



**OPTIONAL ANNUAL REPORT TEMPLATE**

Drinking-Water System Number:	220000031
Drinking-Water System Name:	Clifford Drinking Water System
Drinking-Water System Owner:	Town of Minto
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2016 to December 31, 2016

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [<input checked="" type="checkbox"/>]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [<input checked="" type="checkbox"/>] 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; margin-top: 10px;"> <p>Town of Minto 5941 Hwy #89 R.R. #1 Harriston, ON NOG 1Z0</p> </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p>Number of Designated Facilities served: <div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">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; display: inline-block; padding: 2px 10px;">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>
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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**

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      Town of Minto Website
- Public access/notice via Government Office
- Public access/notice via a newspaper      Advertisements in Local Newspapers
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method      Tax Letter

**Describe your Drinking-Water System**

Clifford is currently serviced by a municipal water system that consists of: three drilled well supplies, two pumphouses; a 1,275 m3 elevated storage facility and a distribution network. In the event of a prolonged power outage, a portable generator is available to Well #1, 3 & 4 to supply back-up power.

Well #3 is a deep overburden well and serves as the primary production well for the system. Well # 1 and #4 are bedrock wells and provide peak flows and redundancy to the system. Wells #3 and #4 are a combined supply and are not allowed to operate together. All three operating wells are equipped with submersible pumps; the pump in Well #3 is a variable speed pump.

In the pumphouses, the raw water supply is injected with 12% sodium hypochlorite for disinfection and the chemical sodium silicate, for iron sequestering. The treated water from Well #1 leaves the pumphouse and enters an underground contact pipe and is discharged into the distribution system after adequate contact time is achieved. Treated water from Well #3 and #4 is discharged back into the elevated storage tank before being discharged into the distribution system.

The wells are controlled (start/stop) automatically based on elevated storage tank liquid levels and pressures in the distribution system. Each pumphouse is equipped with alarms for chlorination system failure (and corresponding lockout of well pumps), low water level and intrusion. Each wellhouse has a continuous monitoring analyzer for chlorine with lockouts and alarms.

SCADA provides continuous monitoring to this system.

**List all water treatment chemicals used over this reporting period**

- 12% Sodium Hypochlorite (disinfectant)
- Sodium Silicate (sequestering agent)



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

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

To meet the requirements of O. Reg. 170/03, upgrades, installation and replacement of various system components have been completed. However, maintaining the system includes repair and replacement of individual components as required.

In 2016 \$356,700 was spent installing watermain on Ann Street to replace the mains in the backyards and \$6,050 installing watermain on Brown Street. The water tower was drained for inspection and paint, this was paid by a Third Party.

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

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

Type / Location of Sample	Number of Samples	Range of Total Coliform Results (min #)-(max #)	Range of E. Coli or Fecal Results (min #)-(max #)	Range of HPC (min #)-(max #)	Number of HPC Samples	
Raw	Well #1	52	0 - 0	0 - 0	N/A	N/A
	Well #3	52	0 - 0	0 - 0	N/A	N/A
	Well #4	52	0 - 0	0 - 0	N/A	N/A
Treated	Well #1	52	0 - 0	0 - 0	< 10 - 50	52
	Well #3	52	0 - 0	0 - 0	< 10 - 20	52
	Well #4	52	0 - 0	0 - 0	< 10 - 10	52
Distribution	156	0 - 0	0 - 0	< 10 - 80	156	



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

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

Operational Testing			Number of Grab Samples	Range of Results (min #) – (max #)
Turbidity	Raw	Well #1	90	0.09 – 0.74
		Well #3	90	0.09 – 0.87
		Well #4	86	0.09 – 0.76
Chlorine	Treated	Well #1	365	0.95 – 1.65
		Well #3	365	0.97 – 1.66
		Well #4	360	0.71 – 1.71
	Distribution		578	0.50 – 1.70
Fluoride (If the DWS provides fluoridation)			N/A	N/A

**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
N/A	N/A	N/A	N/A	N/A

## Clifford Well #1

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

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Antimony	17/05/16	<0.6	ug/L	6
Arsenic	17/05/16	6.5	ug/L	25
Barium	17/05/16	222	ug/L	1000
Boron	17/05/16	<50	ug/L	5000
Cadmium	17/05/16	<0.1	ug/L	5
Chromium	17/05/16	<1.0	ug/L	50
*Lead			ug/L	10
Mercury	17/05/16	<0.1	ug/L	1



Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Selenium	17/05/16	<5.0	ug/L	10
Sodium	23/05/12	14.9	mg/L	20
Uranium	17/05/16	<5.0	ug/L	20
Fluoride	23/05/12	0.73	mg/L	1.5
Nitrite	17/02/16	<0.01	mg/L	1
	17/05/16	<0.01		
	10/08/16	<0.01		
	07/11/16	<0.01		
Nitrate	17/02/16	<0.02	mg/L	10
	17/05/16	<0.02		
	10/08/16	<0.02		
	07/11/16	<0.02		

