



The Corporation of the Municipality of
Central Elgin

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Central Elgin Distribution System

Water Works # 260004761

2017 Summary Report

*For the Period
January 1, 2017 to December 31, 2017*



Central Elgin Distribution System Summary Report for 2017

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INTRODUCTION

The Central Elgin Distribution System is a large Municipal Residential Water system that is owned and operated by the Municipality of Central Elgin. The Central Elgin Distribution System is a spread out system that services a combination of urban and rural customers. The system itself consists of a water tower, a pressure boosting station, chlorine boosting equipment, transmission water mains, pressure reducing valves, many kilometers of distribution water main, water services, fire hydrants and valves. All of the water that flows into the Central Elgin Distribution System originates from the Elgin Area Water Treatment Plant located just a few kilometers east of the hamlet of Port Stanley. Surface water from Lake Erie is treated at this Primary treatment plant and pumped throughout the Municipality of Central Elgin via Secondary Transmission mains that supply water to other Municipalities. Central Elgin receives much of its water through these transmission mains. There are approximately 5000 residents that receive all of their water from this system.

Chlorine boosting equipment is located on the discharge line of the Port Stanley Water Tower to assist in maintaining free chlorine residuals in the distribution system. A flow meter and on-line water quality analyzers assist in chlorine dosing and residual monitoring.

The largest service area of this water system is the Port Stanley Secondary Distribution System. This system supplies potable water to the hamlet of Port Stanley, the hamlet of Union and some rural residents around both of these communities. Other areas are serviced by rural water mains located on the following Municipal Roads; Barnums Gully Line, Fruit Ridge Line, John Wise Line, Yarmouth Centre Road (South of Talbot Line), Yarmouth Centre Road (North of Talbot Line), Tower Road, Prior Street, Springwater Road (North of Talbot Line), Water Tower Line, Turner Road, Blossom Ridge Subdivision (East of Belmont Rd), Tridon Subdivision (Wellington Road and Highway 3), Jacklin Court subdivision (Wellington Road) and areas of Ferguson Line near Highbury Avenue. Central Elgin Residents in some cases receive their water directly off the secondary transmission mains on the Following Municipal roads, Dexter Line, Talbot Line, New Sarum Line and Highbury Avenue.

The Central Elgin Distribution System operates under the Safe Drinking Water Act (S.D.W.A.), Ontario Regulation 128/04 and Ontario Drinking Water Regulation 170/03, Drinking Water Works Permit 046-201 and Municipal Drinking Water License 046-101. These regulatory documents outline among other things, how the water system is to be operated and water sampling requirements.

Under Ontario Regulation 170/03, a Summary Report is to be completed each year for the Central Elgin Distribution System. This Summary Report will include among other things a description of measures taken to comply with the Ontario Drinking Water Regulations, details of non-compliance with the Ontario Drinking Water Regulations and a brief summary of all water

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testing results. A more detailed summary of all water samples taken can be found in a separate report called the Annual Report for the Central Elgin Distribution System, which can be found in the Appendices of this report.

The following will be the Summary Report for the year of 2017.

WATER SYSTEM CLASSIFICATION

The Ministry of the Environment Rates and Classifies each Water System based on the complexity of the system. Other considerations include population served, size and nature of the equipment in use as well as the source of water. The classification number of systems range from Class 1 to Class 4, class 1 being the simplest and class 4 being the most complex. The class of the facility also determines the level of operator certificate that must be obtained for an operator to be able to work in that facility. For example, a Class 1 Facility must have at least a Class 1 operator responsible for the operations, while a Class 4 Facility must have a Class 4 operator responsible for operations.

The Central Elgin Distribution System was classified in 2005 as a Class 2 Distribution System.

REGULATORY COMPLIANCE

The Municipality of Central Elgin has taken all of the necessary steps to comply with the terms and conditions of the Safe Drinking Water Act (S.D.W.A.), Ontario Regulation 170/03, Ontario Regulation 128/04, Drinking Water Works Permit 046-201 and Municipal Drinking Water License 046-101.

The following is a detailed description of some of the measures that the Municipality of Central Elgin has taken to ensure compliance.

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Certified Operators

The Municipality of Central Elgin operates the Central Elgin Distribution System with its own certified operators. The Municipality of Central Elgin owns and operates several water and waste water facilities of which the Central Elgin Distribution System is one. The Municipality has eight certified/licensed operators who collectively operate all of these facilities. This integration of water/wastewater operators ensures that the Municipality will always have a certified water operator available to operate this water system.

