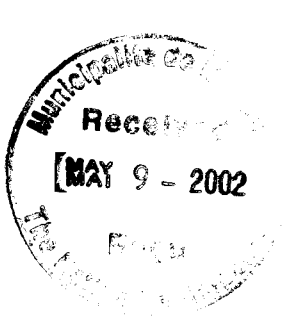

MINISTRY OF THE ENVIRONMENT

CORPORATION OF THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE

Supply and Water Treatment System
Consolidated Certificate of Approval no. 2052-54FRY9
MOE Reference No. 8402-4XNGRM
Fulfillment of Upgrading Requirements – Section 5 of the Certificate of Approval

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APRIL 2002
LEL FILE: 5918.23

MAY 9 - 2002
Reçu
The Nation Municipality

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List of Appendices

1.0 Introduction

The purpose of the present report is to respond to conditions 5.1a) and 5.1b) of consolidated certificate of approval no. 2052-54FRY9 dated January 31st, 2002. A copy of this certificate is included in the report under Appendix I. Condition 5.1a) asks the Municipality to undertake a hydrological study that will verify whether or not the groundwater source at wells 1, 2, 3 and 4 are under the direct influence of surface water.

Whereas, condition 5.1b) suggests an alternative to condition 5.1a) that an engineer's report be submitted proposing the implementation of a chemically-assisted filtration or approved equal treatment process at the existing water treatment plant facility.

We shall demonstrate to the Ministry of the Environment Director, hereafter abrieviated to the Director, that condition 5.1a) is currently under progress and how the present water treatment process can be improved with simple modifications to the existing disinfection system regardless of whether or not the ground water source is under the direct influence of surface water. This shall eliminate the need for a costly chemically-assisted filtration process. This improvement of continuous disinfection will meet the disinfection requirements of the certificate of approval.

The above statement is based on our review of past and present water analysis records of the raw and treated water with respect to the present water treatment process.

2.0 Disinfection Requirements for Ground Water Source

The documents governing the requirements for disinfection systems for ground water sources are :

- Section 5 of O.Reg. 506/01 (formerly O. Reg. 459/00), Ontario Drinking Water Protection Regulation, refer to Appendix II.

- Procedure B13-3 Chlorination of potable water supplies in Ontario, Section 2.1 refer to Appendix III.

Note that section 5 (1) of O.Reg. 506/01 specifies that the minimum level of treatment for water from an underground source is disinfection using chlorine or other agents. The procedure B13-3 is a supporting document for O.Reg. 506/01, providing guidance for the use of chlorine for disinfection. Section 2.1b of the procedure, attached in Appendix III, specifies the conditions where disinfection requirements could be achieved with simple chlorination, without filtration, for an underground source under direct influence of surface water.

These conditions are :

A - If the characteristics of the water source are suitable to avoid filtration.

B - if there is adequate watershed control to avoid filtration.

C - with respect to the above, the minimum level of treatment using a chlorine disinfection system can achieve 3 log reduction of giardia lamblia cysts and 4 log reduction of viruses.

The minimum level of treatment proposed will meet the disinfection requirements as determined by the Ministry of the Environment and governed by O.Reg. 506/01.

3.0 Characteristics of the Water Source

3.1 Chemical/Physical Parameters

We have gathered and compiled the chemical/physical parameters of past and present raw water sample records taken from well no. 1 to 5 inclusively. Please refer to tables 1, 3 and 4 of Appendix IV.

. Table 1 - Chemical/physical health-related parameters;

The results indicate that most of the parameters are non-detectable. The only parameters that could require filtration are turbidity and the potential for trihalomethane formation.

. Table 3 - Radionuclides;

The results indicate that all wells meet the provincial standards.

. Table 4 - Non-health related parameters;

The results here again indicate that the present water treatment process controls colour, hydrogen sulfide, iron and manganese which are within the provicial standards.

With respect to **turbidity**, the present water treatment process at the St-Isidore plant, which includes forced aeration, chemical oxydation and greensand filtration, reduces the turbidity to 0.2 NTU on average and was measured as low as 0.14 NTU on December 13th, 2001. The maximum acceptable limit for turbidity is 1.0 NTU.

Therefore, chemically-assisted filtration, using a coagulant, will not significantly improve the water quality, since turbidity and colour are already very low and within provincial standards.

Futhermore, a coagulant is more effective on surface water, where colour could be as high as 60 TCU and turbidity can be as high as 16 NTU. The coagulant process would also result in massive sludge production that would eventually overload the present greensand filter residue disposal system.

With respect to potential formation of **trihalomethane (THM's)**, the results reported last year indicate a concentration of 0.0505 mg/L on average. This concentration is lower than the maximum acceptable concentration of 0.100 mg/L on an annual basis. However, the THM concentration was above the standard in November 2001 because of a momentarily higher than normal dosage of chlorine. The THM's could be reduced by using potassium permanganate as the prime oxydant instead of chlorine which is presently used. Since potassium permanganate is an oxydant chemical stronger than chlorine (i.e. sodium hypochloride), this change will result with a lower chlorine dosage for final disinfection, which will consequently reduce the potential formation of trihalomethanes in the treated water.

3.2 Microbiological Parameters of raw water, except Clostridium Perfringens

The results of microbiological parameters of raw water samples which were analysed from 1999 to 2001 are summarized in the tables included in Appendix V, as well as a copy of the result sheets for wells no. 1 2, 3 and 4 for the period between September 28th and November 1st, 1999.

The original copy of the laboratory analytical result sheets for the period covering the years 2000 and 2001 was submitted to the Director under a separate report dated December 3rd, 2001.

Results indicate that wells no. 1, 2 and 3 have a very low level of contamination from fecal coliform and total coliform over a long period of time, except during the months of September and October 1999 where higher concentrations were reported. It appears that during this period, heavy rainfall was the cause of higher concentrations of coliform present in the aquifer. Since October 1999, no contamination of this nature has occurred as confirmed by the results.

From previous studies conducted on the St-Isidore wells, it was determined in 1997 that well no. 4 was contaminated with E-Coli bacteria from surface water. The well has since been shut down permanently.

Needless to say that wells no. 1, 2, 3 and 4 are under the direct influence of surface water.

3.3 Clostridium perfringens counts

Appendix VI includes copies of laboratory analytical result sheets for the period between April 1997 and December 2001 for Clostridium perfringens (Giardia cyst indicator). The sampling of the raw water was done at the junction point where wells no. 1, 2, 3 and 4 interconnect. Note that results for well no. 5 raw water are available only for the period between June to December 2001.

