Township of Centre Wellington

Annual Water Report

Centre Wellington Drinking Water System - 20000086

Prepared:

February 2018

Annual Water Report

For the period of January 1, 2017 – December 31, 2017

Centre Wellington Drinking Water System – 220000086

Annual Report Introduction:

As per the Safe Drinking Water Act, 2002 Ontario Regulation 170/03 Section 11, an Annual Report must be prepared and must cover the period from January 1 to December 31 in a year and must be prepared not later than February 28 of the following year.

The Annual Report must include:

- a brief description of the drinking water system;
- a list of water treatment chemicals used;
- a summary of the most recent water test results required under O. Regulation 170/03 or an approval, Municipal Drinking Water Licence or an order;
- a summary of adverse test results and other issues reported to the Ministry including corrective actions taken;
- a description of major expenses incurred to install, repair or replace required equipment;
- the locations were this report is available for inspection.

A copy of the report is available for viewing at:

- Infrastructure Services Office, 7444 County Road 21, Elora
- Municipal Civic Centre, 1 MacDonald Square, Elora
- Online at www.centrewellington.ca

Drinking Water System Description

The Centre Wellington Drinking Water System is a large municipal residential system and is supplied by nine groundwater well sources.

The distribution system covers the village of Elora and the Town of Fergus and is connected by a booster station. It serves a population of approximately 20,000 people and it is comprised of the following infrastructure:

- 115 km of buried watermain;
- 4 elevated storage towers; and
- Watermain valves, service valves, fire hydrants, and water meters.

Water Treatment Chemicals

The water is treated with gas chlorine at all active well sites and sodium hypochlorite at the booster station and two tower locations.

Drinking Water Test Results

From January 1 to December 31, 2017, all regulatory microbiological and chemical quality samples were collected throughout the drinking water system by certified operators and tests were performed by an accredited, licensed laboratory.

1) Adverse Test Results reported under the Safe Drinking Water Act, 18(1) or O. Regulation 170/03, Schedule 16-4
   a) Adverse Water Quality Incidents (AWQI) refers to any unusual test result that does not meet a provincial water quality standard or situation where the disinfection of the drinking water may be compromised.

Table 1: Adverse Water Quality Incidents

Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
September 26, 2017	Total Coliform	3	MPN/100 mL	Re-sampled and analyzed road reconstruction temporary water line; result was 0 total coliform	September 28, 2017

2) Microbiological Testing completed under O. Regulation 170/03, Schedule 10
   a) The Owner of the drinking water system must ensure water samples are taken at least once every week from the raw water supply, before any treatment has been applied to the water. Samples are taken at all well sites and are tested for both Total Coliform and Escherichia coli (E.coli).

b) The owner of the drinking water system must ensure water samples are taken at least once every week from the treated water supply. Samples are taken at all well sites and are tested for Total Coliform, Heterotrophic Plate Count (HPC) and E.coli.
c) The owner of the drinking water system must ensure water samples are taken from the distribution system once every week and the number of samples is based on population served. Samples are tested for Total Coliform, Heterotrophic Plate Count (HPC) and E.coli.

Table 2: Microbiological Test Results

Type of Sample	Number of Samples	Range (minimum – maximum)	Unit of Measure
Raw – Total Coliform	407	0 – 12	MPN/100 mL
Raw – E.coli	407	0 – 0	MPN/100 mL
Treated – Total Coliform	410	0 – 0	MPN/100 mL
Treated – E.coli	410	0 – 0	MPN/100 mL
Treated – HPC	410	0 – 82	cfu/mL
Distribution – Total Coliform	677	0 – 0	MPN/100 mL
Distribution – E.coli	677	0 – 0	MPN/100 mL
Distribution – HPC	677	0 – 229	cfu/ mL

3) Operational Checks completed under O. Regulation 170/03, Schedule 7
   a) The owner of a drinking water system that provides chlorination for primary disinfection must ensure that sampling and testing for free chlorine residual is carried out by continuous monitoring equipment. The number of samples taken for continuous monitoring is considered to be 8,760.
   b) The owner of a drinking water system must ensure that a water sample is taken at least once per month, from a location that is before raw water enters the treatment system, and is tested for turbidity. If the system obtains water from a raw water supply that is groundwater, then a sample must be taken from each well that is supplying water to the system.

Table 3: Chlorine and Turbidity Results

Parameter	Number of Samples	Range (minimum – maximum)	Unit of measure
Chlorine	8760	0.43 – 3.00	ppm
Turbidity	407	0.05 – 0.99	NTU

4) Treated Water Quality Results under O. Regulation 170/03, Schedule 13-6 and 13-7
   a) The owner of a drinking water system that provides chlorination must ensure that at least one distribution sample is taken in each calendar quarter, and tested for trihalomethanes (THMs). The sample must be taken at a point in the system that is likely to have an elevated potential for the formation of THMs. The annual report value is based on a running annual average of quarterly THMs results.
   b) The owner of a drinking water system that provides chlorination must ensure that at least one distribution sample is taken in each calendar quarter, and tested for haloacetic acids (HAAs). The sample must be taken at a point in the system that is likely to have an

elevated potential for the formation of HAAs. The annual report value is based on a running annual average of quarterly HAAs results.

c) The owner of a drinking water system must ensure that at least one water sample is taken every three months and tested for nitrate and nitrite. Samples were taken at every well site that is supplying water to the system.
d) The Maximum Allowable Concentrations (MAC) for the parameters are listed as per O. Regulation 169/03 Schedule 2.