Ontario Regulation 128/04 regulates the requirements of certified water operators in Ontario. Part of the requirements includes annual training. The Municipality of Central Elgin ensures that all of its certified operators are properly trained to conform to Ontario Regulation 128/04.

Accredited Laboratories

The Municipality of Central Elgin uses accredited laboratories for all of the sampling that is required for the Central Elgin Distribution System. For microbiological samples, the Municipality uses S.G.S. Lakefield Research Limited from London Ontario. For the chemical samples, the Municipality uses S.G.S. Lakefield Research Limited from Lakefield Ontario.

Supervisory Control and Data Acquisition System (S.C.A.D.A.)

The Municipality has an extensive S.C.A.D.A. system that incorporates all of the water and waste water sites. The S.C.A.D.A. system provides operations staff with 24 hour a day real time interactive contact through a unique wireless system that operators can view remotely through a wireless lap top computer. This wireless system provides operators with the ability to view and control the equipment at each site.

The S.C.A.D.A. system is constantly recording and tracking many aspects of the systems including security, flows, pump run times, water quality results, tower water levels, water pressures, etc. All of these results are stored on the S.C.A.D.A. computer server that is located in the Central Elgin main office's computer server room. The S.C.A.D.A. computer tracks and generates daily, monthly and yearly reports for each site that summarizes all of this data for review by operations staff.

Each site has unique alarm settings for such things as free chlorine, pressure, security, etc. The S.C.A.D.A. computer will automatically notify operators by pager if an alarm is generated from any of the sites.

On Line Water Quality Analyzers

Located inside the Port Stanley elevated water tower is a set of on-line water quality analyzers that continuously analyze the free chlorine, total chlorine and pH of the tower discharge water. All of the water quality analyzer results are tracked on the S.C.A.D.A. system for review by operators. The analyzers have pre-programmed alarms that will sound if a test result falls out of a preset range. The alarms are tied to the S.C.A.D.A. system that will notify water operators by phone and pager.

These analyzers provide operators with water quality information on the discharge water of the water tower. Process adjustments can be made to the chlorine boosting equipment if required based on this information.

Flow Meter Calibration

There is one 14-inch flow meter on the discharge line of the Port Stanley Water Tower that requires annual calibration. This flow meter measures the volume of water leaving the Port Stanley water tower and is also used in pacing of the chlorine feed equipment that is located there. This meter is calibrated every year.

Operations Manual

The Municipality of Central Elgin has developed and maintains an up to date Water System Operations Manual that includes among other things:

- Procedures for monitoring and recording of in-process parameters necessary for the control of the treatment/water system and for assessing the performance of the water system.
- Procedures for the operation and maintenance of monitoring equipment.
- Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset and equipment breakdown.
- Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint.
- Up to date Process Flow Diagrams (PFD) and Process and Instrumentation Diagrams (P&ID) for the treatment system.

Drinking Water Quality Management System (DWQMS)

The Municipality of Central Elgin has developed and maintains a Drinking Water Quality Operational Plan with associated Procedures that conforms to the Drinking Water Standard as outlined in the Safe Drinking Water Act. This Operational Plan and its associated procedures is followed, reviewed and kept current by staff.

Distribution System Water Samples

The Central Elgin Distribution System is a distribution system that obtains all of its water from other regulated water systems. Therefore, all of the samples collected in this system are distribution samples. In the system there are microbiological samples taken each week and tested for E-Coli, Total Coliforms, Background Colony Counts and Heterotrophic Plate Counts. A free chlorine residual, total chlorine residual and turbidity test is done with each sample. These samples are taken from various points in the Central Elgin Distribution System on a rotational basis to ensure representative sampling of the entire system. Central Elgin exceeds the minimum number of microbiological samples required every month.

The Municipality samples for trihalomethanes, haloacetic acids, lead, alkalinity and pH from the distribution system as required by Ontario Regulation 170/03. One of the requirements of Ontario Regulation 170/03 is to sample and test free chlorine residual on a routine basis from the distribution system. The Municipalities Certified operators perform this test from various points in the distribution system to ensure chlorine levels are adequate.

A detailed summary of all test results can be found in the 2017 Annual Report for the Central Elgin Distribution System.

NON-COMPLIANCE WITH TERMS AND CONDITIONS OF THE DRINKING WATER LICENSE/PERMIT AND REGULATION 170/03

There were not any Non-Compliant issues with in the Central Elgin Distribution System in 2017.

The Annual Ministry of the Environment Inspection of the Central Elgin Distribution System also found Water Operations to be in compliance scoring the system 100% compliant.

