

# St. Andrews/Rosedale Distribution System

Certificate of Approval No. 6314-654PDH (Sept. 2004)

Works No. 260001250

- 2008 Summary Report -

Prepared by:

Caneau Water and Sewage Operations Inc.

15005 County Road 2

RR#3 Ingleside, ON

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Operations Manager: \_\_\_\_\_

Chris Eamon

# ST. ANDREWS/ROSEDALE DISTRIBUTION SYSTEM

## 2008 SUMMARY REPORT

<b>Facility description:</b>	<b>Water booster pumping station</b>
<b>Capacity:</b>	<b>898 m<sup>3</sup></b>
<b>Service area:</b>	<b>St. Andrews/Rosedale Subdivision</b>
<b>Service population:</b>	<b>1850</b>
<b>Raw water source:</b>	<b>St. Lawrence River (water supplied by the City of Cornwall)</b>
<b>Operations manager:</b>	<b>Chris Eamon (613)-551-2720</b>

Water enters from the Cornwall Distribution System at two points, one on Mack Street and one at the corner of Highway 138 and Cornwall Centre Road. Each of these locations contains a metering chamber, which is owned and monitored by the City of Cornwall. In each of these metering chambers, a system of check valves has been installed to prevent backflow into the Cornwall Distribution System.

The booster pumping station and re-chlorination facility consists of the following:

- Duty pumps – two vertical in-line centrifugal booster pumps (one duty, one standby) each rated at approximately 10.4 L/s at a Total Dynamic Head (TDH) of 12.5 m,
- Disinfection system – a sodium hypochlorite disinfection system with automatic switchover consisting of two (2) solution feed pumps each rated at approximately 0.315 L/h at a pressure of 1750 kPa; a 100 L capacity hypochlorite solution tank with spill containment,
- Standby power – provision for connection to portable diesel unit,
- Instrumentation – flow meter and chlorine residual analyzer,

together with all necessary mechanical and electrical work, instrumentation and controls.

The elevated tank is located on the south side of County Road 18. It has a ground elevation of 71.5m. The tower's overflow is at an elevation of 120.3 m. The main water storage cavity is 9.4 m in diameter. It has an effective capacity of 770 m<sup>3</sup>. It is fed and emptied via a 200 mm diameter riser.

The tower is equipped with a Rosemount pressure sensor, which sends signals to the lift station to turn the pumps on or off.

### **Compliance with Terms and Conditions of the Certificate of Approval**

The St. Andrews/Rosedale Distribution System is operated and maintained in accordance with O. Reg. 170/03 dated June 1, 2003 and Certificate of Approval No. 6314-654PDH dated September, 2004.

The distribution system is operated to treat water at a rate not exceeding the maximum flow rate of 898 m<sup>3</sup>/day. The average water taking for the year was 247m<sup>3</sup>/day, 28% of the authorized water taking.

Free chlorine residual in treated water is continuously monitored at the point of entrance into the distribution system. The Prominent chlorine analyzer is accurate to  $\pm 2\%$  of the measured value. The online analyzer is monitored, at minimum, every 72 hours. The on-line chlorine analyzer is checked with the hand-held chlorine analyzer and adjusted as required. An alarm system calls out when the chlorine goes below 0.10 mg/L or above 3.50 mg/L. Operators at the St. Andrews Booster Stations try to keep the chlorine residual around 0.60 mg/L. (See Appendix I for flows and average chlorine residual.) The chlorine analyzer was calibrated June 18, 2008 by Ken Harris Instrumentation.

Operators in charge of the St. Andrews Booster Station keep a daily log book recording flow meter readings, free chlorine residual (both continuous and grab samples), and other physical and chemical parameters of the treated water. The booster station is checked (at minimum) every 72 hours.

Samples are collected throughout the year from the treated water to determine whether or not the water is safe for human consumption (in accordance with O. Reg. 170/03, Schedule 10 and 13, Microbiological and Chemical Sampling and Testing). Bacteriological analysis is performed weekly (10 samples per month) on the distribution samples, (representing the water stream from which they are taken), trihalomethanes are analyzed 4 times a year. Lead is required to be sampled from private plumbing (40 samples), non-residential (4 samples) and in the distribution system (8 samples). (See Appendix II for chemical parameters.) All samples are analyzed at Caduceon Environmental Labs in Nepean, Ontario and Meyer Labs in Long Sault, Ontario. Meyer Labs and Caduceon and its subcontracted labs are accredited by the Standards Council of Canada. Written procedures have been established for the notification of the Medical Officer of Health and the Ministry of the Environment Spills Action Centre should a sample result indicate an exceedance has occurred. (See Appendix III for Procedures for Indicators of Adverse Water Quality). See Appendix IV for adverse water quality incidents.

