

**Part III Form 2
Section 11. ANNUAL REPORT.**

Drinking-Water System Number:	220000512
Drinking-Water System Name:	Listowel Drinking Water System
Drinking-Water System Owner:	Municipality of North Perth
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	Jan 1, 2018 to Dec 31, 2018

<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; width: fit-content;"> 330 Wallace Ave North, Listowel, Ontario. N4W 1L3 </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <div style="border: 1px solid black; width: 100px; text-align: center; padding: 2px;">0</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; width: 100px; text-align: center; padding: 2px;">0</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

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
N/A	

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

The Listowel Drinking Water System consists of 3 ground water wells automatically controlled by a Supervisory Control and Data Acquisition (SCADA) system. The pressure in the distribution system is maintained by an elevated reservoir located at 580 Main Street West with a maximum capacity of 3182 M³. When the water level in the elevated reservoir drops to a predetermined set point the well pumps automatically start. Two chemical feed pumps at each well also start automatically adding predetermined quantities of Sodium Hypochlorite and Sodium Silicate to the water.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite, Sodium Silicate

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

1. Replaced Chlorine pumps at all three wells - \$11,500

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

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
July 30, 2018	Total Coliforms - Firehall	3	CFU/100 ml	Resample and retest (0)	Aug 2, 2018
Aug 7, 2018	Total Coliforms – Well 6 Treated	1	CFU/100 ml	Resample and retest (0)	Aug 9, 2018
Aug 20, 2018	Total Coliforms Firehall	1	CFU/100 ml	Resample and retest (0)	Aug 22, 2018
Nov 8, 2018	Low system pressure due to water main break	N/A	N/A	Increase Chlorine residuals, flush system after repair	Nov 8, 2018

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

WELL #4

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Range of HPC Results (min #)-(max #)	Range of Background Results (min #)-(max #)
Raw	55	0 – 0	0 – 0		0 – 0
Treated	55	0 – 0	0 – 0	0 – 8	0 – 28

WELL #5

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Range of HPC Results (min #)-(max #)	Range of Background Results (min #)-(max #)
Raw	55	0 – 0	0 – 1		0 – 124
Treated	55	0 – 0	0 – 0	0 – 1	0 – 10

WELL #6

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Range of HPC Results (min #)-(max #)	Range of Background Results (min #)-(max #)
Raw	55	0 – 0	0 – 0		0 – 5
Treated	55	0 – 0	0 – 1	0 – 1	0 – 1

LISTOWEL DISTRIBUTION SYSTEM

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Range of HPC Results (min #)-(max #)	Range of Background Results (min #)-(max #)
Fire Hall	58	0 – 0	0 – 3	0 – 1	0 – 11
Meulenstein's	55	0 – 0	0 – 0	0 – 40	0 – 2
Beer Store	55	0 – 0	0 – 0	0 – 2	0 – 0
Maitland Terrace	55	0 – 0	0 – 0	0 – 1	0 – 0

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

WELL #4

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	12	0.28– 0.64 NTU
Chlorine	8760	0 – 2.17
Fluoride (If the DWS provides fluoridation)	N/A	

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

WELL #5

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	12	0.28 – 0.86 NTU
Chlorine	8760	0 – 2.08
Fluoride (If the DWS provides fluoridation)	N/A	

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

WELL #6

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	12	0.17 - 0.76 NTU
Chlorine	8760	0 – 1.89
Fluoride (If the DWS provides fluoridation)	N/A	

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
N/A				

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

WELL #4

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Aug 7/18	None Detected	ug/L	No
Arsenic	Aug 7/18	8.05	ug/L	No
Arsenic	Nov. 12/18	5.7	ug/L	No
Barium	Aug 7/18	52.3	ug/L	No
Boron	Aug 7/18	49.0	ug/L	No
Cadmium	Aug 7/18	None Detected	ug/L	No
Chromium	Aug 7/18	2.50	ug/L	No
Mercury	Aug 7/18	None Detected	mg/L	No
Selenium	Aug 7/18	None Detected	ug/L	No
Sodium	Aug 7/18	15.5	ug/L	No
Uranium	Aug 7/18	0.30	ug/L	No
Fluoride	Aug 7/18	0.96	mg/L	No
Nitrate	Feb 8/18	None Detected	mg/L	No
Nitrate	May 9/18	None Detected	mg/L	No
Nitrate	Aug 7/18	None Detected	mg/L	No
Nitrate	Nov 12/18	None Detected	mg/L	No
Nitrite	Feb 8/18	None Detected	mg/L	No
Nitrite	May 9/18	None Detected	mg/L	No
Nitrite	Aug 7/18	None Detected	mg/L	No
Nitrite	Nov 12/18	None Detected	mg/L	No