Table 4: Trihalomethanes Running Annual Average (RAA)

Location	Date	THMs RAA	THMs MAC	Unit of Measure
Distribution	2017 Sampling	13.0	100	ug/L

Table 5: Haloacetic Acids Running Annual Average (RAA)

Location	Date	HAAs RAA	THMs MAC	Unit of Measure
Distribution	2017 Sampling	2.9	100	ug/L

Table 6: Nitrate and Nitrite Results (4th sampling round in 2017)

Location	Date	Nitrate (as Nitrogen)	Nitrate MAC	Nitrite (as Nitrogen)	Nitrite MAC	Unit of Measure
Fergus Well 1	October 25, 2017	0.841	10	<0.010	1.0	mg/L
Fergus Well 4	October 25, 2017	0.121	10	<0.010	1.0	mg/L
Fergus Well 5	October 25, 2017	0.196	10	<0.010	1.0	mg/L
Fergus Well 6	October 25, 2017	<0.020	10	<0.010	1.0	mg/L
Fergus Well 7	October 25, 2017	<0.020	10	<0.010	1.0	mg/L
Elora Well 1	October 25, 2017	<0.020	10	<0.010	1.0	mg/L
Elora Well 3	October 25, 2017	0.020	10	<0.010	1.0	mg/L
Elora Well 4	October 25, 2017	<0.020	10	<0.010	1.0	mg/L

5) Treated Water Quality Results under O. Regulation 170/03, Schedule 13-2
   a) The owner of a drinking water system must ensure that at least one water sample is taken every 36 months and tested for Schedule 23, Inorganics. Samples were taken at every well site that is supplying water to the system.
   b) The Maximum Allowable Concentrations (MAC) for the parameters are listed as per O. Regulation 169/03 Schedule 2

Table 7: Fergus Well 1 Schedule 23 Inorganics

Parameter	Sample Date	Result	MAC	Unit of Measure
Antimony	Jan 21, 2015	<0.60	6	ug/L
Arsenic	Jan 21, 2015	<1.0	25	ug/L
Barium	Jan 21, 2015	55	1000	ug/L
Boron	Jan 21, 2015	<50	5000	ug/L
Cadmium	Jan 21, 2015	<0.10	5	ug/L
Chromium	Jan 21, 2015	<1.0	50	ug/L
Mercury	Jan 21, 2015	<0.10	1	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
Selenium	Jan 21, 2015	<5.0	50	ug/L
Uranium	Jan 21, 2015	<5.0	20	ug/L

Table 8: Fergus Well 4 Schedule 23 Inorganics

Parameter	Sample Date	Result	MAC	Unit of Measure
Antimony	Jan 21, 2015	<0.60	6	ug/L
Arsenic	Jan 21, 2015	<1.0	25	ug/L
Barium	Jan 21, 2015	31	1000	ug/L
Boron	Jan 21, 2015	69	5000	ug/L
Cadmium	Jan 21, 2015	<0.10	5	ug/L
Chromium	Jan 21, 2015	<1.0	50	ug/L
Mercury	Jan 21, 2015	<0.10	1	ug/L
Selenium	Jan 21, 2015	<5.0	50	ug/L
Uranium	Jan 21, 2015	<5.0	20	ug/L

Table 9: Fergus Well 5 Schedule 23 Inorganics

Parameter	Sample Date	Result	MAC	Unit of Measure
Antimony	Jan 21, 2015	<0.60	6	ug/L
Arsenic	Jan 21, 2015	1.8	25	ug/L
Barium	Jan 21, 2015	35	1000	ug/L
Boron	Jan 21, 2015	72	5000	ug/L
Cadmium	Jan 21, 2015	<0.10	5	ug/L
Chromium	Jan 21, 2015	<1.0	50	ug/L
Mercury	Jan 21, 2015	<0.10	1	ug/L
Selenium	Jan 21, 2015	<5.0	50	ug/L
Uranium	Jan 21, 2015	<5.0	20	ug/L

Table 10: Fergus Well 6 Schedule 23 Inorganics

Parameter	Sample Date	Result	MAC	Unit of Measure
Antimony	Jan 21, 2015	<0.60	6	ug/L
Arsenic	Jan 21, 2015	<1.0	25	ug/L
Barium	Jan 21, 2015	27	1000	ug/L
Boron	Jan 21, 2015	87	5000	ug/L
Cadmium	Jan 21, 2015	<0.10	5	ug/L
Chromium	Jan 21, 2015	<1.0	50	ug/L
Mercury	Jan 21, 2015	<0.10	1	ug/L
Selenium	Jan 21, 2015	<5.0	50	ug/L
Uranium	Jan 21, 2015	<5.0	20	ug/L

Table 11: Fergus Well 7 Schedule 23 Inorganics

Parameter	Sample Date	Result	MAC	Unit of Measure
Antimony	Jan 21, 2015	<0.60	6	ug/L
Arsenic	Jan 21, 2015	2.3	25	ug/L
Barium	Jan 21, 2015	21	1000	ug/L
Boron	Jan 21, 2015	57	5000	ug/L
Cadmium	Jan 21, 2015	<0.10	5	ug/L
Chromium	Jan 21, 2015	<1.0	50	ug/L
Mercury	Jan 21, 2015	<0.10	1	ug/L
Selenium	Jan 21, 2015	<5.0	50	ug/L
Uranium	Jan 21, 2015	<5.0	20	ug/L

Table 12: Elora Well 1 Schedule 23 Inorganics

Parameter	Sample Date	Result	MAC	Unit of Measure
Antimony	Jan 21, 2015	<0.60	6	ug/L
Arsenic	Jan 21, 2015	<1.0	25	ug/L
Barium	Jan 21, 2015	25	1000	ug/L
Boron	Jan 21, 2015	<50	5000	ug/L
Cadmium	Jan 21, 2015	<0.10	5	ug/L
Chromium	Jan 21, 2015	<1.0	50	ug/L
Mercury	Jan 21, 2015	<0.10	1	ug/L
Selenium	Jan 21, 2015	<5.0	50	ug/L
Uranium	Jan 21, 2015	<5.0	20	ug/L

