



Township of Perth East
2021 Annual Drinking Water Report
Milverton Drinking Water System

The Corporation of the Township of Perth East

25 Mill Street East
P.O. Box 455
Milverton, Ontario
N0K 1M0

February 17, 2022

ATTN: Mrs. Theresa Campbell, CAO

**Re: The Corporation of the Township of Perth East
2021 Milverton Drinking Water Annual & Summary Report**

Please find enclosed the Township of Perth East's 2021 Drinking Water Annual Report and Summary Report for the Milverton Drinking Water System. The reports are prepared in accordance with Ontario Regulation 170/03 of the Safe Drinking Water Act.

Under Ontario Regulation 170/03, the Annual Report must cover the period from January 1 to December 31 each year and must be prepared by February 28 of the subsequent year. The Annual Report is to be made available free of charge to anyone whom requests a copy.

Ontario Regulation 170/03 additionally requires the preparation of a Summary Report for the preceding year which must be presented to Council no later than March 31.

A copy of the reports will be available at the Township Office at 25 Mill Street East in Milverton in addition to the Township website at www.pertheast.ca.

Any questions or concerns regarding the reports can be directed to Public Works Department.

Sincerely,

Jake Collings, BESC.
Township of Perth East
Operations Coordinator



**The Corporation of the Township of Perth East
2021 Annual Report & Summary Report
Milverton Drinking Water System**

Date: February 17, 2022



Part 1 – ANNUAL REPORT (as required by O. Reg. 170/03, Section 11)

Drinking-Water System Number:	220000503
Drinking-Water System Name:	Milverton Drinking Water System
Drinking-Water System Owner:	Township of Perth East
Drinking-Water System Category:	Large Municipal Residential
Reporting Period:	January 1, 2021 to December 31, 2021

Complete if your Category is Large Municipal Residential or Small Municipal Residential		Complete for all other Categories	
<i>Does your Drinking-Water System serve more than 10,000 people?</i>	No	<i>Number of Designated Facilities served:</i>	0
<i>Is your Annual Report available to the public at no charge on a web site on the Internet?</i>	Yes	<i>Did you provide a copy of your Annual Report to all Designated Facilities you serve?</i>	N/A
<i>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:</i>		<i>Number of Interested Authorities you report to:</i>	0
Township of Perth East, Municipal Office 25 Mill Street East, Milverton, Ontario PO Box 455 N0K 1M0		<i>Did you provide a copy of your Annual Report to all Interested Authorities you report to for each Designated Facility?</i>	N/A

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	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?
N/A



Indicate how you notified system users that your annual report is available and free of charge:

Public access/ notice via the web	<input checked="" type="checkbox"/>	Public access/ notice via a newspaper		Public access/ notice via Public Request	<input checked="" type="checkbox"/>
Public access/ notice via Government Office	<input checked="" type="checkbox"/>	Public access/ notice via a Public Library		Public access/ notice via other method	

Describe your Drinking Water System

The Milverton Drinking Water system is a Class II Distribution and Supply sub-system owned and operated by the Township of Perth East. The serviced population is approximately 1,750 and consists of eight (8) kilometers of distribution water mains.

The well house facility is situated at 15 Spencer Street in Milverton, Ontario where raw water is conveyed to and stored on site in an underground cast in-place reservoir. The reservoir is made up of two chambers with a combined storage capacity of 1150m³. Water is firstly treated using liquid sodium hypochlorite which is injected using two chemical feed pumps rated at 1.7L/h and one 200L storage tank. Water is then transferred to the reservoir for appropriate chlorine contact time. Two vertical high lift duty pumps, each rated at 16.5L/s pump water into the distribution system. Additionally, there are two vertical turbine fire pumps each rated at 94.7 L/s.

The system water supply consists of two drilled groundwater wells. Well #4, which is considered the standby well, is located at 35 Whaley Avenue. The well is comprised of a 48.0 meter deep, 250mm diameter cast iron casing equipped with a submersible pump rated at 7.4 L/s. Raw water from this well is pumped through an underground line approximately northwest to the well house.