WELL #5

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Aug 7/18	None Detected	ug/L	No
Arsenic	Aug 7/18	6.52	ug/L	No
Arsenic	Nov. 12/18	4.9	ug/L	No
Barium	Aug 7/18	59.8	ug/L	No
Boron	Aug 7/18	49.0	ug/L	No
Cadmium	Aug 7/18	None Detected	ug/L	No

Chromium	Aug 7/18	2.51	ug/L	No
Mercury	Aug 7/18	None Detected	mg/L	No
Selenium	Aug 7/18	None Detected	ug/L	No
Sodium	Aug 7/18	16.0	ug/L	No
Uranium	Aug 7/18	0.21	ug/L	No
Fluoride	Aug 7/18	0.88	mg/L	No
Nitrate	Feb 8/18	None Detected	mg/L	No
Nitrate	May 9/18	None Detected	mg/L	No
Nitrate	Aug 7/18	None Detected	mg/L	No
Nitrate	Nov 12/18	None Detected	mg/L	No
Nitrite	Feb 8/17	None Detected	mg/L	No
Nitrite	May 9/18	None Detected	mg/L	No
Nitrite	Aug 7/18	None Detected	mg/L	No
Nitrite	Nov 12/18	None Detected	mg/L	No

WELL #6

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Aug 7/18	None Detected	ug/L	No
Arsenic	Aug 7/18	5.28	ug/L	No
Arsenic	Nov 12/18	3.2	ug/L	No
Barium	Aug 7/18	66.6	ug/L	No
Boron	Aug 7/18	57.0	ug/L	No
Cadmium	Aug 7/18	None Detected	ug/L	No
Chromium	Aug 7/18	2.34	ug/L	No
Mercury	Aug 7/18	None Detected	mg/L	No
Selenium	Aug 7/18	None Detected	ug/L	No
Sodium	Aug 7/18	18.1	ug/L	No
Uranium	Aug 7/18	0.26	ug/L	No
Fluoride	Aug 7/18	1.24	mg/L	No
Nitrate	Feb 8/18	None Detected	mg/L	No
Nitrate	May 9/18	None Detected	mg/L	No
Nitrate	Aug 7/18	None Detected	mg/L	No
Nitrate	Nov 12/18	None Detected	mg/L	No
Nitrite	Feb 8/18	None Detected	mg/L	No
Nitrite	May 9/18	None Detected	mg/L	No
Nitrite	Aug 7/18	None Detected	mg/L	No
Nitrite	Nov 12/18	None Detected	mg/L	No

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	N/A	N/A	N/A

- Listowel qualifies for reduced lead sampling in 2018

Summary of Organic parameters sampled during this reporting period or the most recent sample results
WELL #4

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Aug 7/18	None Detected	ug/l	No
Atrazine + N-dealkylated metabolites	Aug 7/18	None Detected	ug/l	No
Azinphos-methyl	Aug 7/18	None Detected	ug/l	No
Benzene	Aug 7/18	None Detected	ug/l	No
Benzo(a)pyrene	Aug 7/18	None Detected	ug/l	No
Bromoxynil	Aug 7/18	None Detected	ug/l	No
Carbaryl	Aug 7/18	None Detected	ug/l	No
Carbofuran	Aug 7/18	None Detected	ug/l	No
Carbon Tetrachloride	Aug 7/18	None Detected	ug/l	No
Chlorpyrifos	Aug 7/18	None Detected	ug/l	No
Diazinon	Aug 7/18	None Detected	ug/l	No
Dicamba	Aug 7/18	None Detected	ug/l	No
1,2-Dichlorobenzene	Aug 7/18	None Detected	ug/l	No
1,4-Dichlorobenzene	Aug 7/18	None Detected	ug/l	No
1,2-Dichloroethane	Aug 7/18	None Detected	ug/l	No
1,1-Dichloroethylene (vinylidene chloride)	Aug 7/18	None Detected	ug/l	No
Dichloromethane	Aug 7/18	None Detected	ug/l	No
2-4 Dichlorophenol	Aug 7/18	None Detected	ug/l	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug 7/18	None Detected	ug/l	No
Diclofop-methyl	Aug 7/18	None Detected	ug/l	No
Dimethoate	Aug 7/18	None Detected	ug/l	No
Diquat	Aug 7/18	None Detected	ug/l	No
Diuron	Aug 7/18	None Detected	ug/l	No