Table 13: Elora Well 3 Schedule 23 Inorganics

Parameter	Sample Date	Result	MAC	Unit of Measure
Antimony	Jan 21, 2015	<0.60	6	ug/L
Arsenic	Jan 21, 2015	<1.0	25	ug/L
Barium	Jan 21, 2015	30	1000	ug/L
Boron	Jan 21, 2015	<50	5000	ug/L
Cadmium	Jan 21, 2015	<0.10	5	ug/L
Chromium	Jan 21, 2015	<1.0	50	ug/L
Mercury	Jan 21, 2015	<0.10	1	ug/L
Selenium	Jan 21, 2015	<5.0	50	ug/L
Uranium	Jan 21, 2015	<5.0	20	ug/L

Table 14: Elora Well 4 Schedule 23 Inorganics

Parameter	Sample Date	Result	MAC	Unit of Measure
Antimony	Jan 21, 2015	<0.60	6	ug/L
Arsenic	Jan 21, 2015	<1.0	25	ug/L
Barium	Jan 21, 2015	20	1000	ug/L
Boron	Jan 21, 2015	<50	5000	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
Cadmium	Jan 21, 2015	<0.10	5	ug/L
Chromium	Jan 21, 2015	<1.0	50	ug/L
Mercury	Jan 21, 2015	<0.10	1	ug/L
Selenium	Jan 21, 2015	<5.0	50	ug/L
Uranium	Jan 21, 2015	<5.0	20	ug/L

6) Treated Water Quality Results under O. Regulation 170/03, Schedule 13-8 and 13-9
   a) The owner of a drinking water system must ensure that at least one water sample is taken every 60 months and tested for Sodium. Samples were taken at every well site that is supplying water to the system.
   b) The owner of a drinking water system must ensure that at least one water sample is taken every 60 months and tested for Fluoride. Samples were taken at every well site that is supplying water to the system.
   c) The Maximum Allowable Concentrations (MAC) for the parameters are listed as per O. Regulation 169/03 Schedule 2.
   d) The aesthetic objective (AO) for sodium in drinking water is 200 mg/L. The local Medical Officer of Health must be notified when the sodium concentration exceeds 20 mg/L.

Table 15: Sodium and Fluoride Results

Location	Sample Date	Sodium	Sodium AO	Fluoride	Fluoride MAC	Unit of Measure
Fergus Well 1	Jan 19, 2016	63.6	200	0.40	1.5	mg/L
Fergus Well 4	Jan 19, 2016	25.4	200	0.90	1.5	mg/L
Fergus Well 5	Jan 19, 2016	9.59	200	0.12	1.5	mg/L
Fergus Well 6	Jan 19, 2016	35.7	200	0.34	1.5	mg/L
Fergus Well 7	Jan 19, 2016	21.5	200	0.37	1.5	mg/L
Elora Well 1	Jan 19, 2016	17.3	200	0.28	1.5	mg/L
Elora Well 3	Jan 19, 2016	10.3	200	<0.10	1.5	mg/L
Elora Well 4	Jan 19, 2016	14.3	200	0.25	1.5	mg/L

7) Treated Water Quality Results under O. Regulation 170/03, Schedule 13-4
   a) The owner of a drinking water system must ensure that at least one water sample is taken every 36 months and tested for Schedule 24 parameters. Samples were taken at every well site that is supplying water to the system.
   b) The Maximum Allowable Concentrations (MAC) for the parameters are listed as per O. Regulation 169/03 Schedule 2.

Table 16: Fergus Well 1 Schedule 24 Organic Results

Parameter	Sample Date	Result	MAC	Unit of Measure
Alachlor	Jan 21, 2015	<0.10	5	ug/L
Atrazine + N-dealkylated metobolites	Jan 21, 2015	<0.20	5	ug/L
Azinphos-methyl	Jan 21, 2015	<0.10	20	ug/L
Benzene	Jan 21, 2015	<0.50	1	ug/L
Benzo(a)pyrene	Jan 21, 2015	<0.010	0.01	ug/L
Bromoxynil	Jan 21, 2015	<0.20	5	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
Carbaryl	Jan 21, 2015	<0.20	90	ug/L
Carbofuran	Jan 21, 2015	<0.20	90	ug/L
Carbon Tetrachloride	Jan 21, 2015	<0.50	2	ug/L
Chlorpyrifos	Jan 21, 2015	<0.10	90	ug/L
Diazinon	Jan 21, 2015	<0.10	20	ug/L
Dicamba	Jan 21, 2015	<0.20	120	ug/L
1,2-Dichlorobenzene	Jan 21, 2015	<0.50	200	ug/L
1,4-Dichlorobenzene	Jan 21, 2015	<0.50	5	ug/L
1,2-Dichloroethane	Jan 21, 2015	<0.50	5	ug/L
1,1-Dichloroethylene (vinylidene chloride)	Jan 21, 2015	<0.50	14	ug/L
Dichloromethane	Jan 21, 2015	<5.0	50	ug/L
2-4 Dichlorophenol	Jan 21, 2015	<0.30	900	ug/L
2,4-Dichlorophenoxy acetic acid (2,4-D)	Jan 21, 2015	<0.20	100	ug/L
Diclofop-methyl	Jan 21, 2015	<0.20	9	ug/L
Dimethoate	Jan 21, 2015	<0.10	20	ug/L
Diquat	Jan 21, 2015	<1.0	70	ug/L
Diuron	Jan 21, 2015	<1.0	150	ug/L
Glyphosate	Jan 21, 2015	<5.0	280	ug/L
Malathion	Jan 21, 2015	<0.10	190	ug/L
2 Methyl-4-chlorophenoxyacetic acid	NA	NA	100	ug/L
Metolachlor	Jan 21, 2015	<0.10	50	ug/L
Metribuzin	Jan 21, 2015	<0.10	80	ug/L
Monochlorobenzene	Jan 21, 2015	<0.50	80	ug/L
Paraquat	Jan 21, 2015	<1.0	10	ug/L
Pentachlorophenol	Jan 21, 2015	<0.50	60	ug/L
Phorate	Jan 21, 2015	<0.10	2	ug/L
Picloram	Jan 21, 2015	<0.20	190	ug/L
Polychlorinated Biphenyls(PCB)	Jan 21, 2015	<0.035	3	ug/L
Prometryne	Jan 21, 2015	<0.10	1	ug/L
Simazine	Jan 21, 2015	<0.10	10	ug/L
Terbufos	Jan 21, 2015	<0.20	1	ug/L
Tetrachloroethylene	Jan 21, 2015	<0.50	10	ug/L
2,3,4,6-Tetrachlorophenol	Jan 21, 2015	<0.50	100	ug/L
Triallate	Jan 21, 2015	<0.10	230	ug/L
Trichloroethylene	Jan 21, 2015	<0.50	5	ug/L
2,4,6-Trichlorophenol	Jan 21, 2015	<0.50	5	ug/L
Trifluralin	Jan 21, 2015	<0.10	45	ug/L
Vinyl Chloride	Jan 21, 2015	<0.20	1	ug/L