Free chlorine residual in the distribution system is monitored by an alarmed online analyzer with datalogging. The analyzer is checked (at a minimum) every 72 hours. The distribution analyzer will alarm out when the chlorine residual goes below 0.15 mg/L for a period greater than 15 minutes. The distribution chlorine analyzer was calibrated June 18, 2008 by Ken Harris Instrumentation.

All records and information relating to or resulting from the monitoring, sampling and analyzing activities required by the Certificate of Approval are retained for a minimum of 5 years.

The St. Andrews/Rosedale Distribution System is classified Water Distribution 2 (Certificate Number 3669). Operators responsible for the operation of the St. Andrews/Rosedale Distribution System hold valid licences applicable to this type of water distribution system.

Following all maintenance or repairs to the water distribution system, all affected areas are disinfected in accordance with the MOE's "Procedure for Disinfection of Drinking Water in Ontario" dated March 17, 2003. All chemicals used in the treatment process (Chlorine, liquefied gas) and all materials contacting the water meet both the American Water Works Association (AWWA) quality criteria and the American National Standards Institute (ANSI) safety criteria. All chemicals have been registered by a testing institution accredited under the Standards Council of Canada Act or by ANSI.

A contingency plan and procedures have been established and implemented and adequate equipment and material are available for dealing with emergencies, upset conditions and equipment breakdowns in the works.

An operating manual is being prepared by the engineer and will be kept up to date, incorporating the requirements of the new Certificate of Approval, and any adopted operation and maintenance recommendations of the Engineer's Report (May 2001) based on which this certificate has been issued. The manual includes monitoring and reporting of the necessary in-process parameters essential for control of the treatment process and for the assessment of the performance of the works. It also contains procedures that are required for adequate operation and maintenance of the monitoring equipment.

Drawings will be prepared and kept up-to-date showing the new works as constructed (record drawings), including timely incorporation of all modifications made to the works throughout its operational life.

A Process and Instrumentation Diagram (PID) for the water booster station and the elevated storage reservoir has been prepared and kept up to date, including timely incorporations of all modifications made to the works throughout its operational life.

All record drawings and diagrams and all existing record drawings which are currently in retention throughout the operational life of the water works are readily available for inspection by Ministry staff.

Procedures have been established and are followed for receiving, responding to, and recording complaints about any aspect of the works, including recording the steps that were taken to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its reoccurrence. (See Appendix V for complaint form.)

### **Non-Compliance with Terms and Conditions of the Certificate of Approval**

Ministry of the Environment's 2008/2009 Compliance Inspection was completed on February 10, 2009. A copy of the report will be available at the Township Office upon receipt from the Ministry.

### **Maintenance**

May – hydrant flushing

June 18 & 19, 2008 – annual calibration of flow meter and chlorine analyzer (Ken Harris Instrumentation)

October – hydrant flushing

APPENDIX I

FLOW DATA

APPENDIX II  
LABORATORY ANALYSIS  
RESULTS

APPENDIX III

PROCEDURES FOR INDICATORS OF  
ADVERSE WATER QUALITY

## **INDICATORS OF ADVERSE WATER QUALITY - PROCEDURES**

### **Indicator of Adverse Water Quality (O. Reg. 170/03)**

**If the result of analysis indicates that the level of any parameter exceeds its MAC or IMAC, the local Medical Officer of Health and the Spills Action Centre must be notified immediately by the water works owner (operator) and immediate resampling is required.**

#### ***E. Coli* or Fecal coliform guideline is > 0 counts per 100 mL**

Oral notification must be made immediately when *E. Coli*/Fecal coliform is detected in any sample (with the exception of Raw Water). Notify Eastern Ontario Health Unit (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. Notification to all parties must be to a live person.