The results indicate no positive Clostridium perfringens count, even during the fall of 1999 where an episode of bacteria contamination was reported at wells no. 1, 2 and 3.

We can conclude that Giardia cysts are not present in the St-Isidore undergound water source, even though this source seems to be under the direct influence of surface water.

4.0 Watershed Control

The Nation Municipality is participating with other municipal authorities of Eastern Ontario in a well head protection area study managed by the Raisin Region Conservation Authority. The terms of reference of this study as well as the name of the contact person is included under Appendix VIII.

This study will, in part, undertake a detailed review of the five St-Isidore wells discussed previously and will make recommendations as to measures that need to be applied to prevent biological and chemical contamination of underground water sources which are under the direct influence of surface water. The study will establish a delineation of the wellhead protection areas assisted with the ground water source in accordance with the « Protocal for Delineation of Wellhead Protection Areas for Municipal Groundwater Supply Wells under Direct Influence of Surface Water ». It will also provide a description of the proposed wellhead protection measures satisfactory to the Director and will therefore address condition 5.1a).

5.0 Status of Chemically-assisted Filtration

The consultant considers that the Giardia cyst and viruses inactivation requirements can be achieved by simple disinfection at the St-Isidore water treatment plant, since :

Raw water characteristics do not justify the use of chemically-assisted filtration, since turbidity, colour and organic matter within raw water are already low enough and properly treated with the present aeration and greensand filtration process.

The municipality will provide adequate watershed protection, following the conclusions of a hydrogeological study to be undertaken this spring.

Therefore, the disinfection process should be reviewed in order to achieve the Giardia and viruses removal requirements by using the proper chlorine dosage. Protection measures for the wells, when made available at a later date, will be submitted to the Director.

6.0 Review of Disinfection Process

6.1 Parameters Affecting Disinfection Process

The temperature and pH of the raw water are the two major physical parameters which affect the disinfection process. These parameters are utilized in procedure B13-3 to determine the inactivation rate for Giardia cysts and viruses. In general, when a high temperature and low pH are present, the more efficient the disinfection process becomes. The typical values of temperature and pH measured at the St-Isidore water treatment plant are as follows :

Parameter	Raw water at Wells no.				Combined Treated Water	Raw Water at Well no. 5
	1	2	3	4		
PH-1998	8.1	8.71	8.09	7.58	-	7.70
pH Fall 2000	8.17	8.66	8.19	8.03	7.8	8.19

Parameter	Combined Treated Water	Raw Water at Well no. 5
Temperature		
Minimum (°C)	6.9	8
Average (°C)	9.5	10
Maximum (°C)	12.1	12

The above values indicate that the disinfection process at the St-Isidore plant would have to be capable of providing a higher contact time and/or chlorine residual and/or pH adjustment during the winter compared to summer in order to achieve a relatively constant disinfection efficiency rate throughout the year.

6.2 Disinfection process with present raw water characteristics

The following table illustrates extreme conditions of log inactivation for Giardia cysts and viruses by final disinfection during winter and summer periods, assuming no pH adjustment and inactivation of viruses with the injection of simple chlorine.

Verification of CT Disinfection for Giardia Cyst before First Consumer without pH ajustment

PARAMETER	Wells no. 1, 2, 3 and 4		
Raw water temperature (°C)	6.9	10	12.1
pH (after aeration)	8.0	7.8	7.5
Free chlorine residual at first consumer (mg Cl/L)	2.2	1.7	7.5
Clearwell (two compartments)			
Minimum volume (m^3)	64	64	64
T_{10} / T ratio	0.5	0.5	0.5
Maximum flowrate (L/s)	8.7	8.7	8.7
T (min.)	61.3	61.3	61.3
Connecting Main			
Flowrate (L/s)	8.83*	8.83*	8.83*
Diameter (mm)	150	150	150
Distance to first consumer (m)	1250	1250	1250
T_{10} / T ratio	1.0	1.0	1.0
T (min.)	41.7	41.7	41.7
Total T (min.)	103	103	103
Total CT prior to first consumer (mg Cl/L*min)	226	175	124
Corresponding log inactivation for Giardia cyst by final disinfection**	3.1	3.2	3.1

Note :* ***The maximum flow through the connecting main is occurring when two (2) high lift pumps are in operation.*

Note :* ***Minimum requirement for groundwater supply under the influence of surface water = 3.0 log inactivation of Giardia cysts.

Verification of Log Inactivation of Viruses

PARAMETER	Wells no. 1, 2, 3 and 4		
Temperature (°C)	6.9	10	12.1
pH	8.0	7.8	7.5
Free chlorine residual at first consumer(mg Cl/L)	2.2	1.7	1.2
Time (min.)	103	103	103
CT (mg Cl/L*min)	227	175	124
Log inactivation	>10	>10	>10

Note :* ***Minimum inactivation requirement for viruses = 2.0*

The free chlorine residual at the first consumer varies widely between 1.2 mg Cl/L in summer to 2.2 mg Cl/L in winter. By comparison, the average free chlorine residual was 1.25 mg Cl/L in 2000 and 1.59 mg CI/L in 2001.

It is important to note that the present disinfection process can achieve the log inactiviation requirements of Giardia cysts and viruses by increasing the free chlorine residual at the first consumer to 2.2 mg CI/L all year long.

6.3 Control of Potential THM formation

To minimize the formation of disinfection by-products such as THM's, potassium permanganate will have to be used as primary oxydant instead of sodium hypochlorite. The results of this modification are the following :

- lower dosage of chlorine at final disinfection
- lower chemical count
- lower potential trihalomethane formation rate

7.0 Proposed Modifications to the Water Disinfection Process

The plant operator should be capable of providing and maintaining a free chlorine residual at the first consumer of 2.2 mg Cl/L by adjusting the concentration of sodium hypochlorite at the final disinfection stage. This change does not require a modification to the certificate of approval.

Futhermore, potassium permanganate should be used as the primary oxydant. A potassium permanganate feed system should be provided in accordance to the certificate of approval. Please refer to page 2 in Appendix I.

8.1 Summary and Conclusion

The St-Isidore water treatment plant's consolidated certificate of approval no. 2052-54FRY9 dated January 31st, 2002, stated that the Nation Municipality shall undertake a hydrogeological study at wells no. 1 to 4, in order to determine whether these wells are under the direct influence of surface water. Should this be the case, then the Ministry would recommend to implement chemically-assisted filtration or an equivalent treatment. Two conditions have to be fullfilled at the satisfaction of the MOE to avoid chemically- assisted filtration :

- that the water source is of adequate quality
- that there is adequate watershed control

After review of microbiological data, the consultant concludes that these wells are under the influence of surface water. Total and Fecal coliforms have been detected in September and October 1999. No Giardia cysts have ever been detected. The consultant recommends that the Municipality use potassium permanganate as primary oxydant and adjust the concentration of sodium hypochlorite at the final disinfection stage. This is based on the following reasons :

-Since the raw water has low turbidity and colour, the consultant is in the opinion that a chemically-assisted filtration process will not significantly improve the water quality.

