



ANNUAL REPORT

Drinking-Water System Number:	220002903
Drinking-Water System Name:	Petrolia Drinking Water System
Drinking-Water System Owner:	Corporation of the Town of Petrolia
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1 st , 2020 to December 31 st , 2020

<p><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;"> <p>Town of Petrolia 411 Greenfield Street, P.O Box 1270 Petrolia, ON N0N 1R0</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <div style="border: 1px solid black; padding: 2px; display: inline-block;">n/a</div> </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: <div style="border: 1px solid black; padding: 2px; display: inline-block;">n/a</div> </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>
---	---

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
Town of Enniskillen	220004377

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 [X] 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

The Petrolia Drinking Water System consists of a water treatment plant and a distribution system. The Petrolia Brights Grove Water Treatment Plant is a membrane filtration surface water treatment facility with a total design capacity of 12,000 m³/day, located in Brights Grove Ontario. It is owned by the Town of Petrolia and operated by the Ontario Clean Water Agency along with the distribution system.

The water treatment facility consists of an intake system, a treatment system and distribution pumping system that supplies water to the Town of Petrolia, Town of Enniskillen, Town of Oil Springs and Dawn-Euphemia.

Intake

The Petrolia Brights Grove WTP draws raw water from Lake Huron through 400mm cast iron intake pipe that extends approximately 365 m into the lake.

Treatment Plant

Filtration: At the water plant the in pre-filtered by two automatic strainers to protect the filter membranes from coarser particles in the raw water.

After the water has been strained it enters the membrane filtration system which removes fine particles, sediment, algae, protozoa and bacteria.

Disinfection: Primary disinfection is achieved by the addition of chlorine gas solution at the membrane filtrate effluent header with contact time achieved in the contact tanks and clearwells. Pre-chlorination and post-chlorination application points are located at the low lift discharge header and after the clearwell.

Hydrofluorosilicic acid is injected into the membrane filtrate upstream of the point where filtrate is introduced in the chlorine contact tanks.

Process Drain Water: Membrane filter backwash, strainer and naturalization tank wastewater is all discharged into a settling tank. Supernatant from the settling tank overflows back into Lake Huron. Sludge is removed from the settling as required.

Monitoring and Control: The treatment plant and distribution components are controlled by a Supervisory Control and Data Acquisition (SCADA) computer system and monitored by certified operators.



Standby Power: A generator is onsite to ensure the plant can remain in operation should there be a power supply interruption.

Distribution

Four high lift pumps at the water plant provide water to customers along the 350mm transmission main to the 7,000 m³ Mandaumin Booster Station. Water is pumped from the booster station to a 2,290 m³ elevated tank located in the Town of Petrolia.

List all water treatment chemicals used over this reporting period

Chlorine Gas
 Sodium Hypochlorite 12% *
 Hydrofluorosilicic Acid
 Citric Acid 50%*
 Sodium Hydroxide*
 Calcium Thiosulphate*
 *used in the cleaning process of the membranes

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

- Spare parts for membranes
- Compressor repairs
- Strainers repairs and spare parts
- Watermain repairs
- Hydrant repairs
- Valve Repairs
- Clearwell upgrades
- CIP System upgrades
- SCADA upgrades
- Neutralization tank replacement

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
2020-08-24	Total Coliform	1	cfu	Resample	2020-08-26



Ontario Drinking-Water Systems Regulation O. Reg. 170/03

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	0-10 cfu/100 mL	0-90 cfu/100 mL	n/a	n/a
Treated	52	0-0 cfu/100 mL	0- 0 cfu/100 mL	52	<10-<10
Distribution	267	0-0 cfu/100 mL	0-1 cfu/100 mL	160	<10- 1260cfu/mL