#### Corrective Action:

- Increase the chlorine dose and flush the mains to ensure that a total chlorine residual of at least 1.0 mg/L or a free chlorine residual of 0.2 mg/L is achieved at all points in the affected part(s) of the distribution system. Resample and analyze. Corrective Action should begin immediately and continue until *E. coli* and/or fecal coliforms are no longer detected in two consecutive sets of samples or as instructed by the local Medical Officer of Health.
- Immediate re-sampling is required
- Re-sampling consists of a minimum of three samples for *each positive sampling location*: one sample at the affected site; one at an adjacent location on the same distribution line; and one collected some distance upstream on a feeder line toward the water source. Note the times of sampling and the free chlorine residuals as well.

#### **Total coliform guideline is > 0 counts per 100 mL**

Oral notification must be made immediately when total coliform is detected in any sample (with the exception of Raw Water). Notify Eastern Ontario Health Unit (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. Notification to all parties must be to a live person.

#### Corrective Action:

- Resample at the same site and analyze. If confirmed to be positive, increase the chlorine dose and flush the mains to ensure that a total chlorine residual of at least 1.0 mg/L or a free chlorine residual of 0.2 mg/L is achieved at all points in the affected part (s) of the distribution system. Corrective Action outlined should begin immediately and continue until total coliforms are no longer detected in two consecutive sets of samples or as instructed by the local Medical Officer of Health.
- Immediate re-sampling is required
- Re-sampling consists of a minimum of three samples for *each positive sampling location*: one sample at the affected site; one at an adjacent location on the same distribution line; and one collected some distance upstream on a feeder line toward the water source. Note the times of sampling and the free chlorine residuals as well.

**Greater than 200 background colonies**

Oral notification must be made immediately when a water sample (other than raw water) contains more than 200 colonies. Notify Eastern Ontario Health Unit (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. Notification to all parties must be to a live person.

Corrective Action:

- Resample immediately and analyze
- Re-sampling consists of a minimum of three samples for *each positive sampling location*: one sample at the affected site; one at an adjacent location on the same distribution line; and one collected some distance upstream on a feeder line toward the water source. Note the times of sampling and the free chlorine residuals as well.

**Unchlorinated water or free chlorine residual <0.05 mg/L (including leaving the plant and anywhere in the distribution system):**

Oral notification must be made immediately. Notify Eastern Ontario Health Unit (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. Notification to all parties must be to a live person.

Corrective Action:

- Restore chlorination immediately and follow instructions as directed by the local Medical Officer of Health

**Turbidity results of 1.00 NTU or greater**

Oral notification must be made immediately when turbidity reaches 1.00 NTU. The maximum turbidity result must be reported. Notify the Medical Officer of Health (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. As a courtesy, notify the local Ministry of the Environment Office at 933-7402. Notification to all parties must be to a live person.

- Flush mains until turbidity returns to normal levels.

**Sodium concentration exceeds 200 mg/L**

Notification need not occur more frequently than once in five years. Notification must be made to the local Medical Officer of Health (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. Corrective action: resample and analyze. On confirmation, call the local Medical Officer of Health again. Notification to all parties must be to a live person.

**Oral and Written Procedures:**

**Written notification forms (Notice of Drinking Water Analysis and Remedial Actions for Waterworks as required under Drinking Water Protection Regulation) Parts 1 and 3 are faxed to us by the laboratory and we are required to fill out Part 2 of the forms. Forms must be sent within 24 hours of oral notification.**

- Laboratory oral notification to Jennifer McNeely (or on call operator in her absence)

Jennifer McNeely: (613) 537-2719  
Jennifer McNeely: (613) 937-5647 (pager)  
On Call Operator : 613-937-7988 (pager)

On Call Operator : (613)937-7814(pager)

- The person who receives oral notification from laboratory should immediately contact Jennifer Lawson or proceed with the following procedure in Jennifer's absence.

Oral notification must be made to the local Medical Office of Health (Dr. Paul Roumeliotis' Office). Manon Carrière or Irene Marchand (Dr. Roumeliotis' Assistants) usually speaks on behalf of Dr. Roumeliotis. After 5 PM, the call is forwarded to another office and care should be taken to send a fax both to Dr. Roumeliotis' Office as well as to the office in which the "after-hours" notification was made.