-Watershed control will be provided by the Municipality following the recommendations of a hydrogeological study undertaken this spring. Specific protection measures will be submitted to the Director when available.

The consultant recommends to achieve Giardia Cyst inactivation with simple chlorine disinfection, by maintaining a chlorine residual of 2.2 mg Cl/L at the first consumer.

As well, potassium permanganate should be used as the prime oxydant instead of sodium hypochlorite. This modification can take place immediately since the feed equipment is already part of the certificate of approval. This change will maintain the potential trihalomethane formation concentration below the provincial standard within the water distribution system.

These measures can be applied immediately and at minimal cost to the Municipality.

Prepared by :
LECOMPTE ENGINEERING LTD.

Jean Hébert, P.Eng.
April 29, 2002

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Note :* ***The maximum flow through the connecting main is occurring when two (2) high lift pumps are in operation.*

Note :* ***Minimum requirement for groundwater supply under the influence of surface water = 3.0 log inactivation of Giardia cysts.

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Log inactivation	>10	>10	>10

Note :* ***Minimum inactivation requirement for viruses = 2.0*

The free chlorine residual at the first consumer varies widely between 1.2 mg Cl/L in summer to 2.2 mg Cl/L in winter. By comparison, the average free chlorine residual was 1.25 mg Cl/L in 2000 and 1.59 mg CI/L in 2001.

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The St-Isidore water treatment plant's consolidated certificate of approval no. 2052-54FRY9 dated January 31st, 2002, stated that the Nation Municipality shall undertake a hydrogeological study at wells no. 1 to 4, in order to determine whether these wells are under the direct influence of surface water. Should this be the case, then the Ministry would recommend to implement chemically-assisted filtration or an equivalent treatment. Two conditions have to be fullfilled at the satisfaction of the MOE to avoid chemically- assisted filtration :

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-Since the raw water has low turbidity and colour, the consultant is in the opinion that a chemically-assisted filtration process will not significantly improve the water quality.

-Watershed control will be provided by the Municipality following the recommendations of a hydrogeological study undertaken this spring. Specific protection measures will be submitted to the Director when available.

The consultant recommends to achieve Giardia Cyst inactivation with simple chlorine disinfection, by maintaining a chlorine residual of 2.2 mg Cl/L at the first consumer.

As well, potassium permanganate should be used as the prime oxydant instead of sodium hypochlorite. This modification can take place immediately since the feed equipment is already part of the certificate of approval. This change will maintain the potential trihalomethane formation concentration below the provincial standard within the water distribution system.

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LECOMPTE ENGINEERING LTD.

Jean Hébert, P.Eng.
April 29, 2002

APPENDIX I

5918.23

Ontario

Ministry of the Environment | Ministère de l'Environnement

CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE WATER WORKS
NUMBER 2052-54FRY9

RECEIVED
FEB 08 2002

The Corporation of the Municipality of The Nation
Rural Route, 3
Casselman, Ontario,
K0A 1M0

Site Location: St-Isidore Water Treatment Plant
Lot 22, Concession XI
The Nation Municipality, United Counties of Prescott and Russell

You have applied in accordance with Section 52 of the Ontario Water Resources Act for approval of:

Groundwater supply system serving the Village of St-Isidore, part of the Municipality of the Nation, consisting of five (5) wells at a rated capacity of 907 m^3/d and consisting of the following:

Well No.1:

- A 150 mm diameter, 17.4 m deep drilled groundwater production well, located on along Caledonia Concession Road No.2 (Mainville Road), Lot 20, Concession X (NAD 27: Zone 18, UTM Co-ordinates Easting – 509055.00 m and Northing – 5023980.00 m) consisting of a submersible pump with a rated capacity of 4.2 L/s at 38 m total dynamic head (TDH), 50 mm diameter discharge piping into the water treatment plant, magnetic flowmeter, emergency discharge line, well monitoring system, SCADA system, service building, underground piping and site work.

Well No.2:

- A 200 mm diameter, 22.3 m deep drilled groundwater production well, located on along Caledonia Concession Road No.2 (Mainville Road), Lot 19, Concession XI (NAD 27: Zone 18, UTM Co-ordinates Easting – 509540.00 m and Northing – 5023920.00 m) consisting of a submersible pump with a rated capacity of 3.1 L/s at 53 m TDH, 50 mm diameter discharge piping into the water treatment plant, magnetic flowmeter, emergency discharge line, well monitoring system, SCADA system, service building, underground piping and site work.

Well No.3:

- A 200 mm diameter, 19.2 m deep drilled groundwater production well, located on along Caledonia Concession Road No.2 (Mainville Road), Lot 17, Concession XI (NAD 27: Zone 18, UTM Co-ordinates Easting – 510190.00 m and Northing – 5023900.00 m) consisting of a submersible pump with a rated capacity of 1.3 L/s at 26 m TDH, 50 mm diameter discharge piping into the water treatment plant, magnetic flowmeter, emergency discharge line, well monitoring system, SCADA system, service building, underground piping and site work.

Well No.4:

- A 200 mm diameter, 29.9 m deep drilled groundwater production well (not in use), located on along Caledonia Concession Road No.2 (Mainville Road), Lot 22, Concession XI (NAD 27: Zone 18, UTM Co-ordinates Easting – 508470.00 m and Northing – 5023950.00 m) consisting of a submersible pump with a rated capacity of 1.9 L/s at 59 m TDH, 50 mm diameter discharge piping into the water treatment plant, magnetic flowmeter, emergency discharge line, well monitoring system, SCADA system, service building, underground piping and site work.

Water Treatment Plant:

A water treatment plant to treat water from Wells No. 1 to 4 located on Lot 22, Concession XI, in the Municipality of the Nation (NAD 27: Zone 18, UTM Co-ordinates Easting 508450.00 m, Northing 5023950.00 m) with a rated capacity of 8.7 L/s (752 m^3/d) consisting of 189 m^2 enclosure building housing the following:

- An aeration tower, 1372 mm in diameter, 3289 mm high having a maximum treatment capacity of 12.7L/s. The aeration tower is complete with an air blower (1250 CFM - 35.4 m^3/h air flowrate, 46 mm static pressure, 1HP, 230v/1ph/60Hz) discharging air 4.7 m above the ground level.