Table 17: Fergus Well 4 Schedule 24 Organic Results

Parameter	Sample Date	Result	MAC	Unit of Measure
Alachlor	Jan 21, 2015	<0.10	5	ug/L
Atrazine + N-dealkylated metobolites	Jan 21, 2015	<0.20	5	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
Azinphos-methyl	Jan 21, 2015	<0.10	20	ug/L
Benzene	Jan 21, 2015	<0.50	1	ug/L
Benzo(a)pyrene	Jan 21, 2015	<0.010	0.01	ug/L
Bromoxynil	Jan 21, 2015	<0.20	5	ug/L
Carbaryl	Jan 21, 2015	<0.20	90	ug/L
Carbofuran	Jan 21, 2015	<0.20	90	ug/L
Carbon Tetrachloride	Jan 21, 2015	<0.50	2	ug/L
Chlorpyrifos	Jan 21, 2015	<0.10	90	ug/L
Diazinon	Jan 21, 2015	<0.10	20	ug/L
Dicamba	Jan 21, 2015	<0.20	120	ug/L
1,2-Dichlorobenzene	Jan 21, 2015	<0.50	200	ug/L
1,4-Dichlorobenzene	Jan 21, 2015	<0.50	5	ug/L
1,2-Dichloroethane	Jan 21, 2015	<0.50	5	ug/L
1,1-Dichloroethylene (vinylidene chloride)	Jan 21, 2015	<0.50	14	ug/L
Dichloromethane	Jan 21, 2015	<5.0	50	ug/L
2-4 Dichlorophenol	Jan 21, 2015	<0.30	900	ug/L
2,4-Dichlorophenoxy acetic acid (2,4-D)	Jan 21, 2015	<0.20	100	ug/L
Diclofop-methyl	Jan 21, 2015	<0.20	9	ug/L
Dimethoate	Jan 21, 2015	<0.10	20	ug/L
Diquat	Jan 21, 2015	<1.0	70	ug/L
Diuron	Jan 21, 2015	<1.0	150	ug/L
Glyphosate	Jan 21, 2015	<5.0	280	ug/L
Malathion	Jan 21, 2015	<0.10	190	ug/L
2 Methyl-4-chlorophenoxyacetic acid	NA	NA	100	ug/L
Metolachlor	Jan 21, 2015	<0.10	50	ug/L
Metribuzin	Jan 21, 2015	<0.10	80	ug/L
Monochlorobenzene	Jan 21, 2015	<0.50	80	ug/L
Paraquat	Jan 21, 2015	<1.0	10	ug/L
Pentachlorophenol	Jan 21, 2015	<0.50	60	ug/L
Phorate	Jan 21, 2015	<0.10	2	ug/L
Picloram	Jan 21, 2015	<0.20	190	ug/L
Polychlorinated Biphenyls(PCB)	Jan 21, 2015	<0.035	3	ug/L
Prometryne	Jan 21, 2015	<0.10	1	ug/L
Simazine	Jan 21, 2015	<0.10	10	ug/L
Terbufos	Jan 21, 2015	<0.20	1	ug/L
Tetrachloroethylene	Jan 21, 2015	<0.50	10	ug/L
2,3,4,6-Tetrachlorophenol	Jan 21, 2015	<0.50	100	ug/L
Triallate	Jan 21, 2015	<0.10	230	ug/L
Trichloroethylene	Jan 21, 2015	<0.50	5	ug/L
2,4,6-Trichlorophenol	Jan 21, 2015	<0.50	5	ug/L
Trifluralin	Jan 21, 2015	<0.10	45	ug/L
Vinyl Chloride	Jan 21, 2015	<0.20	1	ug/L

