OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	**220003378**
Drinking-Water System Name:	Chatham Drinking Water System
Drinking-Water System Owner:	Municipality of Chatham-Kent
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1 – December 31, 2018

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people? Yes [X] No [ ]

Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Chatham-Kent P.U.C.
325 Grand Ave. East
P.O. Box 1191
Chatham, ON
N7M 5L8

Complete for all other Categories.

Number of Designated Facilities served:

N/A

Did you provide a copy of your annual report to all Designated Facilities you serve?
Yes [ ] No [ ]

Number of Interested Authorities you report to: N/A

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?
Yes [ ] No [ ]

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
None	

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.

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

Describe your Drinking-Water System

The Kent County Raw Pumping Station serves the Chatham Water Treatment Plant, as well as the South Chatham-Kent Water Treatment Plant. Raw water from Lake Erie is pumped to the stand pipe at Cedar Springs, and then flows by gravity to the Surge Tower in Chatham.
The treatment process at the Chatham WTP involves Actiflo micro-sand ballasted clarifiers, which include coagulation, injection of microsand and clarification, as well as settling and filtration. In addition, for colour events involving manganese, sodium permanganate and powdered activated carbon filtration may be used.
The Distribution System includes 4 elevated tanks, located in Chatham, Paincourt, Mitchell's Bay and Dresden as well as 2 standpipes located in Eberts and Thamesville.
Fluoride is also added to the water to prevent tooth decay.
The residue management process includes equalization, flocculation, clarification, thickening and dewatering. Supernatant from these clarifiers is discharged into the Thames River after dechlorination. Remaining solids residuals are treated at the Chatham Water Pollution Control Plant.

List all water treatment chemicals used over this reporting period

1. Chlorine Gas
2. Fluoride
3. Polyaluminum Chloride
4. Sodium Bisulphite
5. Sodium Permanganate
6. PAC
7. Polymer

Were any significant expenses incurred to?

[X] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred	
1. Chlorine Tonner Replacement parts	$ 1,900
2. Security Cameras	4,000
3. Replaced Screens in Actiflo	3,200
4. Vacuum Pump Rebuild	3,500
5. Electric Chain Hoist	4,000
6. High Lift Pump #1 Rebuild	6,220
7. 3000 lbs of GAC	51,000
8. Davit Bases	25,000
9. Valve Repairs	4,500
10. High Lift Pump # 4 Rebuild	9,260
11. High Lift Pump # 2 Valve Repairs	6,750
12. Filter # 2 Cleaning	20,000
13. Pressure Gauge Transmitter	1,450
14. Cyclone Replacement Parts	9,000
15. Analyzer Parts	12,500
16. Tideflex Valves for Towers	2,800
17. New Verbatim	8,200
18. Fluoride Controller	3,400
19. Two Chlorine Controllers	5,600

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
Dec 12, 2017	Free Chlorine Residual in the Distribution System	>4.00	mg/L	Sodium hypochlorite dosing set points adjusted	Dec 12 & 13, 2017 The incident was discovered and reported by Compliance 2018 Jan 16
Mar 26	Free Chlorine Residual in the Distribution System	>4.00	mg/L	Power failure & generator failed to start. Generator issue resolved & power restored. Chlorine residual spiked at the Point of Entry at start-up of High Lift Pumps	Mar 26
Mar 29	Water Main Break – Suspected Contamination			Boil Water Advisory Issued, Flush, Sample, Test	Mar 29 & 30
May 15	Total Coliform in a Distribution sample	1	cfu/100mL	Flush, Resample	May 16
May 29	Total Coliforms in a Distribution sample	1	cfu/100mL	Flush, Resample	May 29
Jul 4	Total Coliforms in a Distribution sample	7	cfu/100mL	Flush, Resample	July 4
Jul 4	Total Coliforms in a Distribution sample	46	cfu/100mL	Flush, Resample	July 4, 5, & 6
Jul 5	Total Coliform in a Distribution sample	1	cfu/100mL	Flush, Resample	July 5 & 6
Aug 8	Total Coliform in a Distribution sample	1	cfu/100mL	Flush, Resample	August 9, 10 & 11
Aug 10	Total Coliform in a Distribution sample	1	cfu/100mL	Flush, Resample	August 10 & 11
Oct 11	Boil Water Advisory			BWA, Flush, Resample until 2 Consecutive Sets Clear	October 11 & 12
Dec 7	Boil Water Advisory			BWA, Flush, Resample until 2 Consecutive Sets Clear	December 7 & 8