- A potassium permanganate feed system which includes two (2) feed pumps with automatic switchover, each having a capacity of 0.63 L/h and one (1) 200 L capacity solution tank with an injection point between the aeration tower and the contact chamber.

- A contact chamber that is 2.8 m X 1.83 m X 0.89 m and 4.57 m^3, complete with 150 mm diameter overflow, baffles, bypass pipe to clearwell, control float and ultrasonic transducer.

- Two (2) transfer pumps, each having a maximum capacity of 13.14 L/s (47.3 m^3/h) at a TDH of 7.6 m, complete with a 1.5 kW (2HP) 230v/3ph/60Hz variable speed motor. The flowrate is adjusted to maintain a constant water level at the contact chamber.

- Two (2) greensand filters, 1830 mm diameter, each divided into two equal size compartments having 203 mm of anthracite (0.30 to 0.35 mm effective size, uniformity coefficient < 1.7), 610 mm of greensand (0.30 to 0.35 effective size, uniformity coefficient < 1.6) having a design filtration rate of 5.95 m/h and equipped with automatic electrically actuated valves.

- One submersible backwash pump that has a capacity of 13.6 L/s (215 USGPM) at a total dynamic head of 8.5 m (28 feet), 2.23 kW (3HP) 230/1ph/60Hz, 3600 RPM, capable of a backwash rate of 37.3 m/h, complete with discharge piping and valving facilities.

Backwash water disposal system :

- One 7,200 L balancing tank, complete with two submersible transfer pumps both having a capacity of 2.77 L/s (44 USGPM) at 10 m TDH, 230v/1ph/60Hz, 0.3 HP.
- One 7,200 L septic tank (for backwash disposal).
- An above-ground infiltration bed made of four 19 m long perforated 100 mm diameter pipes.

(iv) A summary of records made under Condition 2.1 related to flow rate exceedances, and a summary of analytical results of sampling required by the certificate, including raw water and in-process parameters as specified in the operations manual in accordance with Condition 3.10; and

(v) A summary listing treatment chemicals used, including average dosage rates with special reference to any abnormal usages.

(d) The Compliance Report shall be signed by a person designated by the Council of the municipality that owns the works.

(e) Within three months of completion of the Compliance Report, the Owner shall confirm by a resolution of council that the Compliance Report has been presented to council.

(f) The Owner shall ensure that copies of the Compliance Report are available for inspection by any member of the public during normal business hours without charge and at the same location as that required by s.11 of O.Reg. 459/00 for reports under that regulation. Each 4th quarter report required under section 12 of that regulation shall include information about when the Compliance Report is required to be completed, an outline of the requirements for its contents, and the location where the completed report can be inspected.

5. UPGRADING REQUIREMENTS

5.1 (a) The Owner shall ensure that a hydrogeological study is undertaken for Wells No. 1, 2, 3, and 4 to establish whether or not the groundwater source is under the direct influence of surface water, and that an appropriate report is submitted to the Director.

The study shall be undertaken and the necessary report prepared in accordance with "Terms of Reference for Hydrogeological Study to Examine Groundwater Sources Potentially under Direct Influence of Surface Water" available from the Ministry. Two (2) copies of the hydrogeological study report shall be submitted to the Director by **April 30, 2002.**

Where the undertaken hydrogeological study concludes that there is a direct influence of surface waters and further concludes that, despite the influence, a requirement for filtration may not be warranted, and the Owner does not wish to provide filtration, the Owner shall prepare and submit to the Director, along with the application for approval of the physical improvements required by Condition 5.2, a delineation of the wellhead protection areas associated with the groundwater source, prepared in accordance with the "Protocol for Delineation of Wellhead Protection Areas for Municipal Groundwater Supply Wells under Direct Influence of Surface Water" available from the Ministry, and a description of the proposed wellhead protection measures satisfactory to the Director.

(b) As an alternative to submitting the report required by clause 5.1(a) above, the Owner may choose to submit a proposal to provide full treatment consisting of chemically assisted filtration and continuous disinfection or an equivalent treatment process. Such proposal shall be submitted to the Director by **April 30, 2002.**

5.2 Subject to Condition 5.3 below, by **December 31, 2002**, the Owner shall implement the following physical improvements to the works, in keeping with recommendations of the Engineers' Report and related correspondence:

(a) All works and measures necessary to meet requirements of the "Procedure B13-3 Chlorination of Potable Water Supplies in Ontario".

(b) All works and measures necessary to ensure the effective treatment and integrity of the works, including but not limited to:

(i) Provide a second sodium hypochlorite solution tank for the water treatment system.

(ii) Provide well protection with steel bollards and extend well casing to a minimum 300 mm above existing grade to Well No. 5.

5.3 The Owner shall not construct or allow the construction of any portion of the works necessary to comply with the requirements of Condition 5.2 above for which an approval under the *Ontario Water Resources Act* or the *Environmental Protection Act* is required unless a complete application for approval of such portion of the works, including detailed design drawings, specifications and a design brief containing detailed design calculations, has been submitted to and approved by the Director.

5.4 The Owner shall ensure that a complete application for approval under Section 52 of the *Ontario Water Resources Act*, and if necessary, under Section 9 of the *Environmental Protection Act*, is submitted to the Director for each item listed in Condition 5.2 above for which an approval is required at a date which will allow the Owner to obtain approval for the required physical upgrades to the works, and implement the upgrades on or before the compliance date stipulated in Condition 5.2 above.

5.5 The Owner shall submit to the Director complete raw water characterization data, specifically 2,3,4,6-tetrachlorophenol, and trichloroethylene, as required by the Terms of Reference for Engineers' Reports for Water Works, dated January 2001, as soon as it is available and not later than the date of submission of application for approval for physical improvements identified in Condition 5.2

5.6 The Owner shall ensure that the design of the proposed physical improvements is based on the complete raw water characterization data.

APPENDIX II

Document updated: December 19, 2001

Ontario Regulation 505/01, Drinking Water Protection – Smaller Water Works Serving Designated Facilities, is complementary to O. Reg. 459/00. It is appropriate to amend the title of the latter to avoid possible confusion and accentuate the complementary relationship.

reg2001.0539.e
2-DB

ONTARIO REGULATION 506/01
made under the
ONTARIO WATER RESOURCES ACT

Amending O. Reg. 459/00
(Drinking Water Protection)

Note: Ontario Regulation 459/00 has not previously been amended.