Table 18: Fergus Well 5 Schedule 24 Organic Results

Parameter	Sample Date	Result	MAC	Unit of Measure
Alachlor	April 4, 2017	<0.10	5	ug/L
Atrazine + N-dealkylated metobolites	April 4, 2017	<0.20	5	ug/L
Azinphos-methyl	April 4, 2017	<0.10	20	ug/L
Benzene	April 4, 2017	<0.50	1	ug/L
Benzo(a)pyrene	April 4, 2017	<0.010	0.01	ug/L
Bromoxynil	April 4, 2017	<0.20	5	ug/L
Carbaryl	April 4, 2017	<0.20	90	ug/L
Carbofuran	April 4, 2017	<0.20	90	ug/L
Carbon Tetrachloride	April 4, 2017	<0.20	2	ug/L
Chlorpyrifos	April 4, 2017	<0.10	90	ug/L
Diazinon	April 4, 2017	<0.10	20	ug/L
Dicamba	April 4, 2017	<0.20	120	ug/L
1,2-Dichlorobenzene	April 4, 2017	<0.50	200	ug/L
1,4-Dichlorobenzene	April 4, 2017	<0.50	5	ug/L
1,2-Dichloroethane	April 4, 2017	<0.50	5	ug/L
1,1-Dichloroethylene (vinylidene chloride)	April 4, 2017	<0.50	14	ug/L
Dichloromethane	April 4, 2017	<5.0	50	ug/L
2-4 Dichlorophenol	April 4, 2017	<0.30	900	ug/L
2,4-Dichlorophenoxy acetic acid (2,4-D)	April 4, 2017	<0.20	100	ug/L
Diclofop-methyl	April 4, 2017	<0.20	9	ug/L
Dimethoate	April 4, 2017	<0.10	20	ug/L
Diquat	April 4, 2017	<1.0	70	ug/L
Diuron	April 4, 2017	<1.0	150	ug/L
Glyphosate	April 4, 2017	<5.0	280	ug/L
Malathion	April 4, 2017	<0.10	190	ug/L
2 Methyl-4-chlorophenoxyacetic acid	April 4, 2017	<0.20	100	ug/L
Metolachlor	April 4, 2017	<0.10	50	ug/L
Metribuzin	April 4, 2017	<0.10	80	ug/L
Monochlorobenzene	April 4, 2017	<0.50	80	ug/L
Paraquat	April 4, 2017	<1.0	10	ug/L
Pentachlorophenol	April 4, 2017	<0.50	60	ug/L
Phorate	April 4, 2017	<0.10	2	ug/L
Picloram	April 4, 2017	<0.60	190	ug/L
Polychlorinated Biphenyls(PCB)	April 4, 2017	<0.035	3	ug/L
Prometryne	April 4, 2017	<0.10	1	ug/L
Simazine	April 4, 2017	<0.10	10	ug/L
Terbufos	April 4, 2017	<0.20	1	ug/L
Tetrachloroethylene	April 4, 2017	<0.50	10	ug/L
2,3,4,6-Tetrachlorophenol	April 4, 2017	<0.50	100	ug/L
Triallate	April 4, 2017	<0.10	230	ug/L
Trichloroethylene	April 4, 2017	<0.50	5	ug/L
2,4,6-Trichlorophenol	April 4, 2017	<0.50	5	ug/L
Trifluralin	April 4, 2017	<0.10	45	ug/L
Vinyl Chloride	April 4, 2017	<0.20	1	ug/L

Table 19: Fergus Well 6 Schedule 24 Organic Results

Parameter	Sample Date	Result	MAC	Unit of Measure
Alachlor	April 4, 2017	<0.10	5	ug/L
Atrazine + N-dealkylated metobolites	April 4, 2017	<0.20	5	ug/L
Azinphos-methyl	April 4, 2017	<0.10	20	ug/L
Benzene	April 4, 2017	<0.50	1	ug/L
Benzo(a)pyrene	April 4, 2017	<0.010	0.01	ug/L
Bromoxynil	April 4, 2017	<0.20	5	ug/L
Carbaryl	April 4, 2017	<0.20	90	ug/L
Carbofuran	April 4, 2017	<0.20	90	ug/L
Carbon Tetrachloride	April 4, 2017	<0.20	2	ug/L
Chlorpyrifos	April 4, 2017	<0.10	90	ug/L
Diazinon	April 4, 2017	<0.10	20	ug/L
Dicamba	April 4, 2017	<0.20	120	ug/L
1,2-Dichlorobenzene	April 4, 2017	<0.50	200	ug/L
1,4-Dichlorobenzene	April 4, 2017	<0.50	5	ug/L
1,2-Dichloroethane	April 4, 2017	<0.50	5	ug/L
1,1-Dichloroethylene (vinylidene chloride)	April 4, 2017	<0.50	14	ug/L
Dichloromethane	April 4, 2017	<5.0	50	ug/L
2-4 Dichlorophenol	April 4, 2017	<0.30	900	ug/L
2,4-Dichlorophenoxy acetic acid (2,4-D)	April 4, 2017	<0.20	100	ug/L
Diclofop-methyl	April 4, 2017	<0.20	9	ug/L
Dimethoate	April 4, 2017	<0.10	20	ug/L
Diquat	April 4, 2017	<1.0	70	ug/L
Diuron	April 4, 2017	<1.0	150	ug/L
Glyphosate	April 4, 2017	<5.0	280	ug/L
Malathion	April 4, 2017	<0.10	190	ug/L
2 Methyl-4-chlorophenoxyacetic acid	April 4, 2017	<0.20	100	ug/L
Metolachlor	April 4, 2017	<0.10	50	ug/L
Metribuzin	April 4, 2017	<0.10	80	ug/L
Monochlorobenzene	April 4, 2017	<0.50	80	ug/L
Paraquat	April 4, 2017	<1.0	10	ug/L
Pentachlorophenol	April 4, 2017	<0.50	60	ug/L
Phorate	April 4, 2017	<0.10	2	ug/L
Picloram	April 4, 2017	<0.60	190	ug/L
Polychlorinated Biphenyls(PCB)	April 4, 2017	<0.035	3	ug/L
Prometryne	April 4, 2017	<0.10	1	ug/L
Simazine	April 4, 2017	<0.10	10	ug/L
Terbufos	April 4, 2017	<0.20	1	ug/L
Tetrachloroethylene	April 4, 2017	<0.50	10	ug/L
2,3,4,6-Tetrachlorophenol	April 4, 2017	<0.50	100	ug/L
Triallate	April 4, 2017	<0.10	230	ug/L
Trichloroethylene	April 4, 2017	<0.50	5	ug/L
2,4,6-Trichlorophenol	April 4, 2017	<0.50	5	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
Trifluralin	April 4, 2017	<0.10	45	ug/L
Vinyl Chloride	April 4, 2017	<0.20	1	ug/L