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 - NDOGT	0 - NDOGT	0	N/A
Point of Entry (Treated)	52	0 - 0	0 - 0	52	<10 - 950
Distribution	1612	0 - 0	0 - 46	1612	<10 - NDOGT

*NDOGN – No Data Overgrown with Non-Target Organisms
*NDOGT – No Data Overgrown with Target Organisms

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 #)
Turbidity Filters	8760	0.001 – 0.705
Chlorine R1+R2 IN	8760	0.057 – 5.00
Fluoride (If the DWS provides fluoridation)	8760	0.29 – 0.76

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

***NOTE**: Record the unit of measure if it is **not** milligrams per litre.*

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
MDWL 027-102: Pg. 12 Residue Management Table 3: Monthly No limit	Total Aluminum	Jan 3 Feb 7 Mar 6 Apr 4 May 1 Jun 6 Jul 4 Aug 8 Sept 5 Oct 4 Nov 7 Dec 5	430 753 550 553 398 537 430 770 1733 793 710 900	ug/L
MDWL 027-102: Pg. 12 Residue Management Table 3: Monthly No limit	Chlorine	Jan 3 Feb 7 Mar 6 Apr 4 May 1 Jun 6 Jul 4 Aug 8 Sept 5 Oct 4 Nov 7 Dec 5	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	mg/L free chlorine
MDWL 027-102: Pg. 12 Residue Management Table 3: Monthly No limit	Total Phosphorous	Jan 3 Feb 7 Mar 6 Apr 4 May 1 Jun 6 Jul 4 Aug 8 Sept 5 Oct 4 Nov 7 Dec 5	0.020 0.020 0.020 0.020 0.020 0.020 0.020 0.021 0.026 0.020 0.027 0.020	mg/L

MDWL 027-102: Pg. 12 Residue Management Table 3: Annual Avg Concentration Limit: 25 mg/L	Total Suspended Solids	Jan 3 Feb 7 Mar 6 Apr 4 May 1 Jun 6 Jul 4 Aug 8 Sept 5 Oct 4 Nov 7 Dec 5 **Annual Avg Concentration**	6.3 5.3 4.3 6.0 3.3 7.7 6.3 10 14 18 34 13 **10.7**	mg/L

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

*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

	Sample Date Feb 20	Sample Date May 7	Sample Date Aug 20	Sample Date Nov 19	Exceedances
Antimony – ug/L			<0.50		None
Arsenic- ug/L			<1.0		None
Barium – ug/L			20		None
Boron – ug/L			18		None
Cadmium – ug/L			<0.10		None
Chromium – ug/L			<5.0		None
Lead – ug/L	See Schedule 15.1 Summary				
Mercury – mg/L			<0.0001		None
Selenium – ug/L			<2.0		None
Sodium – mg/L	7.7	9.4	8.9	9.2	None
Uranium – ug/L			1.8		None
Fluoride – mg/L	Continuous Monitoring Required: See Operational Section				
Nitrate – mg/L	0.27	0.11	0.24	<0.10	None
Nitrite – mg/L	0.01	0.01	0.01	<0.010	None

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
Residential	0	0	0
Non Residential	0	0	0
Distribution	8	<0.50 – <0.50	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results. Results measured in ug/L unless otherwise indicated.

Parameter	Sample Date	Results Value	Unit of Measure	Exceedances
Alachlor	Aug 20	< 0.50	ug/L	No
Atrazine + N-dealkylated metabolites	Aug 20	< 1.0	ug/L	No
Azinphos - methyl	Aug 20	< 2.0	ug/L	No
Benzene	Aug 20	< 0.10	ug/L	No
Benzo(a)pyrene	Aug 20	<0.0090	ug/L	No
Bromoxynil	Aug 20	< 0.50	ug/L	No
Carbaryl	Aug 20	< 5.0	ug/L	No
Carbofuran	Aug 20	< 5.0	ug/L	No
Carbon Tetrachloride	Aug 20	< 0.10	ug/L	No
Chloropyrifos	Aug 20	< 1.0	ug/L	No
Diazinon	Aug 20	< 1.0	ug/L	No
Dicamba	Aug 20	< 1.0	ug/L	No
1,2 - Dichlorobenzene	Aug 20	< 0.20	ug/L	No
1,4 - Dichlorobenzene	Aug 20	< 0.20	ug/L	No
1,2 - Dichloroethane	Aug 20	< 0.20	ug/L	No
1,1- Dichloroethylene (vinylidenechloride)	Aug 20	< 0.10	ug/L	No
Dichloromethane	Aug 20	< 0.50	ug/L	No
2,4 - Dichlorophenol	Aug 20	< 0.25	ug/L	No
2,4 - Dichlorophenoxy acetic acid (2,4 - D)	Aug 20	< 1.0	ug/L	No
Diclofop - methyl	Aug 20	< 0.90	ug/L	No
Dimethoate	Aug 20	< 2.5	ug/L	No
Diquat	Aug 20	< 7.0	ug/L	No
Diuron	Aug 20	< 10	ug/L	No
Glyphosate	Aug 20	< 10	ug/L	No