1. The title to Ontario Regulation 459/00 is revoked and the following substituted:

Drinking Water Protection – Larger Water Works

(5) The Director may issue a Notice of Interim Approval for analysis for the microbiological parameters listed in Table A of Schedule 2 to a laboratory that,

(a) is a member in good standing of the Canadian Association for Environmental Analytical Laboratories;

(b) has passed the Canadian Association for Environmental Analytical Laboratories Proficiency Testing studies for the microbiological parameters listed in Table A of Schedule 2; and

(c) has completed the Canadian Association for Environmental Analytical Laboratories Initial or Abbreviated On-Site Assessment addressing the methods specific to those microbiological parameters.

(6) Until October 31, 2000, every laboratory for which a Notice of Interim Approval has been issued under subsection (5) and not revoked shall be deemed to be an accredited laboratory for the microbiological parameters listed in Table A of Schedule 2.

APPLICATION

3. (1) This Regulation applies to every water treatment or distribution system that includes a water works for which an approval would be required if the water works were established on or after August 8, 2000.

(2) Despite subsection (1), this Regulation does not apply to a water treatment or distribution system that obtains all of its water from another water treatment or distribution system to which this Regulation does apply, unless,

(a) the system that obtains the water is owned or operated by a municipality or by the Ontario Clean Water Agency;

(b) the system that obtains the water supplies water to a municipality or the Ontario Clean Water Agency; or

(c) the system that obtains the water rechlorinates or otherwise treats the water.

(3) Despite subsection (1), this Regulation does not apply to a water treatment or distribution system that supplies 50,000 litres of water or less on at least 88 days in every 90-day period, unless the system serves more than five private residences.

(4) Despite subsection (1), this Regulation does not apply to a water treatment or distribution system that is not capable of supplying water at a rate greater than 250,000 litres per day, unless the system serves more than five private residences.

APPROVALS

4. (1) A person who applies for an approval shall do so in accordance with the Ontario Drinking Water Standards.

(2) In considering an application for an approval, the Director shall have regard to the Ontario Drinking Water Standards.

MINIMUM LEVEL OF TREATMENT

5. (1) The owner of a water treatment or distribution system that obtains water from a ground water source shall ensure provision of a minimum level of treatment consisting of disinfection.

(2) The owner of a water treatment or distribution system that obtains water from a surface water source shall ensure provision of a minimum level of treatment consisting of chemically assisted filtration and disinfection or other treatment capable, in the Director's opinion, of producing water of equal or better quality.

(3) The owner of a water treatment or distribution system shall ensure that no water enters a water distribution system or plumbing unless it has been treated with chlorination or another treatment that, in the Director's opinion, is as effective as chlorination to achieve disinfection that persists into the distribution system or plumbing.

(4) Subsections (1), (2) and (3) apply despite any provision in an approval granted before August 1, 2000.

(5) If a water treatment or distribution system commenced operation before August 1, 2000 and, immediately before August 1, 2000, was not in compliance with subsection (1), (2) or (3), the owner,

(a) is not required to comply with that subsection until December 31, 2002; and

(b) shall, on or before October 31, 2000, deliver to the Director a written notice describing the action proposed in order to achieve compliance and setting out a timetable for the action.

6. (1) Subsections 5 (1) and (3) do not apply if an approval granted on or after August 1, 2000 provides that disinfection and chlorination are not required.

(2) An approval may provide that disinfection and chlorination are not required only if,

(a) the water is obtained exclusively from ground water sources; and

(b) the application for the approval includes,

(i) if the owner of the water treatment and distribution system is a municipality, a copy of a resolution of the municipal council approving the application,

(ii) the written consent of the medical officer of health for the health unit in which the water treatment and distribution system is located,

(iii) results of all water sampling and analysis required by subsection 7 (1) during the 24 months before the application is made,

(iv) a report prepared by a hydrogeologist, assessing the aquifer, the well, the well head protection and the impact of existing and anticipated land uses,

(v) confirmation that reasonable notice was given of a public meeting to inform users and prospective users of water from the water treatment and distribution system of the application and to obtain their comments on it,

(vi) a summary of the comments made at the public meeting mentioned in subclause (v) and the owner's responses to them, and

(vii) confirmation that, for every well in the water treatment and distribution system, standby disinfection equipment and a supply of appropriate chemicals will be readily available for immediate use in case disinfection is required.

SAMPLING AND ANALYSIS

7. (1) The owner of a water treatment or distribution system shall ensure that water sampling and analysis is carried out in accordance with,

(a) Schedule 2 (Sampling and Analysis Requirements); and

(b) any additional requirements of an approval or an order or direction under the Act.

APPENDIX III

PROCEDURE B13-3 CHLORINATION OF POTABLE WATER SUPPLIES IN ONTARIO

1.0 RATIONALE

Procedure B13-3 is a supporting document for the Ontario Drinking Water Protection Regulation. Procedure B13-3 supersedes the MOE Bulletin 65-W-4 "Chlorination of Potable Water Supplies" 1987.

Disinfection, the destruction or inactivation of pathogenic organisms, is the most important step in any water treatment process. New microbiological challenges and increased knowledge of disinfection by-products makes it essential that the design of new waterworks, the upgrading of, or extension to, existing waterworks and the maintenance of existing facilities reflect current knowledge, technologies and practices.

1.1 GOALS

Disinfection in Ontario is primarily accomplished through chlorination. This Procedure provides guidance for the use of chlorine for disinfection. The goals are:

- minimize the risk to human health attributable to disease causing microorganisms that may be present in the drinking water supply;
- achieve and maintain adequate disinfection of a ground or surface water supply at the water treatment plant, while minimizing disinfection by-product concentrations in the treated water; and
- outline the requirements to achieve adequate disinfection of water distribution systems.

2.0 CHLORINATION REQUIREMENTS FOR WATER WORKS

2.1 GROUNDWATER SUPPLIES

a. A minimum chlorine residual, measured as free chlorine, after 15 minutes contact time determined as T_{10}[1] at maximum flow and before the first consumer of 0.2 mg/L shall be maintained in all disinfected water entering the distribution system.

b. Where a groundwater source is determined to be under the direct influence of surface water; and where the source water quality conditions are suitable to avoid filtration as determined by the Ministry; and where there is adequate watershed control to avoid filtration as determined by the Ministry; the system treatment requirements of greater than 3 log reduction of giardia lamblia cysts and greater than 4 log reduction of viruses may be achieved by disinfection only, in accordance with Section 3 of this document.

c. A maximum chlorine residual, measured as free chlorine should be less than 4.0 mg/L, or as combined chlorine should be less than 3.0 mg/L at all times, at any location, in the water distribution system.

d. A minimum free chlorine residual in a water distribution system should be 0.2 mg/L. Minimum combined chlorine residuals, if appropriate, shall be 1.0 mg/L at distant points in the distribution system.