MOH: (613) 933-1375

- Oral notification to the MOE Spills Action Centre - take note of the persons name in order to send the fax to their attention

MOE Spills Action Centre: 1-800-268-6060

- Written notification to the local Medical Office of Health (Dr. Paul Roumeliotis' Office), Manon Carrière or Irene Marchand – Dr. Roumeliotis' Assistants. It is customary to include a detailed CANEAU fax sheet describing the situation, Chlorine residual, actions taken and reassurance that a follow up fax will be forwarded with the results of the re-samples

MOH Fax Number: (613) 933-7930

- Written notification to the MOE Spills Action Centre. It is customary to include a detailed CANEAU fax sheet describing the situation, Chlorine residual, actions taken and reassurance that a follow up fax will be forwarded with the results of the re-samples

MOE Spills Action Centre Fax Number: 1-800-268-6061 or 1-416-325-3011

- Written notice to the appropriate Township Office. The Twp. Offices should be contacted orally as well. It is customary to include a detailed CANEAU fax sheet describing the situation, Chlorine residual, actions taken and reassurance that a follow up fax will be forwarded with the results of the re-samples.

Township of South Stormont - Betty De Haan: 537-2362/537-9441 or Dan Pilon: 930-3283  
Township of South Stormont - Fax Number: 537-8113

Township of South Dundas - Brenda Brunt: 535-2673  
Township of South Dundas - Fax Number: 535-2099

- Contact the local MOE office by fax with the notifications (out of courtesy – not required or stipulated in the guidelines).

MOE Cornwall fax number: 933-6402

In Jen's absence, the same procedure should be strictly adhered to and copies of all forms forwarded to Jen.

#### **RESULTS OF FIRST RE-SAMPLE RETURN FREE OF BACTERIOLOGICAL COUNTS:**

Once the results of the re-samples are returned, fax each of the resample results to the MOE Spills Action Centre and the local Medical Officer of Health the day we receive them. Also fax the local MOE office with the results.

### ***E. Coli* or Fecal coliform**

- Corrective action should continue until total coliforms are no longer detected in two consecutive sets of samples or as instructed by the local Medical Officer of Health.
- Fax the results of the re-samples to the local Medical Officer of Health (Dr. Paul Roumeliotis), MOE Spills Action Centre, the Township Office, and the local MOE Office.

### **Total coliform**

- Corrective action should continue until total coliforms are no longer detected in two consecutive sets of samples or as instructed by the local Medical Officer of Health.
- Fax the results of the re-samples to the local Medical Officer of Health (Dr. Paul Roumeliotis), MOE Spills Action Centre, the Township Office, and the local MOE Office.

### **Background**

Fax the results of the re-samples to the local Medical Officer of Health (Dr. Paul Roumeliotis), MOE Spills Action Centre, the Township Office, and the local MOE Office.

### **RESULTS OF RE-SAMPLES RETURN WITH ELEVATED COUNTS:**

#### ***E. Coli* or Fecal coliform**

Oral notification must be made immediately when E.Coli/Fecal coliform is detected in any sample (with the exception of Raw Water). Notify Eastern Ontario Health Unit (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. Notification to all parties must be to a live person.

- Increase the chlorine dose and flush the mains to ensure that a total chlorine residual of at least 1.0 mg/L or a free chlorine residual of 0.2 mg/L is achieved at all points in the affected part (s) of the distribution system. Resample and analyze. Corrective Action should begin immediately and continue until *E. coli* and fecal coliforms are no longer detected in two consecutive sets of samples or as instructed by the local Medical Officer of Health.
- Immediate re-sampling is required
- Re-sampling consists of a minimum of three samples for *each positive sampling location*: one sample at the affected site; one at an adjacent location on the same distribution line; and one collected some distance upstream on a feeder line toward the water source. Note the times of sampling and the free chlorine residuals as well.

#### **Total coliform**

Oral notification must be made immediately when total coliform is detected in any sample (with the exception of Raw Water). Notify Eastern Ontario Health Unit (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. Notification to all parties must be to a live person.