\*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

**Clifford Well #3**

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

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Antimony	17/05/16	<0.6	ug/L	6
Arsenic	17/05/16	<1.0	ug/L	25
Barium	17/05/16	144	ug/L	1000
Boron	17/05/16	<50	ug/L	5000
Cadmium	17/05/16	<0.1	ug/L	5
Chromium	17/05/16	<1.0	ug/L	50
*Lead			ug/L	100
Mercury	17/05/16	<0.1	ug/L	1
Selenium	17/05/16	<5.0	ug/L	10
Sodium	23/05/12	11.8	mg/L	20
Uranium	17/05/16	<5.0	ug/L	20
Fluoride	23/05/12	0.23	mg/L	1.5
Nitrite	17/02/16	<0.01	mg/L	1
	17/05/16	<0.01		
	10/08/16	<0.01		
	07/11/16	<0.01		
Nitrate	17/02/16	0.255	mg/L	10



Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Nitrate	17/05/16	0.355	mg/L	10
	10/08/16	0.306		
	07/11/16	0.317		

\*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

**Clifford Well #4**

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

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Antimony	17/05/16	<0.6	ug/L	6
Arsenic	17/05/16	8.1	ug/L	25
Barium	17/05/16	163	ug/L	1000
Boron	17/05/16	<50	ug/L	5000
Cadmium	17/05/16	<0.1	ug/L	5
Chromium	17/05/16	<1.0	ug/L	50
*Lead			ug/L	100
Mercury	17/05/16	<0.1	ug/L	1
Selenium	17/05/16	<5.0	ug/L	10
Sodium	23/05/12	10.1	mg/L	20
Uranium	17/05/16	<5.0	ug/L	20
Fluoride	23/05/12	0.23	mg/L	1.5
Nitrite	17/02/16	<0.01	mg/L	1
	17/05/16	<0.01		
	10/08/16	<0.01		
	07/11/16	<0.01		
Nitrate	17/02/16	<0.02	mg/L	10
	17/05/16	0.054		
	10/08/16	<0.02		
	07/11/16	<0.02		

\*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	22	<1.0 - 2.5 ug/L	0
Distribution	4	<1.0 - <1.0 ug/L	N/A

\* These results are from samples taken in December 2013 -> April 2014 and June - October 2014.  
No adverse results were identified.

### Clifford Well #1

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

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Alachlor	31/05/16	<0.1	ug/L	5
alpha-Chlordane	17/05/16	<0.1	ug/L	
Aroclor 1242	31/05/16	<0.02	ug/L	
Aroclor 1254	31/05/16	<0.02	ug/L	
Aroclor 1260	31/05/16	<0.02	ug/L	
Atrazine	31/05/16	<0.1	ug/L	
Atrazine Desethyl	31/05/16	<0.1	ug/L	
Atrazine & Metabolites	31/05/16	<0.2	ug/L	5
Azinphos-methyl	31/05/16	<0.1	ug/L	20
Benzene	17/05/16	<0.5	ug/L	5
Benzo(a)pyrene	31/05/16	<0.01	ug/L	0.01
Bromoxynil	17/05/16	<0.2	ug/L	5
Carbaryl	31/05/16	<0.2	ug/L	90
Carbofuran	31/05/16	<0.2	ug/L	90
Carbon Tetrachloride	17/05/16	<0.5	ug/L	5
Chlorpyrifos	31/05/16	<0.1	ug/L	90
Diazinon	31/05/16	<0.1	ug/L	20
Dicamba	17/05/16	<0.2	ug/L	120
1,2-Dichlorobenzene	17/05/16	<0.5	ug/L	200
1,4-Dichlorobenzene	17/05/16	<0.5	ug/L	5
1,2-Dichloroethane	17/05/16	<0.5	ug/L	5
1,1-Dichloroethylene (vinylidene chloride)	17/05/16	<0.5	ug/L	14
Dichloromethane	17/05/16	<5.0	ug/L	50
2-4 Dichlorophenol	31/05/16	<0.3	ug/L	900



Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
2,4-Dichlorophenoxy acetic acid (2,4-D)	17/05/16	<0.2	ug/L	100
Diclofop-methyl	31/05/16	<0.2	ug/L	9
Dimethoate	31/05/16	<0.1	ug/L	20
Diquat	17/05/16	<1.0	ug/L	70
Diuron	17/05/16	<1.0	ug/L	150
gamma-Chlordane	17/05/16	<0.1	ug/L	
Glyphosate	17/05/16	<5.0	ug/L	280
Malathion	31/05/16	<0.1	ug/L	190
MCPA	17/05/16	<0.2	ug/L	
Metolachlor	31/05/16	<0.1	ug/L	50
Metribuzin	31/05/16	<0.1	ug/L	80
Monochlorobenzene	17/05/16	<0.5	ug/L	80
o,p-DDT	17/05/16	<0.1	ug/L	
Oxychlordane	17/05/16	<0.1	ug/L	
p,p-DDD	17/05/16	<0.1	ug/L	
p,p-DDE	17/05/16	<0.1	ug/L	
p,p-DDT	17/05/16	<0.1	ug/L	
Paraquat	17/05/16	<1.0	ug/L	10
Pentachlorophenol	31/05/16	<0.5	ug/L	60
Phorate	31/05/16	<0.1	ug/L	2
Picloram	17/05/16	<0.2	ug/L	190
Polychlorinated Biphenyls (PCB)	31/05/16	<0.035	ug/L	3
Prometryne	31/05/16	<0.1	ug/L	1
Simazine	31/05/16	<0.1	ug/L	10
Terbufos	31/05/16	<0.2	ug/L	1
Tetrachloroethylene (perchloroethylene)	17/05/16	<0.5	ug/L	30
2,3,4,6-Tetrachlorophenol	31/05/16	<0.5	ug/L	100
Triallate	31/05/16	<0.1	ug/L	230
Trichloroethylene	17/05/16	<0.5	ug/L	5
2,4,6-Trichlorophenol	31/05/16	<0.5	ug/L	5
Trifluralin	31/05/16	<0.1	ug/L	45
Vinyl Chloride	17/05/16	<0.2	ug/L	2

**Clifford Well #3**

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

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Alachlor	31/05/16	<0.1	ug/L	5
alpha-Chlordane	17/05/16	<0.1	ug/L	
Aroclor 1242	31/05/16	<0.02	ug/L	
Aroclor 1254	31/05/16	<0.02	ug/L	



Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Aroclor 1260	31/05/16	<0.02	ug/L	
Atrazine	31/05/16	<0.1	ug/L	
Atrazine Desethyl	31/05/16	<0.1	ug/L	
Atrazine & Metabolites	31/05/16	<0.2	ug/L	5
Azinphos-methyl	31/05/16	<0.1	ug/L	20
Benzene	17/05/16	<0.5	ug/L	5
Benzo(a)pyrene	31/05/16	<0.01	ug/L	0.01
Bromoxynil	17/05/16	<0.2	ug/L	5
Carbaryl	31/05/16	<0.2	ug/L	90
Carbofuran	31/05/16	<0.2	ug/L	90
Carbon Tetrachloride	17/05/16	<0.5	ug/L	5
Chlorpyrifos	31/05/16	<0.1	ug/L	90
Diazinon	31/05/16	<0.1	ug/L	20
Dicamba	17/05/16	<0.2	ug/L	120
1,2-Dichlorobenzene	17/05/16	<0.5	ug/L	200
1,4-Dichlorobenzene	17/05/16	<0.5	ug/L	5
1,2-Dichloroethane	17/05/16	<0.5	ug/L	5
1,1-Dichloroethylene (vinylidene chloride)	17/05/16	<0.5	ug/L	14
Dichloromethane	17/05/16	<5.0	ug/L	50
2-4 Dichlorophenol	31/05/16	<0.3	ug/L	900
2,4-Dichlorophenoxy acetic acid (2,4-D)	17/05/16	<0.2	ug/L	100
Diclofop-methyl	31/05/16	<0.2	ug/L	9
Dimethoate	31/05/16	<0.1	ug/L	20
Diquat	17/05/16	<1.0	ug/L	70
Diuron	17/05/16	<1.0	ug/L	150
gamma-Chlordane	17/05/16	<0.1	ug/L	
Glyphosate	17/05/16	<5.0	ug/L	280
Malathion	31/05/16	<0.1	ug/L	190
MCPA	17/05/16	<0.2	ug/L	
Metolachlor	31/05/16	<0.1	ug/L	50
Metribuzin	31/05/16	<0.1	ug/L	80
Monochlorobenzene	17/05/16	<0.5	ug/L	80
o,p-DDT	17/05/16	<0.1	ug/L	
Oxychlordane	17/05/16	<0.1	ug/L	
p,p-DDD	17/05/16	<0.1	ug/L	
p,p-DDE	17/05/16	<0.1	ug/L	
p,p-DDT	17/05/16	<0.1	ug/L	
Paraquat	17/05/16	<1.0	ug/L	10
Pentachlorophenol	31/05/16	<0.5	ug/L	60
Phorate	31/05/16	<0.1	ug/L	2
Picloram	17/05/16	<0.2	ug/L	190