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 #)	Unit of Measure
Turbidity (Rack 1)	8760	0.0-1.0*	NTU
Turbidity (Rack 2)	8760	0.0-1.0*	NTU
Turbidity (Rack 3)	8760	0.0-1.0*	NTU
Fluoride AIT 5004/5102	8760	0.00-1.25	mg/L
Free Chlorine (Primary Disinfection) AIT 5002**	8760	1.50-3.47	mg/L
Free Chlorine (Primary Disinfection) AIT 5109 –Contact Tank 1	8760	0.81-3.38	mg/L
Free Chlorine (Primary Disinfection) AIT 5110 Contact Tank 2	8760	0.32-4.35	mg/L
Free Chlorine (Secondary Disinfection) AIT 5003/5101	8760	0.45-3.47	mg/L
Free Chlorine Distribution-Grab	363	0.39-2.17	mg/L

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

*Note – no AWQI, brief spike, less than 5 minutes

** 5002 no longer in service as of April 5109 and 5110 from April on



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
2017-04-21	Suspended Solids-Residue Management	2020-01-31	71	mg/L
		2020-05-01	26	
		2020-07-15	9	
		2020-10-29	9	
		2020-12-21	3	
			Avg: 23.6	

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 Results		MAC (µg/L)	Number of Exceedances
		Minimum	Maximum		
Distribution - Lead Results (µg/L)	0	n/a	n/a	n/a	n/a
Distribution - Alkalinity (mg/L)	6	74	81	n/a	n/a
Distribution - pH	6	7.30	8.24	n/a	n/a

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

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TW	2020/01/20	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2020/01/20	0.04	5.00	No	No
Azinphos-methyl (ug/L) - TW	2020/01/20	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2020/01/20	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2020/01/20	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2020/01/20	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2020/01/20	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2020/01/20	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2020/01/20	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW	2020/01/20	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2020/01/20	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2020/01/20	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2020/01/20	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2020/01/20	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2020/01/20	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2020/01/20	<MDL 0.33	14.00	No	No



Ontario Drinking-Water Systems Regulation O. Reg. 170/03

Dichloromethane (Methylene Chloride) (ug/L) - TW	2020/01/20	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2020/01/20	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2020/01/20	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2020/01/20	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2020/01/20	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW	2020/01/20	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2020/01/20	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2020/01/20	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2020/01/20	<MDL 0.02	190.00	No	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2020/01/20	<MDL 0.12	100	No	No
Metolachlor (ug/L) - TW	2020/01/20	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2020/01/20	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2020/01/20	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2020/01/20	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2020/01/20	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2020/01/20	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2020/01/20	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2020/01/20	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW	2020/01/20	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2020/01/20	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2020/01/20	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2020/01/20	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2020/01/20	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2020/01/20	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2020/01/20	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2020/01/20	<MDL 0.25	5.00	No	No
Trifluralin (ug/L) - TW	2020/01/20	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2020/01/20	<MDL 0.17	1.00	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	2020	31.5	100.00	No	No
HAA Total (ug/L) Annual Average - DW	2020	23.1	80	No	No



Ontario Drinking-Water Systems Regulation O. Reg. 170/03

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

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
TREATED WATER					
Antimony: Sb (ug/L) - TW	2020/01/20	0.18	6.0	No	No
Arsenic: As (ug/L) - TW	2020/01/20	0.4	10	No	No
Barium: Ba (ug/L) - TW	2020/01/20	13.8	1000.0	No	No
Boron: B (ug/L) - TW	2020/01/20	13	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2020/01/20	0.005	5.0	No	No
Chromium: Cr (ug/L) - TW	2020/01/20	0.20	50.0	No	No
Mercury: Hg (ug/L) - TW	2020/01/20	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2020/01/20	0.12	50	No	No
Uranium: U (ug/L) - TW	2020/01/20	0.217	20.0	No	No
Additional Inorganics					
Nitrite (mg/L) - TW	2020/01/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/04/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/07/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/10/05	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2020/01/06	0.356	10.0	No	No
Nitrate (mg/L) - TW	2020/04/06	1.32	10.0	No	No
Nitrate (mg/L) - TW	2020/07/06	0.293	10.0	No	No
Nitrate (mg/L) - TW	2020/10/05	0.274	10.0	No	No
Sodium: Na (mg/L) - TW	2020/01/20	4.72	20*	No	No
*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified mg/L when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.					

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
n/a	n/a	n/a	n/a