SUMMARY AND DISCUSSION OF THE QUANTITY OF WATER SUPPLIED

The Summary report requires a discussion and review of the amount of water supplied to the Central Elgin Distribution System. This review is to include daily maximum, monthly average and yearly totals of water supplied.

Due to the complexity of the Central Elgin Distribution System and the many sources of water supply, the Municipality does not have the ability at this time to record the amount of water supplied to all areas of the system. Billing is done through individual customer water meters.

SUMMARY AND DISCUSSION OF WATER SAMPLING RESULTS

Microbiological Samples

Microbiological water sampling in the Central Elgin Distribution System is done as required by the Ontario Drinking Water Regulation 170/03. The Regulation requires weekly microbiological samples to be taken from the distribution system. These samples must be taken from all areas of the system on a rotational basis to ensure water quality goals in all areas are met. A detailed summary of these sample results can be found in the Annual Report for the Central Elgin Distribution System, which can be found in the Appendices of this report.

There are many microbiological samples taken from the Central Elgin Distribution System each year. On occasion samples are found to contain bacteria in them. This does not mean that the water was contaminated. In some cases, bacterial contamination can occur in other ways such as the unknowing use of a contaminated bottle or the unknowing use of a contaminated sample tap.

In 2017, there were two incidents of adverse microbiological water samples found in the Central Elgin Distribution System. These incidents are described below.

- July 4, 2017.
 - One sample taken at the sample station located at 347 Colborne Street returned with a result showing two Total Coliforms.
 - Re-samples returned clear of all bacteria.
- July 26, 2017.
 - One sample taken at the sample station located at 9475 Prior Street returned with a result showing nine Total Coliforms.
 - Re-samples returned clear of all bacteria.

Central Elgin Distribution System Summary Report for 2017

Chemical Samples

The Ontario Drinking Water Regulation 170/03 requires lead, alkalinity, haloacetic acid, pH and trihalomethane samples to be taken in the Central Elgin Distribution System. Ontario Regulation 170/03 also requires routine grab samples be taken in the distribution system and tested for free chlorine. Central Elgin Water Operators take more than the minimum free chlorine grab samples to ensure that chlorine residuals are adequate in all areas of the system. A detailed summary of these sample results can be found in the 2017 Annual Report for the Central Elgin Distribution System which is included in the Appendices of this report.

In 2017 there were not any adverse chemical water samples found in the Central Elgin Distribution System.

SUMMARY AND DISCUSSION OF TREATMENT CHEMICALS USED

Sodium Hypochlorite

Sodium Hypochlorite with 12% available chlorine is added with chemical feed pumps to boost the chlorine levels of water leaving the Port Stanley Water Tower. The Sodium Hypochlorite used, met all applicable standards of the American Water Works Association (AWWA) and met all the safety criteria of the American National Standards Institute (ANSI).

Primary Water Treatment Plant Chemicals

There is additional treatment chemicals used at the Elgin Area Water Treatment Plant in the primary treatment process. Chemicals such as fluoride and chlorine are used at this site. The Elgin Area Water Treatment Plant is not operated by the Municipality of Central Elgin. A summary of the chemicals used at the Elgin Area Water Treatment Plant can be found in the Summary Report for Elgin Area Water Treatment Plant.

SUMMARY AND DISCUSSION OF WORK DONE TO SYSTEM

Work done to the Central Elgin Distribution System in 2017 included:

- A small section of water main was replaced on Bridge Street in Port Stanley as part of the sewer construction project that was taking place at that location. Approximately 30m of water main was replaced.

SUMMARY

The Central Elgin Distribution System was operated by the Municipalities certified and competent water operators with no major issues in 2017. There was an extensive microbiological water-sampling program that saw no confirmed adverse bacterial samples. Routine chlorine residuals ensured that the disinfection in the system was adequate. The ongoing upgrade of the water system continued with water main replacements. The use of accredited laboratories and the implementation of policies and procedures will help ensure the continuing supply of safe drinking water to the users of the Central Elgin Distribution System.

APPENDIX

A

ANNUAL REPORT

**FOR THE
CENTRAL ELGIN DISTRIBUTION SYSTEM**

Part III Form 2
Section 11. ANNUAL REPORT.