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Polychlorinated Biphenyls (PCB)	31/05/16	<0.035	ug/L	3
Prometryne	31/05/16	<0.1	ug/L	1
Simazine	31/05/16	<0.1	ug/L	10
Terbufos	31/05/16	<0.2	ug/L	1
Tetrachloroethylene (perchloroethylene)	17/05/16	<0.5	ug/L	30
2,3,4,6-Tetrachlorophenol	31/05/16	<0.5	ug/L	100
Triallate	31/05/16	<0.1	ug/L	230
Trichloroethylene	17/05/16	<0.5	ug/L	5
2,4,6-Trichlorophenol	31/05/16	<0.5	ug/L	5
Trifluralin	31/05/16	<0.1	ug/L	45
Vinyl Chloride	17/05/16	<0.2	ug/L	2

#### Clifford Well #4

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

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Alachlor	31/05/16	<0.1	ug/L	5
alpha-Chlordane	17/05/16	<0.1	ug/L	
Aroclor 1242	31/05/16	<0.02	ug/L	
Aroclor 1254	31/05/16	<0.02	ug/L	
Aroclor 1260	31/05/16	<0.02	ug/L	
Atrazine	31/05/16	<0.1	ug/L	
Atrazine Desethyl	31/05/16	<0.1	ug/L	
Atrazine & Metabolites	31/05/16	<0.2	ug/L	5
Azinphos-methyl	31/05/16	<0.1	ug/L	20
Benzene	17/05/16	<0.5	ug/L	5
Benzo(a)pyrene	31/05/16	<0.01	ug/L	0.01
Bromoxynil	17/05/16	<0.2	ug/L	5
Carbaryl	31/05/16	<0.2	ug/L	90
Carbofuran	31/05/16	<0.2	ug/L	90
Carbon Tetrachloride	14/05/13	<0.5	ug/L	5
Chlorpyrifos	31/05/16	<0.1	ug/L	90
Diazinon	31/05/16	<0.1	ug/L	20
Dicamba	17/05/16	<0.2	ug/L	120
1,2-Dichlorobenzene	17/05/16	<0.5	ug/L	200
1,4-Dichlorobenzene	17/05/16	<0.5	ug/L	5
1,2-Dichloroethane	17/05/16	<0.5	ug/L	5
1,1-Dichloroethylene (vinylidene chloride)	17/05/16	<0.5	ug/L	14

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Dichloromethane	17/05/16	<5.0	ug/L	50
2-4 Dichlorophenol	31/05/16	<0.3	ug/L	900
2,4-Dichlorophenoxy acetic acid (2,4-D)	17/05/16	<0.2	ug/L	100
Diclofop-methyl	31/05/16	<0.2	ug/L	9
Dimethoate	31/05/16	<0.1	ug/L	20
Diquat	17/05/16	<1.0	ug/L	70
Diuron	17/05/16	<1.0	ug/L	150
gamma-Chlordane	17/05/16	<0.1	ug/L	
Glyphosate	17/05/16	<5.0	ug/L	280
Malathion	31/05/16	<0.1	ug/L	190
MCPA	17/05/16	<0.2	ug/L	
Metolachlor	31/05/16	<0.1	ug/L	50
Metribuzin	31/05/16	<0.1	ug/L	80
Monochlorobenzene	17/05/16	<0.5	ug/L	80
o,p-DDT	17/05/16	<0.1	ug/L	
Oxychlordane	17/05/16	<0.1	ug/L	
p,p-DDD	17/05/16	<0.1	ug/L	
p,p-DDE	17/05/16	<0.1	ug/L	
p,p-DDT	17/05/16	<0.1	ug/L	
Paraquat	17/05/16	<1.0	ug/L	10
Pentachlorophenol	31/05/16	<0.5	ug/L	60
Phorate	31/05/16	<0.1	ug/L	2
Picloram	17/05/16	<0.2	ug/L	190
Polychlorinated Biphenyls (PCB)	31/05/16	<0.035	ug/L	3
Prometryne	31/05/16	<0.1	ug/L	1
Simazine	31/05/16	<0.1	ug/L	10
Terbufos	31/05/16	<0.2	ug/L	1
Tetrachloroethylene (perchloroethylene)	17/05/16	<0.5	ug/L	30
2,3,4,6-Tetrachlorophenol	31/05/16	<0.5	ug/L	100
Triallate	31/05/16	<0.1	ug/L	230
Trichloroethylene	17/05/16	<0.5	ug/L	5
2,4,6-Trichlorophenol	31/05/16	<0.5	ug/L	5
Trifluralin	31/05/16	<0.1	ug/L	45
Vinyl Chloride	17/05/16	<0.2	ug/L	2

### Clifford Distribution System

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



Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
THM	17/02/16	13.5	ug/L	100
	17/05/16	13.7		
	10/08/16	9.7		
	07/11/16	22.8		

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

*(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)*