Well #6, considered the production well, is located approximately 25 meters east of the Spencer Street treatment facility and is comprised of a 66.4 meter deep 200mm diameter steel casing, equipped with a 10 hp submersible pump rated at 16.5 L/s. Water is conveyed from the well directly to the well house.

List all water treatment chemicals used over this reporting period:

Liquid Chlorine (Sodium Hypochlorite) 12%

Were any significant expenses incurred to?

Install required equipment:	No
Repair required equipment:	No
Replace required equipment:	No

Please provide a brief description and a breakdown of monetary expenses incurred:

No significant expenses were incurred in 2021.



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 Center:

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
Jan. 24/2021	Low System Pressure			Resample and retest, restore chlorine residual	Jan. 24/2021

Microbiological testing done under Schedule 10, 11 or 12 of O. Reg. 170/03 during this reporting period:

Description	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. #)
Well # 4 - Raw	52	0-0	0-0	N/A	0-0
Well # 6 - Raw	52	0-0	0-0	N/A	0-0
Treated	52	0-0	0-0	0-1	0-0
Arena	52	0-0	0-0	0-56	0-0
Blow Off #3	52	0-0	0-0	0-5	0-0
Municipal Building	52	0-0	0-0	0-3	0-0

Operational testing done under Schedule 7, 8 or 9 of O. Reg. 170/03 during the reporting period:

Description	Number of Grab Samples	Range of Results (min. #) – (max. #)
Turbidity (NTU)		
Turbidity – Well #4	12	0.38 - 0.63 NTU
Turbidity – Well #6	12	0.19 - 0.51 NTU
Chlorine Residual (mg/L)		
Chlorine – Point of Entry (POE)	8760	0.00* - 2.96* mg/L

* Values due to operator maintenance on chlorine analyzer

Summary of additional testing & 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:

Milverton Reservoir – Treated Water

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Aug. 11/20	None Detected	µg/L	No
Arsenic	Feb. 10/21	8.3	µg/L	No
Arsenic	May 19/21	9.3	µg/L	No
Arsenic	Aug. 16/21	8.5	µg/L	No
Arsenic	Nov. 16/21	7.4	µg/L	No
Barium	Aug. 11/20	122	µg/L	No
Boron	Aug. 11/20	77	µg/L	No
Cadmium	Aug. 11/20	None Detected	µg/L	No
Chromium	Aug. 11/20	None Detected	µg/L	No
Mercury	Aug. 11/20	None Detected	µg/L	No
Selenium	Aug. 11/20	None Detected	µg/L	No
Sodium	Feb. 13/20	28.5	mg/L	Yes
Sodium (retest)	Feb. 19/20	28.8	mg/L	Yes
Uranium	Aug. 11/20	None Detected	µg/L	No
Fluoride	Feb. 13/20	1.08	mg/L	No
Nitrite	Feb. 10/21	None Detected	mg/L	No
Nitrite	May 19/21	None Detected	mg/L	No
Nitrite	Aug. 16/21	None Detected	mg/L	No
Nitrite	Nov. 16/21	None Detected	mg/L	No
Nitrate	Feb. 10/21	None Detected	mg/L	No
Nitrate	May 19/21	None Detected	mg/L	No
Nitrate	Aug. 16/21	None Detected	mg/L	No
Nitrate	Nov. 16/21	None Detected	mg/L	No

Summary of Lead testing under Schedule 15.1 during this reporting period:

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

* Milverton qualified for reduced lead sampling in 2021.