e. Automatic chlorine residual recorders should be provided where the chlorine demand varies appreciably over a short period of time. The installation of an alarm system should be provided to ensure continuous disinfection at all waterworks.

f. Monitor chlorine residuals according to the Ontario Drinking Water Standards and/or site specific Certificate of Approval requirements using monitoring equipment capable of measuring chlorine residuals with an accuracy of +/-0.1 mg/L.

g. Disinfect all new watermains and water mains taken out of service for inspection, repair or other activities that may lead to contamination before they are placed in service according to the provisions of the AWWA C651-

e. Automatic chlorine residual recorders should be provided where the chlorine demand varies appreciably over a short period of time. The installation of an alarm system should be provided to ensure continuous disinfection at all waterworks.

f. Monitor chlorine residuals according to the Ontario Drinking Water Standards and/or site specific Certificate of Approval requirements using monitoring equipment capable of measuring chlorine residuals with an accuracy of +/-0.1 mg/L.

g. Disinfect all new watermains and water mains taken out of service for inspection, repair or other activities that may lead to contamination before they are placed in service according to the provisions of the AWWA C651-92 Standard for Disinfecting Water Mains, AWWA C652-92 for storage facilities, C653-87 for Water Treatment Plants and C654-87 for Wells or a proven equivalent procedure.

2.2 SURFACE WATER SUPPLIES

a. Achieve, through a combination of filtration and continuous disinfection, a minimum 3-log removal/inactivation of giardia cysts and a 4-log removal/inactivation of viruses at all times at or before the first consumers' connection in accordance with Section 3 of this document. Higher removal/inactivation credits may be required for source waters where increased levels of raw water contamination may occur.

b. A minimum free chlorine residual in a water distribution system should be 0.2 mg/L. Minimum combined chlorine residuals, if appropriate, should be 1.0 mg/L at distant points in the distribution system.

c. A maximum chlorine residual, measured as free chlorine should be less than 4.0 mg/L, or as combined chlorine should be less than 3.0 mg/L at all times at any location in the water distribution system.

d. The installation of continuous residual analyzers equipped with a high and low residual alarm system should be provided to ensure continuous disinfection at all waterworks, particularly at remotely operated or minimally supervised facilities. Automatic chlorine residual recorders should be provided where the chlorine demand varies appreciably over a short period of time.

e. Monitor chlorine residuals according to the Ontario Drinking Water Standards and/or site specific Certificate of Approval requirements using metering equipment capable of measuring chlorine residuals with an accuracy of +/- 0.1 mg/L.

f. Disinfect all new watermains and water mains taken out of service for inspection, repair or other activities that may lead to contamination before they are placed in service according to the provisions of the AWWA C651-92 Standard for Disinfecting Water Mains, AWWA C652-92 for storage facilities, C653-87 for Water Treatment Plants and C654-87 for Wells or a proven equivalent procedure.

3.0 "CT" DISINFECTION CONCEPT

This section outlines the CT disinfection concept, developed by the United States Environmental Protection Agency (Federal Register, 40 CFR, Parts 141 and 142, June 29, 1989). The CT concept uses the combination of disinfection residual concentration (mg/L) and the effective disinfection contact time (in minutes) to measure the effective pathogen reduction achieved in a water works.

a. The required log reductions of pathogens are achieved by a combination of filtration and disinfection removal/inactivation credits.

Disinfection shall contribute a minimum of 0.5 log giardia cyst inactivation or 2 log virus inactivation to the total credits.

APPENDIX IV

THE NATION MUNICIPALITY – Village of St-Isidore

Table 1 – Chemical / Physical Health-related Parameters

Raw Water Characteristics

Date : December 13th, 2001

PARAMETERS	MAC (mg/L)	IMAC (mg/L)	AO (mg/L)	Detection Limit	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5
Alachlor		0.005		0.001	ND	ND	ND	ND	ND
Aldicarb	0.009			0.005	ND	ND	ND	ND	ND
Aldrin + Diedrin	0.0007			0.0001	ND	ND	ND	ND	ND
Arsenic		0.025		0.001	ND	ND	ND	ND	ND
Atrazine + N-dealkylated				0.003	ND	ND	ND	ND	ND
Metabolites		0.005		0.002	ND	ND	ND	ND	ND
Azinphos-methyl	0.020								
Barium	1.0			0.005	0.775	0.150	0.525	0.52	0.165
Bendiocarb	0.04			0.005	ND	ND	ND	ND	ND
Benzene	0.005			0.0005	ND	ND	ND	ND	ND
Benzo (a) pyrene	0.00001			0.00001	ND	ND	ND	ND	ND
Boron		5.0		0.01	0.15	0.46	0.21	0.10	0.14
Bromoxynil		0.005		0.0005	ND	ND	ND	ND	ND
Cadmium	0.005			0.0001	ND	ND	ND	ND	ND
Carbaryl	0.09			0.005	ND	ND	ND	ND	ND
Carbofuran	0.09			0.010	ND	ND	ND	ND	ND

PARAMETERS	MAC (mg/L)	IMAC (mg/L)	AO (mg/L)	Detection Limit	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5
Carbon tetrachloride	0.005			0.0002	ND	ND	ND	ND	ND
Chloramine	3.0			0.1	ND	ND	ND	ND	ND
Chlordane	0.007			0.0005	ND	ND	ND	ND	ND
Chloripyrifos	0.09			0.005	ND	ND	ND	ND	ND
Chromium	0.5			0.01	ND	ND	ND	ND	ND
Cyanazine		0.01		0.001	ND	ND	ND	ND	ND
Cyanide	0.2			0.005	ND	ND	ND	ND	ND
Diazinon	0.02			0.002	ND	ND	ND	ND	ND
Dicamba	0.12			0.010	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.2		0.003	0.0001	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.005		0.001	0.0002	ND	ND	ND	ND	ND
Dichlorodiphenyltrichloroethane(DDT)	0.03			0.001	ND	ND	ND	ND	ND
1,1-Dichloroethylene (vinylidene chloride)	0.014			0.0001	ND	ND	ND	ND	ND
1,2-Dichloroethane		0.005		0.0001	ND	ND	ND	ND	ND
Dichloromethane	0.05			0.0001	ND	ND	ND	ND	ND
2,4-Dichlorophenol	0.9			0.002	ND	ND	ND	ND	ND
2,4-Dichlorophenoxy acetic acid(2,4-D)		0.1		0.010	ND	ND	ND	ND	ND
Diclofop-methyl	0.009			0.0005	ND	ND	ND	ND	ND
Dimethoate		0.02		0.002	ND	ND	ND	ND	ND
DINOSEB	0.01			0.001	ND	ND	ND	ND	ND
Dioxins and Furans	15 pg/L			0.1 pg/L	ND	0.6pg/L	0.3pg/L	0.4pg/L	0.5pg/L
Diquat	0.15			0.005	ND	ND	ND	ND	ND
Diuron	0.15			0.010	ND	ND	ND	ND	ND
Fluoride	1.5			0.1	ND	0.6	0.3	0.4	0.5
Glyphosate		0.28		0.025	ND	ND	ND	ND	ND