Table 20: Fergus Well 7 Schedule 24 Organic Results

Parameter	Sample Date	Result	MAC	Unit of Measure
Alachlor	April 4, 2017	<0.10	5	ug/L
Atrazine + N-dealkylated metobolites	April 4, 2017	<0.20	5	ug/L
Azinphos-methyl	April 4, 2017	<0.10	20	ug/L
Benzene	April 4, 2017	<0.50	1	ug/L
Benzo(a)pyrene	April 4, 2017	<0.010	0.01	ug/L
Bromoxynil	April 4, 2017	<0.20	5	ug/L
Carbaryl	April 4, 2017	<0.20	90	ug/L
Carbofuran	April 4, 2017	<0.20	90	ug/L
Carbon Tetrachloride	April 4, 2017	<0.20	2	ug/L
Chlorpyrifos	April 4, 2017	<0.10	90	ug/L
Diazinon	April 4, 2017	<0.10	20	ug/L
Dicamba	April 4, 2017	<0.20	120	ug/L
1,2-Dichlorobenzene	April 4, 2017	<0.50	200	ug/L
1,4-Dichlorobenzene	April 4, 2017	<0.50	5	ug/L
1,2-Dichloroethane	April 4, 2017	<0.50	5	ug/L
1,1-Dichloroethylene (vinylidene chloride)	April 4, 2017	<0.50	14	ug/L
Dichloromethane	April 4, 2017	<5.0	50	ug/L
2-4 Dichlorophenol	April 4, 2017	<0.30	900	ug/L
2,4-Dichlorophenoxy acetic acid (2,4-D)	April 4, 2017	<0.20	100	ug/L
Diclofop-methyl	April 4, 2017	<0.20	9	ug/L
Dimethoate	April 4, 2017	<0.10	20	ug/L
Diquat	April 4, 2017	<1.0	70	ug/L
Diuron	April 4, 2017	<1.0	150	ug/L
Glyphosate	April 4, 2017	<5.0	280	ug/L
Malathion	April 4, 2017	<0.10	190	ug/L
2 Methyl-4-chlorophenoxyacetic acid	April 4, 2017	<0.20	100	ug/L
Metolachlor	April 4, 2017	<0.10	50	ug/L
Metribuzin	April 4, 2017	<0.10	80	ug/L
Monochlorobenzene	April 4, 2017	<0.50	80	ug/L
Paraquat	April 4, 2017	<1.0	10	ug/L
Pentachlorophenol	April 4, 2017	<0.50	60	ug/L
Phorate	April 4, 2017	<0.10	2	ug/L
Picloram	April 4, 2017	<0.60	190	ug/L
Polychlorinated Biphenyls(PCB)	April 4, 2017	<0.035	3	ug/L
Prometryne	April 4, 2017	<0.10	1	ug/L
Simazine	April 4, 2017	<0.10	10	ug/L
Terbufos	April 4, 2017	<0.20	1	ug/L
Tetrachloroethylene	April 4, 2017	<0.50	10	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
2,3,4,6-Tetrachlorophenol	April 4, 2017	<0.50	100	ug/L
Triallate	April 4, 2017	<0.10	230	ug/L
Trichloroethylene	April 4, 2017	<0.50	5	ug/L
2,4,6-Trichlorophenol	April 4, 2017	<0.50	5	ug/L
Trifluralin	April 4, 2017	<0.10	45	ug/L
Vinyl Chloride	April 4, 2017	<0.20	1	ug/L

Table 21: Elora Well 1 Schedule 24 Organic Results

Parameter	Sample Date	Result	MAC	Unit of Measure
Alachlor	Jan 21, 2015	<0.10	5	ug/L
Atrazine + N-dealkylated metobolites	Jan 21, 2015	<0.20	5	ug/L
Azinphos-methyl	Jan 21, 2015	<0.10	20	ug/L
Benzene	Jan 21, 2015	<0.50	1	ug/L
Benzo(a)pyrene	Jan 21, 2015	<0.010	0.01	ug/L
Bromoxynil	Jan 21, 2015	<0.20	5	ug/L
Carbaryl	Jan 21, 2015	<0.20	90	ug/L
Carbofuran	Jan 21, 2015	<0.20	90	ug/L
Carbon Tetrachloride	Jan 21, 2015	<0.50	2	ug/L
Chlorpyrifos	Jan 21, 2015	<0.10	90	ug/L
Diazinon	Jan 21, 2015	<0.10	20	ug/L
Dicamba	Jan 21, 2015	<0.20	120	ug/L
1,2-Dichlorobenzene	Jan 21, 2015	<0.50	200	ug/L
1,4-Dichlorobenzene	Jan 21, 2015	<0.50	5	ug/L
1,2-Dichloroethane	Jan 21, 2015	<0.50	5	ug/L
1,1-Dichloroethylene (vinylidene chloride)	Jan 21, 2015	<0.50	14	ug/L
Dichloromethane	Jan 21, 2015	<5.0	50	ug/L
2-4 Dichlorophenol	Jan 21, 2015	<0.30	900	ug/L
2,4-Dichlorophenoxy acetic acid (2,4-D)	Jan 21, 2015	<0.20	100	ug/L
Diclofop-methyl	Jan 21, 2015	<0.20	9	ug/L
Dimethoate	Jan 21, 2015	<0.10	20	ug/L
Diquat	Jan 21, 2015	<1.0	70	ug/L
Diuron	Jan 21, 2015	<1.0	150	ug/L
Glyphosate	Jan 21, 2015	<5.0	280	ug/L
Malathion	Jan 21, 2015	<0.10	190	ug/L
2 Methyl-4-chlorophenoxyacetic acid	NA	NA	100	ug/L
Metolachlor	Jan 21, 2015	<0.10	50	ug/L
Metribuzin	Jan 21, 2015	<0.10	80	ug/L
Monochlorobenzene	Jan 21, 2015	<0.50	80	ug/L
Paraquat	Jan 21, 2015	<1.0	10	ug/L
Pentachlorophenol	Jan 21, 2015	<0.50	60	ug/L
Phorate	Jan 21, 2015	<0.10	2	ug/L
Picloram	Jan 21, 2015	<0.20	190	ug/L
Polychlorinated Biphenyls(PCB)	Jan 21, 2015	<0.035	3	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
Prometryne	Jan 21, 2015	<0.10	1	ug/L
Simazine	Jan 21, 2015	<0.10	10	ug/L
Terbufos	Jan 21, 2015	<0.20	1	ug/L
Tetrachloroethylene	Jan 21, 2015	<0.50	10	ug/L
2,3,4,6-Tetrachlorophenol	Jan 21, 2015	<0.50	100	ug/L
Triallate	Jan 21, 2015	<0.10	230	ug/L
Trichloroethylene	Jan 21, 2015	<0.50	5	ug/L
2,4,6-Trichlorophenol	Jan 21, 2015	<0.50	5	ug/L
Trifluralin	Jan 21, 2015	<0.10	45	ug/L
Vinyl Chloride	Jan 21, 2015	<0.20	1	ug/L

