-0.19
Filter 1A Turbidity		
Continuous	8760	0.05-0.24
Grab	730	0.04-0.18
Filter 1B Turbidity		
Continuous	8760	0.03-0.34
Grab	729	0.04-0.24
Filter 2A Turbidity		
Continuous	8760	0.05-0.54
Grab	728	0.04-0.25
Filter 2B Turbidity		
Continuous	8760	0.06-0.41
Grab	729	0.04-0.32
Chlorine (Primary)		
Continuous	8760	0.39-2.96
Grab	730	0.5-3.3
Chlorine(Point of Entry)		
Continuous	8760	0.64-3.27
Grab	730	1.5-3.2
Chlorine(Distribution)		
Grab: Free:	834	0.31-2.4
Total:	728	0.97-2.60
UV Disinfection	8760	45.48-74.39
Fluoride	N/A	N/A

NOTE: For continuous monitors use 8760 as the number of samples.

NOTE: Units of measures include:

Chlorine – mg/L

Turbidity – NTU

UV – mj/cm²

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
N/A	N/A	N/A	N/A	N/A

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	05-Oct-18	0.0001	mg/L	No
Arsenic	05-Oct-18	0.0006	mg/L	No
Barium	03-Oct-18	0.022	mg/L	No
Boron	03-Oct-18	0.020	mg/L	No
Cadmium	05-Oct-18	<0.000015	mg/L	No
Chromium	03-Oct-18	<0.002	mg/L	No
*Lead	04-Jan-18	<0.00002	mg/L	No
Mercury	05-Oct-18	<0.00002	mg/L	No
Selenium	05-Oct-18	<0.001	mg/L	No
Sodium	03-Jul-18	20.4	mg/L	No
Uranium	05-Oct-18	0.00027	mg/L	No
Fluoride	04-Dec-18	0.5	mg/L	No
Nitrite	04-Dec-18	<0.1	mg/L	No
Nitrate	04-Dec-18	0.3	mg/L	No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min) – (max)	Number of Exceedances
Plumbing	N/A	N/A	N/A
Distribution	4	0.00007-0.00048	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	15-Oct-18	<0.3	ug/L	No
Atrazine + N-dealkylated metabolites	15-Oct-18	<0.5	ug/L	No
Azinphos-methyl	15-Oct-18	<1	ug/L	No
Benzene	03-Oct-18	<0.5	ug/L	No
Benzo(a)pyrene	15-Oct-18	<0.005	ug/L	No
Bromoxynil	15-Oct-18	<0.3	ug/L	No
Carbaryl	15-Oct-18	<3	ug/L	No
Carbofuran	15-Oct-18	<1	ug/L	No
Carbon Tetrachloride	03-Oct-18	<0.2	ug/L	No
Chlorpyrifos	15-Oct-18	<0.5	ug/L	No
Diazinon	15-Oct-18	<1	ug/L	No
Dicamba	15-Oct-18	<5	ug/L	No
1,2-Dichlorobenzene	03-Oct-18	<0.5	ug/L	No
1,4-Dichlorobenzene	03-Oct-18	<0.5	ug/L	No
1,2-Dichloroethane	03-Oct-18	<0.5	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	03-Oct-18	<0.5	ug/L	No
Dichloromethane	03-Oct-18	<0.3	ug/L	No
2,4 Dichlorophenol	15-Oct-18	<0.1	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	15-Oct-18	<5	ug/L	No
Diclofop-methyl	15-Oct-18	<0.5	ug/L	No
Dimethoate	15-Oct-18	<1	ug/L	No
Diquat	09-Oct-18	<5	ug/L	No
Diuron	15-Oct-18	<5	ug/L	No
Glyphosate	09-Oct-18	<25	ug/L	No
Malathion	15-Oct-18	<5	ug/L	No
MCPA	15-Oct-18	<10	Ug/L	No
Metolachlor	15-Oct-18	<3	ug/L	No
Metribuzin	15-Oct-18	<3	ug/L	No
Monochlorobenzene	03-Oct-18	<0.5	ug/L	No
Paraquat	09-Oct-18	<1	ug/L	No
Pentachlorophenol	15-Oct-18	<0.1	ug/L	No
Phorate	15-Oct-18	<0.3	ug/L	No
Picloram	15-Oct-18	<5	ug/L	No
Polychlorinated Biphenyls(PCB)	04-Oct-18	<0.05	ug/L	No
Prometryne	15-Oct-18	<0.1	ug/L	No
Simazine	15-Oct-18	<0.5	ug/L	No
THM (NOTE: show latest annual average)	2018	58.7	ug/L	No
HAA (annual average)	2018	38.6	ug/L	No
Terbufos	15-Oct-18	<0.3	ug/L	No
Tetrachloroethylene	03-Oct-18	<0.5	ug/L	No
2,3,4,6-Tetrachlorophenol	15-Oct-18	<0.1	ug/L	No



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Triallate	15-Oct-18	<10	ug/L	No
Trichloroethylene	03-Oct-18	<0.5	ug/L	No
2,4,6-Trichlorophenol	15-Oct-18	<0.1	ug/L	No
Trifluralin	15-Oct-18	<0.5	ug/L	No
Vinyl Chloride	03-Oct-18	<0.5	ug/L	No

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

Parameter	Result Value	Unit of Measure	Date of Sample