Drinking-Water System Number:	260004761
Drinking-Water System Name:	Central Elgin Distribution System
Drinking-Water System Owner:	Municipality of Central Elgin
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2017 to December 31, 2017

<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;"> Central Elgin Administration Office 450 Sunset Drive St. Thomas Ontario, Canada N5R 5V1 </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div> <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; height: 20px; margin: 5px 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
-	-

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 Central Elgin Distribution System is a collection of water service areas that obtain all of their water from other regulated water systems. The majority of the consumers are from the Port Stanley and Union areas, which obtain all of their water from the Elgin Area Primary Water System. The remaining areas obtain their water from rural spur mains that are connected to other secondary water systems. There are approximately 5000 people serviced by the Central Elgin Distribution System.

There is chlorine boosting equipment located inside the Port Stanley Elevated Water Tower which uses Sodium Hypochlorite to increase chlorine levels on the discharge side of the water tower.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite is used for disinfection at the Port Stanley Water Tower and is the only chemical used within the Central Elgin Distribution System.

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

In 2017 water mains were replaced in the Central Elgin Distribution System in the following areas;

-A small section of water main was replaced on Bridge Street at Carlow Road as part of another capital project.

The total cost of replacement was approximately \$40,000 plus HST.

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

Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
Total Coliforms	2	Count/100 ml	Re-Sample	July 11, 2017
Total Coliforms	9	Count/100 ml	Re-Sample	August 1, 2017

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 #)	Number of Background Samples	Range of Background Results (min #)-(max #)
Distribution System	672	0 to 0	0 to 9	671	<10 to >2000	672	0 to 39

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

Parameter	Number of Grab Samples	Range of Results of grab samples (min #)-(max #)	Number of Continuous Monitoring Samples	Range of Results of continuous monitoring (min #)-(max #)	Average of continuous monitoring results
Turbidity (Distribution)	2862	0.06 to 2.40 NTU	0	N/A	N/A
pH (Distribution)	6	7.27 to 7.87	8760	7.15 to 8.47	N/A
Free Chlorine (Distribution)	3125	0.10 to 2.64 mg/L	8760	0.55 to 4.26 mg/L	1.38 mg/L
Total Chlorine (Distribution)	3125	0.18 to 2.77 mg/L	8760	0.55 to 4.70 mg/L	1.48 mg/L

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
-	-	-	-	-

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

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony				
Arsenic				
Barium				
Boron				
Cadmium				
Chromium				
*Lead	See	Table	Below	
Mercury				
Selenium				
Sodium				
Uranium				
Fluoride				
Nitrite				
Nitrate				

Summary of lead testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	M.A.C.	Range of Lead Results	Number of Exceedances
Plumbing	0	0.10 mg/L	N/A	N/A
Distribution	6	0.10 mg/L	0.00006 to 0.00035 mg/L	0

Summary of alkalinity testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	M.A.C.	Range of Alkalinity Results	Number of Exceedances
Distribution	6	N/A	89 to 101 mg/L	N/A

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

Parameter	Sample Date	M.A.C.	Result Value	Unit of Measure	Exceedance
Alachlor					
Aldicarb					
Aldrin + Dieldrin					
Atrazine + N-dealkylated metabolites					
Azinphos-methyl					
Bendiocarb					
Benzene					
Benzo(a)pyrene					
Bromoxynil					
Carbaryl					
Carbofuran					
Carbon Tetrachloride					
Chlordane (Total)					
Chlorpyrifos					

Cyanazine					
Diazinon					
Dicamba					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					
Dichlorodiphenyltrichloroethane (DDT) + metabolites					
1,2-Dichloroethane					
1,1-Dichloroethylene (vinylidene chloride)					
Dichloromethane					
2-4 Dichlorophenol					
2,4-Dichlorophenoxy acetic acid (2,4-D)					
Diclofop-methyl					
Dimethoate					
Dinoseb					
Diquat					
Diuron					
Glyphosate					
Total Haloacetic Acids (HAA5)	2017 Avg.	R.A.A. 0.10	R.A.A. 0.01715	mg/L	No
Heptachlor + Heptachlor Epoxide					
Lindane (Total)					
Malathion					
Methoxychlor					
Metolachlor					
Metribuzin					
Monochlorobenzene					
Paraquat					
Parathion					
Pentachlorophenol					
Phorate					
Picloram					
Polychlorinated Biphenyls(PCB)					
Prometryne					
Simazine					
THM (Total) (NOTE: show latest annual average)	2017 Avg.	R.A.A. 0.10	R.A.A. 0.04	mg/L	No
Temephos					
Terbufos					
Tetrachloroethylene					
2,3,4,6-Tetrachlorophenol					
Triallate					
Trichloroethylene					
2,4,6-Trichlorophenol					
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)					

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

Trifluralin					
Vinyl Chloride					

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
-	-	-	-

(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)