Summary of Organic parameters tested during this reporting period or the most recent sample results:				
Milverton Reservoir – Treated Water				
Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Volatile Organic Compounds (VOCs)				
Benzene	Aug. 11/20	None Detected	µg/L	No
Carbon Tetrachloride	Aug. 11/20	None Detected	µg/L	No
Monochlorobenzene	Aug. 11/20	None Detected	µg/L	No
1,2-Dichlorobenzene	Aug. 11/20	None Detected	µg/L	No
1,4-Dichlorobenzene	Aug. 11/20	None Detected	µg/L	No
1,2-Dichloroethane	Aug. 11/20	None Detected	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	Aug. 11/20	None Detected	µg/L	No
Dichloromethane	Aug. 11/20	None Detected	µg/L	No
Ethylbenzene	Aug. 11/20	None Detected	µg/L	No
Tetrachloroethylene (perchloroethylene)	Aug. 11/20	None Detected	µg/L	No
Toluene	Aug. 11/20	None Detected	µg/L	No
Trichloroethylene	Aug. 11/20	None Detected	µg/L	No
Vinyl Chloride	Aug. 11/20	None Detected	µg/L	No
o-xylene	Aug. 11/20	None Detected	µg/L	No
m/p-xylene	Aug. 11/20	None Detected	µg/L	No
Xylenes (Total)	Aug. 11/20	None Detected	µg/L	No
Polycyclic Aromatic Hydrocarbons (PAHs)				
Benzo(a)pyrene	Aug. 11/20	None Detected	µg/L	No
Polychlorinated Biphenyls (PCBs)				
Total Polychlorinated Biphenyls (PCBs)	Aug. 11/20	None Detected	µg/L	No
Pesticides and Herbicides				
Alachlor	Aug. 11/20	None Detected	µg/L	No
Atrazine + N-dealkylated metabolites	Aug. 11/20	None Detected	µg/L	No
Azinphos-methyl	Aug. 11/20	None Detected	µg/L	No
Bromoxynil	Aug. 11/20	None Detected	µg/L	No
Carbaryl	Aug. 11/20	None Detected	µg/L	No
Carbofuran	Aug. 11/20	None Detected	µg/L	No
Chlorpyrifos	Aug. 11/20	None Detected	µg/L	No
Diazinon	Aug. 11/20	None Detected	µg/L	No



Dicamba	Aug. 11/20	None Detected	µg/L	No
2,4-Dichlorophenol	Aug. 11/20	None Detected	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug. 11/20	None Detected	µg/L	No
Diclofop-methyl	Aug. 11/20	None Detected	µg/L	No
Dimethoate	Aug. 11/20	None Detected	µg/L	No
Diquat	Aug. 11/20	None Detected	µg/L	No
Diuron	Aug. 11/20	None Detected	µg/L	No
Glyphosate	Aug. 11/20	None Detected	µg/L	No
Malathion	Aug. 11/20	None Detected	µg/L	No
Metolachlor	Aug. 11/20	None Detected	µg/L	No
Metribuzin	Aug. 11/20	None Detected	µg/L	No
Paraquat	Aug. 11/20	None Detected	µg/L	No
Pentachlorophenol	Aug. 11/20	None Detected	µg/L	No
Phorate	Aug. 11/20	None Detected	µg/L	No
Picloram	Aug. 11/20	None Detected	µg/L	No
Prometryne	Aug. 11/20	None Detected	µg/L	No
Simazine	Aug. 11/20	None Detected	µg/L	No
Terbufos	Aug. 11/20	None Detected	µg/L	No
2,3,4,6-Tetrachlorophenol	Aug. 11/20	None Detected	µg/L	No
Triallate	Aug. 11/20	None Detected	µg/L	No
2,4,6-Trichlorophenol	Aug. 11/20	None Detected	µg/L	No
Trifluralin	Aug. 11/20	None Detected	µg/L	No
2 methyl-4-chlorophenoxyacetic acid (MCPA)	Aug. 11/20	None Detected	µg/L	No
Haloacetic Acids (HAAs)				
HAAs (Total) Quarter 1	Feb. 10/21	8.5	µg/L	No
HAAs (Total) Quarter 2	May 19/21	9.0	µg/L	No
HAAs (Total) Quarter 3	Aug. 16/21	13.2	µg/L	No
HAAs (Total) Quarter 4	Nov. 16/21	8.7	µg/L	No
Trihalomethanes (THMs)				
THMs (Total) Quarter 1	Feb. 10/21	13.6	µg/L	No
THMs (Total) Quarter 2	May 19/21	15.6	µg/L	No
THMs (Total) Quarter 3	Aug. 16/21	26.0	µg/L	No
THMs (Total) Quarter 4	Nov. 16/21	17.2	µg/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
Arsenic	8.3	mg/L	Feb. 10/21
Arsenic	9.3	mg/L	May 19/21
Arsenic	8.5	mg/L	Aug. 16/21
Arsenic	7.4	mg/L	Nov. 16/21
Fluoride	1.08	mg/L	Feb. 13/20
Sodium	28.5	mg/L	Feb. 13/20
Sodium	28.8	mg/L	Feb. 19/20