Haloacetic acid– sampled quarterly (NOTE: show latest annual average) **Running Annual Average: 11.7**	Feb 20 May 7 Aug 20 Nov 19 **Average**	15 18 8.7 <5.0 **11.7**	ug/L ug/L ug/L ug/L	No
Malathion	Aug 20	< 5.0	ug/L	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA) mg/L	Aug 20	< 10	ug/L	No
Metolachlor	Aug 20	< 0.50	ug/L	No
Metribuzin	Aug 20	< 5.0	ug/L	No
Monochlorobenzene (chlorobenzene)	Aug 20	< 0.10	ug/L	No
Paraquat	Aug 20	< 1.0	ug/L	No
Pentachlorophenol	Aug 20	< 0.50	ug/L	No
Phorate	Aug 20	< 0.50	ug/L	No
Picloram	Aug 20	< 5.0	ug/L	No
Polychlorinated Byphenyls (PCB)	Aug 20	< 0.05	ug/L	No
Prometryne	Aug 20	< 0.25	ug/L	No
Simazine	Aug 20	< 1.0	ug/L	No
Trihalomethanes ug/L– sampled quarterly **Running Annual Average: 42.5**	Feb 20 May 7 Aug 20 Nov 19 **Average**	32.4 31.1 54.4 52.4 **42.5**	ug/L	No
Terbufos	Aug 20	< 0.50	ug/L	No
Tetrachloroethylene (perchloroethylene)	Aug 20	< 0.10	ug/L	No
2,3,4,6 - Tetrachlorophenol	Aug 20	< 0.50	ug/L	No
Triallate	Aug 20	< 1.0	ug/L	No
Trichloroethylene	Aug 20	< 0.10	ug/L	No
2,4,6 - Trichlorophenol	Aug 20	< 0.50	ug/L	No
Trifluralin	Aug 20	< 1.0	ug/L	No
Vinyl Chloride	Aug 20	< 0.20	ug/L	No

ADDITIONAL
POINT OF ENTRY

Parameter	**Sample Date** **Feb 20**	**Sample Date** **May 7**	**Sample Date** **Aug 20**	**Sample Date** **Nov 19**
pH	7.72	7.82	7.61	7.62
HARDNESS – **mg/L**	110	120	120	110
ALKALINITY – **mg/L**	89	94	95	88
COLOUR - **TCU**	< 2	< 2	< 2	< 2
FLUORIDE – **mg/L**	0.62	0.59	0.53	0.49
ALUMINUM – **mg/L**	0.06	0.10	0.12	0.09

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
None			

Summary of additional voluntary sampling and testing during this reporting period.

Parameter	Date Sampled	Result: Point of Entry	Result: Distribution	Unit of Measure
Microcystin	May 25	<0.150	<0.150	ug/L
	Jun 04	<0.150	<0.150	
	Jun 11	<0.150	<0.150	
	Jun 18	<0.150	<0.150	
	Jun 25	<0.150	<0.150	
	Jul 03	<0.150	<0.150	
	Jul 09	<0.150	<0.150	
	Jul 16	<0.150	<0.150	
	Jul 23	<0.150	<0.150	
	Jul 30	<0.150	<0.150	
	Aug 07	<0.150	<0.150	
	Aug 13	<0.150	<0.150	
	Aug 20	<0.150	<0.150	
	Aug 27	<0.150	<0.150	
	Sept 4	<0.150	<0.150	
	Sept 10	<0.150	<0.150	
	Sept 17	<0.150	<0.150	
	Sept 24	<0.150	<0.150	
	Oct 1	<0.150	<0.150	
	Oct 9	<0.150	<0.150	
	Oct 15	<0.150	<0.150	
	Oct 22	<0.150	<0.150	
	Oct 29	<0.150	<0.150	
	Nov 5	<0.150	<0.150	
	Nov 13	<0.150	<0.150	
	Nov 19	<0.150	<0.150	
	Nov 26	<0.150	<0.150	