Table 22: Elora Well 3 Schedule 24 Organic Results

Parameter	Sample Date	Result	MAC	Unit of Measure
Alachlor	April 4, 2017	<0.10	5	ug/L
Atrazine + N-dealkylated metobolites	April 4, 2017	<0.20	5	ug/L
Azinphos-methyl	April 4, 2017	<0.10	20	ug/L
Benzene	April 4, 2017	<0.50	1	ug/L
Benzo(a)pyrene	April 4, 2017	<0.010	0.01	ug/L
Bromoxynil	April 4, 2017	<0.20	5	ug/L
Carbaryl	April 4, 2017	<0.20	90	ug/L
Carbofuran	April 4, 2017	<0.20	90	ug/L
Carbon Tetrachloride	April 4, 2017	<0.20	2	ug/L
Chlorpyrifos	April 4, 2017	<0.10	90	ug/L
Diazinon	April 4, 2017	<0.10	20	ug/L
Dicamba	April 4, 2017	<0.20	120	ug/L
1,2-Dichlorobenzene	April 4, 2017	<0.50	200	ug/L
1,4-Dichlorobenzene	April 4, 2017	<0.50	5	ug/L
1,2-Dichloroethane	April 4, 2017	<0.50	5	ug/L
1,1-Dichloroethylene (vinylidene chloride)	April 4, 2017	<0.50	14	ug/L
Dichloromethane	April 4, 2017	<5.0	50	ug/L
2-4 Dichlorophenol	April 4, 2017	<0.30	900	ug/L
2,4-Dichlorophenoxy acetic acid (2,4-D)	April 4, 2017	<0.20	100	ug/L
Diclofop-methyl	April 4, 2017	<0.20	9	ug/L
Dimethoate	April 4, 2017	<0.10	20	ug/L
Diquat	April 4, 2017	<1.0	70	ug/L
Diuron	April 4, 2017	<1.0	150	ug/L
Glyphosate	April 4, 2017	<5.0	280	ug/L
Malathion	April 4, 2017	<0.10	190	ug/L
2 Methyl-4-chlorophenoxyacetic acid	April 4, 2017	<0.20	100	ug/L
Metolachlor	April 4, 2017	<0.10	50	ug/L
Metribuzin	April 4, 2017	<0.10	80	ug/L
Monochlorobenzene	April 4, 2017	<0.50	80	ug/L
Paraquat	April 4, 2017	<1.0	10	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
Pentachlorophenol	April 4, 2017	<0.50	60	ug/L
Phorate	April 4, 2017	<0.10	2	ug/L
Picloram	April 4, 2017	<0.60	190	ug/L
Polychlorinated Biphenyls(PCB)	April 4, 2017	<0.035	3	ug/L
Prometryne	April 4, 2017	<0.10	1	ug/L
Simazine	April 4, 2017	<0.10	10	ug/L
Terbufos	April 4, 2017	<0.20	1	ug/L
Tetrachloroethylene	April 4, 2017	<0.50	10	ug/L
2,3,4,6-Tetrachlorophenol	April 4, 2017	<0.50	100	ug/L
Triallate	April 4, 2017	<0.10	230	ug/L
Trichloroethylene	April 4, 2017	<0.50	5	ug/L
2,4,6-Trichlorophenol	April 4, 2017	<0.50	5	ug/L
Trifluralin	April 4, 2017	<0.10	45	ug/L
Vinyl Chloride	April 4, 2017	<0.20	1	ug/L

Table 23: Elora Well 4 Schedule 24 Organic Results

Parameter	Sample Date	Result	MAC	Unit of Measure
Alachlor	April 12, 2017	<0.10	5	ug/L
Atrazine + N-dealkylated metobolites	April 12, 2017	<0.20	5	ug/L
Azinphos-methyl	April 12, 2017	<0.10	20	ug/L
Benzene	April 12, 2017	<0.50	1	ug/L
Benzo(a)pyrene	April 12, 2017	<0.010	0.01	ug/L
Bromoxynil	April 12, 2017	<0.20	5	ug/L
Carbaryl	April 12, 2017	<0.20	90	ug/L
Carbofuran	April 12, 2017	<0.20	90	ug/L
Carbon Tetrachloride	April 12, 2017	<0.20	2	ug/L
Chlorpyrifos	April 12, 2017	<0.10	90	ug/L
Diazinon	April 12, 2017	<0.10	20	ug/L
Dicamba	April 12, 2017	<0.20	120	ug/L
1,2-Dichlorobenzene	April 12, 2017	<0.50	200	ug/L
1,4-Dichlorobenzene	April 12, 2017	<0.50	5	ug/L
1,2-Dichloroethane	April 12, 2017	<0.50	5	ug/L
1,1-Dichloroethylene (vinylidene chloride)	April 12, 2017	<0.50	14	ug/L
Dichloromethane	April 12, 2017	<5.0	50	ug/L
2-4 Dichlorophenol	April 12, 2017	<0.30	900	ug/L
2,4-Dichlorophenoxy acetic acid (2,4-D)	April 12, 2017	<0.20	100	ug/L
Diclofop-methyl	April 12, 2017	<0.20	9	ug/L
Dimethoate	April 12, 2017	<0.10	20	ug/L
Diquat	April 12, 2017	<1.0	70	ug/L
Diuron	April 12, 2017	<1.0	150	ug/L
Glyphosate	April 12, 2017	<5.0	280	ug/L
Malathion	April 12, 2017	<0.10	190	ug/L
2 Methyl-4-chlorophenoxyacetic acid	April 12, 2017	<0.20	100	ug/L