Part 2 – SUMMARY REPORT (as required by O. Reg. 170/03, Schedule 22)

Non-Compliance with Legislations, Regulations, Approvals & Orders		
<p>The MECP conducted an announced routine inspection of the Milverton Drinking Water System on September 28, 2021. During this period, it was determined that the Facility was operated in full compliance with the Act, the regulations and the Facility's Municipal Drinking Water Licence, Drinking Water Works Permit and Permit to Take Water, save and except for the following:</p>		
Requirement	Duration of Failure	Measures to Correct the Failure
* There were no non compliances over the reporting period in 2021.		

Well #4						
System Capability Assessment						
Month	Average Flow (m ³ /day)	Maximum Flow (m ³ /day)	Total Monthly Flow (m ³)	Maximum Flow Rate (L/min)	Approved Flow Rate (L/min)	System Capacity (m ³ /day)
January	9.72	55.79	301.24	352.14	500	2143.89
February	8.58	13.82	240.35	364.88		
March	9.48	58.62	293.92	360.00		
April	28.92	212.92	867.62	354.27		
May	6.87	9.22	212.86	353.95		
June	7.10	9.13	212.88	354.58		
July	7.03	8.45	217.99	353.07		
August	10.78	77.04	334.14	352.25		
September	20.51	288.27	615.16	352.56		
October	9.22	71.63	285.95	354.82		
November	8.38	34.08	251.52	355.56		
December	9.48	75.36	293.79	360.53		
Average	11.34		343.95	355.72		
Maximum		288.27	867.62	364.88		
% of Capacity	0.53	13.45				



Well #6						
System Capability Assessment						
Month	Average Flow (m ³ /day)	Maximum Flow (m ³ /day)	Total Monthly Flow (m ³)	Maximum Flow Rate (L/min)	Approved Flow Rate (L/min)	System Capacity (m ³ /day)
January	364.70	481.78	11305.69	707.60	990	2143.89
February	380.00	546.56	10639.94	709.10		
March	372.73	500.03	11554.75	709.30		
April	378.57	707.22	11357.13	711.30		
May	502.33	965.72	15572.10	710.00		
June	452.82	547.41	13584.57	704.10		
July	406.82	542.16	12611.28	714.70		
August	408.06	474.59	12649.96	703.80		
September	404.60	610.25	12138.11	699.80		
October	416.31	497.88	12905.56	702.40		
November	414.15	866.69	12424.62	724.30		
December	403.21	498.88	12499.47	732.10		
<i>Average</i>	408.69		12436.93	710.71		
<i>Maximum</i>		965.72	15572.10	732.10		
<i>% of Capacity</i>	19.06	45.05				



Combined					
Month	Average Flow (m ³ /day)	Maximum Flow (m ³ /day)	Total Monthly Flow (m ³)	Approved Flow Rate (L/min)	System Capacity (m ³ /day)
January	374.42	537.57	11606.93	Well 4: 500 Well 6: 990	2143.89
February	388.58	560.38	10880.29		
March	382.21	558.65	11848.67		
April	407.49	920.14	12224.75		
May	509.2	974.94	15784.96		
June	459.92	556.54	13797.45		
July	413.85	550.61	12829.27		
August	418.84	551.63	12984.1		
September	425.11	898.52	12753.27		
October	425.53	569.51	13191.51		
November	422.53	900.77	12676.14		
December	412.69	574.24	12793.26		
<i>Average</i>	420.03		12780.88		
<i>Maximum</i>		974.94	15784.96		
<i>% of Capacity</i>	19.59	45.48			