PARAMETERS	MAC (mg/L)	IMAC (mg/L)	AO (mg/L)	Detection Limit	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5
Heptachlor + Heptachlor epoxide	0.003			0.0004	ND	ND	ND	ND	ND
Lead	0.01			0.0002	ND	ND	ND	ND	ND
Lindane (TOTAL)	0.004			0.0004	ND	ND	ND	ND	ND
Malathion	0.19			0.01	ND	ND	ND	ND	ND
Mercury	0.001			0.0001	ND	ND	ND	ND	ND
Methoxychlor	0.9			0.01	ND	ND	ND	ND	ND
Metolachlor		0.05		0.005	ND	ND	ND	ND	ND
Metribuzin	0.08			0.005	ND	ND	ND	ND	ND
Monochlorobenzene	0.08			0.0002	ND	ND	ND	ND	ND
Nitrate (N)	10.0			0.1	ND	ND	ND	ND	ND
Nitrite (N)	1.0			0.1	ND	ND	ND	ND	ND
Nitrate + Nitrite (N)	10.0			0.1	ND	ND	ND	ND	ND
Nitrilotriacelic Acid (NTA)	0.4			0.05	ND	ND	ND	ND	ND
Nitrosodimethylamine (NDMA)		9 pG/L		0.4 pG/L	ND	ND	ND	ND	ND
Paraquat		0.01		0.001	ND	ND	ND	ND	ND
Parathion	0.05			0.005	ND	ND	ND	ND	ND
Pentachlorophenol	0.06		0.03	0.0002	ND	ND	ND	ND	ND
Phorate		0.002		0.0005	ND	ND	ND	ND	ND
Picloram		0.19		0.01	ND	ND	ND	ND	ND
Polychlorinated		0.003		0.0002	ND	ND	ND	ND	ND
Biphenil (PCB)		0.001		0.0002	ND	ND	ND	ND	ND
Prometryne									
Selenium	0.01			0.001	ND	ND	ND	ND	ND
Simazine		0.01		0.001	ND	ND	ND	ND	ND
Temephos		0.28		0.020	ND	ND	ND	ND	ND
Terbufos		0.001		0.001	ND	ND	ND	ND	ND
Tetrachloroethylene	0.03			0.0002	ND	ND	ND	ND	ND
2,3,4,6-Tetrachlorophenol	0.10			0.002	ND	ND	ND	ND	ND

PARAMETERS	MAC (mg/L)	IMAC (mg/L)	AO (mg/L)	Detection Limit	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5
2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)	0.28			0.02	ND	ND	ND	ND	ND
Trichloroethylene	0.05			0.0001	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	0.005			0.0002	ND	ND	ND	ND	ND
Triallate	0.100			0.02	ND	ND	ND	ND	ND
Trifluralin		0.045		0.002	ND	ND	ND	ND	ND
Trihalomethanes	0.100			0.001	ND	ND	ND	ND	ND
Turbidity *	1 NTU		5 NTU	0.1	1.8	0.3	1.1	4.8	3.2
Uranium	0.1			0.001	0.001	0.006	ND	0.002	ND
Vinyl choride	0.002			0.0003	ND	ND	ND	ND	ND

Shortforms :

MAC	Maximum Acceptable Concentration	NTU	Nephalometric Turbidity Unit
IMAO	Interim Maximum Acceptable Concentration	mg/L	Milligram per litre
AO	Aesthetic Objective	pg/L	picograms per litre
		ND	non detected; actual concentration is the method or instrument detection limit

Date of sampling : All wells sampled on December 13th, 2001, except well no. 4 (January 29th, 2002).

*Trihalomethanes at treated water (refer to Appendix IX).
*Turbidity at treated water on December 13th, 2001; at water treatment plant = 0.2 NTU; at well no. 5 = 0.14 NTU

Compiled by:
LECOMPTE ENGINEERING LTD.

Jean Hébert, P.Eng.
April 17, 2002
5918-23.ta1

THE NATION MUNICIPALITY – Village of St-Isidore
Table 3 – Raw Water Characteristics
Date : January 29th, 2002

PARAMETERS	MAC (Bq/L)	Detection Limit	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5
I – Gross Alpha Emission							
Radium-226	0.6	0.1	ND	ND	ND	ND	ND
II – Gross Beta Emission		0.1	0.3	0.2	0.4	0.2	0.3
Cesium-137							
Iodine –131	10						
Strontium-90	6						
	5						
III – Tritium	7,000	1,000	ND	ND	ND	ND	ND

Compiled by:
LECOMPTE ENGINEERING LTD.

Jean Hébert, P.Eng.
April 4, 2002

5918-23.ta3

THE NATION MUNICIPALITY – Village of St-Isidore

Table 4 – Chemical / Physical Non-Health Related Parameters
Raw Water Characteristics

Dates : December 18th, 2000 / November 6th, 2001 / January 29th, 2002

PARAMETERS	Objective (mg/L – unless otherwise specified)	Type of Objective	Detection Limit	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5
Alkalinity (as $CaCO_3$)*	30-500	OG	1	*297*	*334*	*250*	*279*	*279*
Aluminium*	0.1	OG	0.01	*0.01*	*ND*	*0.02*	*0.01*	*ND*
Chloride	250	AO	0.5	103	53.3	112	*40.1*	88.9
Colour	5 TCU	AO	1	6	3	ND	*5*	ND
Copper	1.0	AO	0.01	*ND*	*ND*	*ND*	*ND*	*ND*
Total Organic Carbon	5.0	AO	0.3	2.6	1.7	0.7	*2.8*	0.8
Ethylbenzene	0.0024	AO	0.0005	ND	ND	ND	*ND*	ND
Hardness (as $CaCO_3$)	80-100	OG	1	209	31	286	*312*	273
Iron	0.3	AO	0.02	0.09	0.06	0.38	*0.89*	0.14
Manganese	0.05	AO	0.01	0.02	ND	ND	*0.08*	0.02
Methane	3 L/m^3	OG	0.02	ND	ND	ND	*ND*	ND
Odour	Inoffensive	AO	0.2	-	Rotten egg	Inoffensive	*2*	Inoffensive
Organic Nitrogen	0.15	AO	0.01	0.07	0.13	0.08	*0.21*	0.09
PH	6.5-8.5 (no units)	AO	0.1	8.17	8.66	8.19	*8.03*	8.19
Sodium	200	AO	1	154	191	73.7	*38.6*	77.8
Sulphate*	500	AO	1	*109*	*9*	*12*	*70*	*22*
Sulphide	0.05	AO	0.01	*0.02*	*0.95*	*0.08*	*0.06*	*0.01*
Taste	Inoffensive	AO	-	Bad	Inoffensive	Inoffensive	*Inoffensive*	Inoffensive