Parameter	Sample Date	Result	MAC	Unit of Measure
Metolachlor	April 12, 2017	<0.10	50	ug/L
Metribuzin	April 12, 2017	<0.10	80	ug/L
Monochlorobenzene	April 12, 2017	<0.50	80	ug/L
Paraquat	April 12, 2017	<1.0	10	ug/L
Pentachlorophenol	April 12, 2017	<0.50	60	ug/L
Phorate	April 12, 2017	<0.10	2	ug/L
Picloram	April 12, 2017	<0.20	190	ug/L
Polychlorinated Biphenyls(PCB)	April 12, 2017	<0.035	3	ug/L
Prometryne	April 12, 2017	<0.10	1	ug/L
Simazine	April 12, 2017	<0.10	10	ug/L
Terbufos	April 12, 2017	<0.20	1	ug/L
Tetrachloroethylene	April 12, 2017	<0.50	10	ug/L
2,3,4,6-Tetrachlorophenol	April 12, 2017	<0.50	100	ug/L
Triallate	April 12, 2017	<0.10	230	ug/L
Trichloroethylene	April 12, 2017	<0.50	5	ug/L
2,4,6-Trichlorophenol	April 12, 2017	<0.50	5	ug/L
Trifluralin	April 12, 2017	<0.10	45	ug/L
Vinyl Chloride	April 12, 2017	<0.20	1	ug/L

8) Lead Results under O. Regulation 170/03, Schedule 15.1-5
   a) The owner of a drinking water system must ensure that the distribution system is sampled and tested for lead concentrations as per the Reduced Sampling table. The samples must be taken during the period of December 15 – April 15 (winter sampling) and during the period of June 15 – October 15 (summer sampling) every 3 years.
   b) The Maximum Allowable Concentrations (MAC) for the parameters are listed as per O. Regulation 169/03 Schedule 2.
   c) The owner of a drinking water system must ensure that the distribution system is sampled and tested for pH and total alkalinity during each of the periods in 8 (a) in every 12-month period.
   d) The Operational Guideline for pH is 6.5-8.5 and the Operational Guideline for Alkalinity (as CaCO3) is 30-500 mg/L.

Table 24: Lead Testing Results

Location	Sample Date	Lead	Lead MAC	Unit of Measure
Distribution Location 1	February 18, 2016	<1.0	10	ug/L
Distribution Location 2	February 18, 2016	<1.0	10	ug/L
Distribution Location 3	February 18, 2016	<1.0	10	ug/L
Distribution Location 4	February 18, 2016	<1.0	10	ug/L
Distribution Location 1	July 14, 2016	<1.0	10	ug/L
Distribution Location 2	July 14, 2016	<1.0	10	ug/L
Distribution Location 3	July 14, 2016	<1.0	10	ug/L
Distribution Location 4	July 14, 2016	<1.0	10	ug/L

Table 25: pH and Alkalinity Sampling Required Only

Location	Sample Date	pH	Alkalinity (as CaCO3)	Alkalinity Unit of Measure
Distribution Location 1	January 25, 2017	7.38	223	mg/L
Distribution Location 2	January 25, 2017	7.60	213	mg/L
Distribution Location 3	January 25, 2017	7.27	192	mg/L
Distribution Location 4	January 25, 2017	7.35	184	mg/L
Distribution Location 5	July 24, 2017	7.43	248	mg/L
Distribution Location 6	July 24, 2017	7.76	222	mg/L
Distribution Location 7	July 24, 2017	7.04	219	mg/L
Distribution Location 8	July 24, 2017	7.25	216	mg/L

9) Summary of Additional Testing and Sampling under the Township's Municipal Drinking Water Licence (MDWL), 4.1, Table 5
   a) The Township is required to complete quarterly sampling for Trichloroethylene (TCE) at Fergus Well 1 raw water.
   b) The Maximum Allowable Concentrations (MAC) for TCE is listed as per O. Regulation 169/03 Schedule 2.

Table 26: Trichloroethylene Sampling Results (Raw Water)

Location	Sample Date	TCE	TCE MAC	Unit of Measure
Fergus Well 1	January 25, 2017	2.33	5	ug/L
Fergus Well 1	April 4, 2017	5.15	5	ug/L
Fergus Well 1	July 24, 2017	9.28	5	ug/L
Fergus Well 1	October 25, 2017	6.97	5	ug/L

10) Review of the Data
   a) The Annual Report must list any inorganic or organic parameter that exceeded half the standard (½ MAC) prescribed in Schedule 2 of the Ontario Drinking Water Standards.
   b) The Maximum Allowable Concentration (MAC) was established for parameters which when present above a certain concentration, have known or suspected adverse health effects.
   c) The results of the organic parameter analysis are below the ½ MAC for each parameter and the majority were under the laboratory's MDL (minimum detection limit).
   d) The results of the inorganic parameter analysis are below the ½ MAC for each parameter with the following exception:

Table 27: Inorganic and Organic Parameters Exceeding ½ MAC

Parameter	Location	Result	MAC	½ MAC	Units
Fluoride	Well F4	0.90	1.5	0.75	mg/L

11) The Annual Report must describe any major expenses incurred during the year to install, repair or replace required equipment.

Table 28: Equipment Major Expenses

Location	Description	Cost
Elora Well 1	Security Fencing	$13,000
Elora Well 3	Well Pump and Motor Replacement	$22,000
Elora Well 3	Geophysics	$14,000
Elora Well 3	Highlift Pump VFD	$13,000
Elora Well 4	Highlift Pump VFD	$13,000
Fergus Well 1	Well Pump Replacement	$22,000
Fergus Well 1	Geophysics	$14,000
Fergus Well 1	Air Stripper Media Replacement	$11,000
Fergus Well 1	Hardness Treatment Process	$63,000
Water Meters	Accuracy Testing	$14,000
Wells and Towers	SCADA Secondary Data Collection (Backup)	$16,000