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

Glyphosate	Aug 7/18	None Detected	ug/l	No
HAA (running annual average)	2018	6.25	ug/l	No
Malathion	Aug 7/18	None Detected	ug/l	No
Metolachlor	Aug 7/18	None Detected	ug/l	No
Metribuzin	Aug 7/18	None Detected	ug/l	No
Monochlorobenzene	Aug 7/18	None Detected	ug/l	No
Paraquat	Aug 7/18	None Detected	ug/l	No
Pentachlorophenol	Aug 7/18	None Detected	ug/l	No
Phorate	Aug 7/18	None Detected	ug/l	No
Picloram	Aug 7/18	None Detected	ug/l	No
Polychlorinated Biphenyls(PCB)	Aug 7/18	None Detected	ug/l	No
Prometryne	Aug 7/18	None Detected	ug/l	No
Simazine	Aug 7/18	None Detected	ug/l	No
THM (running annual average)	2018	9.50	ug/l	No
Terbufos	Aug 7/18	None Detected	ug/l	No
Tetrachloroethylene	Aug 7/18	None Detected	ug/l	No
2,3,4,6-Tetrachlorophenol	Aug 7/18	None Detected	ug/l	No
Triallate	Aug 7/18	None Detected	ug/l	No
Trichloroethylene	Aug 7/18	None Detected	ug/l	No
2,4,6-Trichlorophenol	Aug 7/18	None Detected	ug/l	No
Trifluralin	Aug 7/18	None Detected	ug/l	No
Vinyl Chloride	Aug 7/18	None Detected	ug/l	No
2-Methyl-4-chlorophenoxyacetic acid MCPA	Aug 7/18	None Detected	ug/l	No

WELL # 5

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Aug 7/18	None Detected	ug/l	No
Atrazine + N-dealkylated metabolites	Aug 7/18	None Detected	ug/l	No
Azinphos-methyl	Aug 7/18	None Detected	ug/l	No
Benzene	Aug 7/18	None Detected	ug/l	No
Benzo(a)pyrene	Aug 7/18	None Detected	ug/l	No
Bromoxynil	Aug 7/18	None Detected	ug/l	No
Carbaryl	Aug 7/18	None Detected	ug/l	No
Carbofuran	Aug 7/18	None Detected	ug/l	No
Carbon Tetrachloride	Aug 7/18	None Detected	ug/l	No
Chlorpyrifos	Aug 7/18	None Detected	ug/l	No
Diazinon	Aug 7/18	None Detected	ug/l	No
Dicamba	Aug 7/18	None Detected	ug/l	No
1,2-Dichlorobenzene	Aug 7/18	None Detected	ug/l	No
1,4-Dichlorobenzene	Aug 7/18	None Detected	ug/l	No
1,2-Dichloroethane	Aug 7/18	None Detected	ug/l	No

1,1-Dichloroethylene (vinylidene chloride)	Aug 7/18	None Detected	ug/l	No
Dichloromethane	Aug 7/18	None Detected	ug/l	No
2-4 Dichlorophenol	Aug 7/18	None Detected	ug/l	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug 7/18	None Detected	ug/l	No
Diclofop-methyl	Aug 7/18	None Detected	ug/l	No
Dimethoate	Aug 7/18	None Detected	ug/l	No
Diquat	Aug 7/18	None Detected	ug/l	No
Diuron	Aug 7/18	None Detected	ug/l	No
Glyphosate	Aug 7/18	None Detected	ug/l	No
HAA (running annual average)	2018	6.25	ug/l	No
Malathion	Aug 7/18	None Detected	ug/l	No
Metolachlor	Aug 7/18	None Detected	ug/l	No
Metribuzin	Aug 7/18	None Detected	ug/l	No
Monochlorobenzene	Aug 7/18	None Detected	ug/l	No
Paraquat	Aug 7/18	None Detected	ug/l	No
Pentachlorophenol	Aug 7/18	None Detected	ug/l	No
Phorate	Aug 7/18	None Detected	ug/l	No
Picloram	Aug 7/18	None Detected	ug/l	No
Polychlorinated Biphenyls(PCB)	Aug 7/18	None Detected	ug/l	No
Prometryne	Aug 7/18	None Detected	ug/l	No
Simazine	Aug 7/18	None Detected	ug/l	No
THM (running annual average)	2018	9.5	ug/l	No
Terbufos	Aug 7/18	None Detected	ug/l	No
Tetrachloroethylene	Aug 7/18	None Detected	ug/l	No
2,3,4,6-Tetrachlorophenol	Aug 7/18	None Detected	ug/l	No
Triallate	Aug 7/18	None Detected	ug/l	No
Trichloroethylene	Aug 7/18	None Detected	ug/l	No
2,4,6-Trichlorophenol	Aug 7/18	None Detected	ug/l	No
Trifluralin	Aug 7/18	None Detected	ug/l	No
Vinyl Chloride	Aug 7/18	None Detected	ug/l	No
2-Methyl-4-chlorophenoxyacetic acid MCPA	Aug 7/18	None Detected	ug/l	No