- Resample at the same site and analyze. If confirmed to be positive, increase the chlorine dose and flush the mains to ensure that a total chlorine residual of at least 1.0 mg/L or a free chlorine residual of 0.2 mg/L is achieved at all points in the affected part (s) of the distribution system. Corrective Action outlined should begin immediately and continue until total coliforms are no longer detected in two consecutive sets of samples or as instructed by the local Medical Officer of Health.
- Immediate re-sampling is required

- Re-sampling consists of a minimum of three samples for *each positive sampling location*: one sample at the affected site; one at an adjacent location on the same distribution line; and one collected some distance upstream on a feeder line toward the water source. Note the times of sampling and the free chlorine residuals as well

### **Background**

Oral notification must be made immediately when > 200 colonies is detected in any sample (with the exception of Raw Water). Notify Eastern Ontario Health Unit (Dr. Paul Roumeliotis) at 933-1375. Notify Spills Action Centre at 1-800-268-6060. Notification to all parties must be to a live person.

- Notify the local Medical Officer of Health again and consult (must speak to a live person).
- Immediate re-sampling is required
- Re-sampling consists of a minimum of three samples for *each positive sampling location*: one sample at the affected site; one at an adjacent location on the same distribution line; and one collected some distance upstream on a feeder line toward the water source. Note the times of sampling and the free chlorine residuals as well.

**Written notification must be sent to the appropriate agencies within 24 hours of oral notification.**

APPENDIX IV  
COMPLAINT FORM



**CANEAU WATER AND SEWAGE OPERATIONS Inc.  
Record of Public Complaint**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_ Phone: \_\_\_\_\_

Location (if different from above address): \_\_\_\_\_

Name of utility the complaint is about: \_\_\_\_\_

Complaint: Odour: \_\_\_\_\_ Taste: \_\_\_\_\_ Colour: \_\_\_\_\_ Pressure: \_\_\_\_\_ Other: \_\_\_\_\_

Briefly describe the complaint:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date Noted: \_\_\_\_\_

Time Noted: \_\_\_\_\_

Date Reported: \_\_\_\_\_

Time Reported: \_\_\_\_\_

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Actions Taken by: \_\_\_\_\_

Actions Taken:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ Date Actions Were Taken: \_\_\_\_\_

Follow-up conversations with Complainant: Yes  No

### St. Andrews/Rosedale Distribution System Lead Sampling

Location Type	Number of Samples	Range of Results (mg/L)	Exceedances	MAC mg/L
Plumbing	42	<0.00002-0.0038	0	0.010
Distribution	8	<0.00002-0.0019	0	0.010
Non-Residential	4	0.00041-0.00361	0	0.010

MAC - Maximum Acceptable Concentration

**St. Andrews/Rosedale Distribution System**

Microbiological parameters	MAC	Number of Samples	Range CFU/100 mL	Adverse Water Incidences	Typical Source of Contamination
<b>Total Coliform</b> (CFU/100 mL)	0	120	<1	0	Indicates possible presence of fecal matter
<b>E. Coli</b> (CFU/100 mL)	0	120	<1	0	Definite indicator of fecal matter
<b>HPC</b> (CFU/1 mL)*	N/A	47	<2-20	0	Cannot distinguish harmful forms of bacteria from harmless forms.

**Booster Station**

Physical Parameters	MAC	Number of Samples	Annual Average (range)	Adverse Water Incidences	Typical Source of Contamination
<b>Free Chlorine</b> (mg/L)	--	8760	0.79 (0.10-5.01)	0	Based on MOE Procedure B13-3 a minimum free chlorine residual of 0.2 mg/L and a maximum free residual of 3 mg/L should be maintained at all times in order to control microbiological quality in the system.

**Distribution System**

Physical Parameters	MAC	Number of Samples	Annual Average (range)	Adverse Water Incidences	Typical Source of Contamination
<b>THM's</b> (mg/L)	0.100	4	0.06 (0.025-0.080)	0	Chlorine combining with naturally occurring organics (precursors) left in the water after filtration
<b>Free Chlorine</b> (mg/L)	--	8760	0.62 (0.22-1.48)	0	Based on MOE Procedure B13-3 a minimum free chlorine residual of 0.2 mg/L and a maximum free residual of 3 mg/L should be maintained at all times in order to control microbiological quality in the system.
<b>Lead</b> (mg/L)	0.01	1	0.00012	0	Only present as a result of corrosion of lead solder, brass fittings containing lead or lead pipes. Lead ingestion should be avoided.

MAC - Maximum Acceptable Concentration

mg/L - milligrams per litre

NA - not applicable