WELL #6

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Aug 7/18	None Detected	ug/l	No
Atrazine + N-dealkylated metabolites	Aug 7/18	None Detected	ug/l	No
Azinphos-methyl	Aug 7/18	None Detected	ug/l	No
Benzene	Aug 7/18	None Detected	ug/l	No
Benzo(a)pyrene	Aug 7/18	None Detected	ug/l	No
Bromoxynil	Aug 7/18	None Detected	ug/l	No
Carbaryl	Aug 7/18	None Detected	ug/l	No

Carbofuran	Aug 7/18	None Detected	ug/l	No
Carbon Tetrachloride	Aug 7/18	None Detected	ug/l	No
Chlorpyrifos	Aug 7/18	None Detected	ug/l	No
Diazinon	Aug 7/18	None Detected	ug/l	No
Dicamba	Aug 7/18	None Detected	ug/l	No
1,2-Dichlorobenzene	Aug 7/18	None Detected	ug/l	No
1,4-Dichlorobenzene	Aug 7/18	None Detected	ug/l	No
1,2-Dichloroethane	Aug 7/18	None Detected	ug/l	No
1,1-Dichloroethylene (vinylidene chloride)	Aug 7/18	None Detected	ug/l	No
Dichloromethane	Aug 7/18	None Detected	ug/l	No
2-4 Dichlorophenol	Aug 7/18	None Detected	ug/l	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug 7/18	None Detected	ug/l	No
Diclofop-methyl	Aug 7/18	None Detected	ug/l	No
Dimethoate	Aug 7/18	None Detected	ug/l	No
Diquat	Aug 7/18	None Detected	ug/l	No
Diuron	Aug 7/18	None Detected	ug/l	No
Glyphosate	Aug 7/18	None Detected	ug/l	No
HAA (running annual average)	2018	6.25	ug/l	No
Malathion	Aug 7/18	None Detected	ug/l	No
Metolachlor	Aug 7/18	None Detected	ug/l	No
Metribuzin	Aug 7/18	None Detected	ug/l	No
Monochlorobenzene	Aug 7/18	None Detected	ug/l	No
Paraquat	Aug 7/18	None Detected	ug/l	No
Pentachlorophenol	Aug 7/18	None Detected	ug/l	No
Phorate	Aug 7/18	None Detected	ug/l	No
Picloram	Aug 7/18	None Detected	ug/l	No
Polychlorinated Biphenyls(PCB)	Aug 7/18	None Detected	ug/l	No
Prometryne	Aug 7/18	None Detected	ug/l	No
Simazine	Aug 7/18	None Detected	ug/l	No
THM (running annual average)	2018	9.5	ug/l	No
Terbufos	Aug 7/18	None Detected	ug/l	No
Tetrachloroethylene	Aug 7/18	None Detected	ug/l	No
2,3,4,6-Tetrachlorophenol	Aug 7/18	None Detected	ug/l	No
Triallate	Aug 7/18	None Detected	ug/l	No
Trichloroethylene	Aug 7/18	None Detected	ug/l	No
2,4,6-Trichlorophenol	Aug 7/18	None Detected	ug/l	No
Trifluralin	Aug 7/18	None Detected	ug/l	No
Vinyl Chloride	Aug 7/18	None Detected	ug/l	No
2-Methyl-4-chlorophenoxyacetic acid MCPA	Aug 7/18	None Detected	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
Fluoride (Well 4)	0.96	mg/l	Aug 7/18
Fluoride (Well 5)	0.88	mg/l	Aug 7/18
Fluoride (Well 6)	1.24	mg/l	Aug 7/18
Arsenic (Well 4)	8.05	ug/L	Aug 7/18
Arsenic (Well 5)	6.52	ug/L	Aug 7/18
Arsenic (Well 6)	5.28	ug/L	Aug 7/18
Arsenic (Well 4)	5.7	ug/L	Nov. 12/18

(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)