PARAMETERS	Objective (mg/L – unless otherwise specified)	Type of Objective	Detection Limit	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5
Temperature	15°C	AO	0.5°C	-	-	-	-	-
Toluene	0.024	AO	0.0005	ND	ND	ND	*ND*	ND
Total Dissolved Solids	500	AO	1	*456*	*422*	*362*	*414*	*442*
Xylenes	0.3	AO	0.002	ND	ND	ND	*ND*	ND
Zinc*	5.0	AO	0.01	*ND*	*ND*	*ND*	*ND*	*ND*
Conductivity	-	-	1	951	1360	2080	*ND*	1900

Results that are underlined are dated December 18th, 2000.

Results in regular font are dated November 6th, 2001.

Results in *italic* font are dated January 29th, 2002.

Compiled by:
LECOMPTE ENGINEERING LTD.

Jean Hébert, P.Eng.
April 4, 2002

Data supplied by the Ontario Clean Water Agency (St-Isidore WTP)
Laboratory : Caduceon Enterprises Inc., Ottawa, Ontario

5918-23.ta4

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

RECEIVED
MAR 08 2002

Report: **210009014**
Project: WTP- St. Isidore
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water Well #3	Raw Water Well #5
Fluoride	mg/L	0.1	0.3	0.3
Nitrite- Nitrogen	mg/L	0.1	<0.1	<0.1
Nitrate- Nitrogen	mg/L	0.1	<0.1	<0.1
Turbidity	NTU	0.1	0.3	3.2
Mercury	mg/L	0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.0001	<0.0001	<0.0001
Lead	mg/L	0.0002	<0.0002	<0.0002
Arsenic	mg/L	0.001	<0.001	<0.001
Selenium	mg/L	0.001	<0.001	<0.001
Total Cyanide	mg/L	0.005	<0.005	<0.005
Total Uranium	mg/L	0.001	<0.001	<0.001
Boron	mg/L	0.01	0.21	0.14
Barium	mg/L	0.005	0.525	0.165
Chromium	mg/L	0.01	<0.01	<0.01
Benzo(a)pyrene	µg/L	0.01	<0.01	<0.01
2,3,4,6-Tetrachlorophenol	µg/L	2	<2	<2
2,4,5-T	µg/L	20	<20	<20
2,4,6-Trichlorophenol	µg/L	0.2	<0.2	<0.2
2,4-D	µg/L	10	<10	<10
2,4-Dichlorophenol	µg/L	2	<2	<2
Alachlor	µg/L	1	<1	<1
Aldicarb	µg/L	5	<5	<5
Aldrin	µg/L	0.1	<0.1	<0.1

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: J.P. Gelinas

Report: **210009014**
Project: WTP- St. Isidore
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water Well #3	Raw Water Well #5
Atrazine	µg/L	3	<3	<3
Bendiocarb	µg/L	5	<5	<5
Bromoxynil	µg/L	0.5	<0.5	<0.5
Carbaryl	µg/L	5	<5	<5
Carbofuran	µg/L	10	<10	<10
Chlordane	µg/L	0.5	<0.5	<0.5
Chlorpyrifos (Dursban)	µg/L	5	<5	<5
Cyanazine (Bladex)	µg/L	1	<1	<1
DDT	µg/L	1	<1	<1
Diazinon	µg/L	2	<2	<2
Dicamba	µg/L	10	<10	<10
Diclofop-methyl	µg/L	0.5	<0.5	<0.5
Dieldrin	µg/L	0.1	<0.1	<0.1
Dimethoate	µg/L	2	<2	<2
Dinoseb	µg/L	1	<1	<1
Diuron	µg/L	10	<10	<10
Guthion (Azinphos-methyl)	µg/L	2	<2	<2
Heptachlor	µg/L	0.2	<0.2	<0.2
Heptachlor epoxide	µg/L	0.2	<0.2	<0.2
Lindane	µg/L	0.4	<0.4	<0.4
Malathion	µg/L	10	<10	<10
Methoxychlor	µg/L	10	<10	<10
Metolachlor	µg/L	5	<5	<5

Caduceon Environmental Laboratories
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Michael Ziebell, General Manager

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report: 210009014
Project: WTP- St. Isidore
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water Well #3	Raw Water Well #5
Metribuzin (Sencor)	µg/L	5	<5	<5
Parathion	µg/L	5	<5	<5
Pentachlorophenol	µg/L	0.2	<0.2	<0.2
Phorate	µg/L	0.5	<0.5	<0.5
Picloram	µg/L	10	<10	<10
Prometryn	µg/L	0.2	<0.2	<0.2
Simazine	µg/L	1	<1	<1
Temephos	µg/L	20	<20	<20
Terbufos	µg/L	1	<1	<1
Total PCB	µg/L	0.2	<0.2	<0.2
Triallate	µg/L	20	<20	<20
Trifluralin	µg/L	2	<2	<2
Glyphosate	µg/L	25	<25	<25
1,1-Dichloroethylene	mg/L	0.0001	<0.0001	<0.0001
1,2-Dichlorobenzene	mg/L	0.0001	<0.0001	<0.0001
1,2-Dichloroethane	mg/L	0.0001	<0.0001	<0.0001
1,4-Dichlorobenzene	mg/L	0.0002	<0.0002	<0.0002
Benzene	mg/L	0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/L	0.0001	<0.0001	<0.0001
Bromoform	mg/L	0.0001	<0.0001	<0.0001
Carbon Tetrachloride	mg/L	0.0002	<0.0002	<0.0002
Chlorobenzene	mg/L	0.0002	<0.0002	<0.0002
Chloroform	mg/L	0.0003	<0.0003	<0.0003

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Certificate of Analysis

Client:
Ontario Clean Water Agency
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K0A 2M0

Attention: J.P. Gelinas

Report: 210009014
Project: WTP- St. Isidore
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water Well #3	Raw Water Well #5
Dibromochloromethane	mg/L	0.0001	<0.0001	<0.0001
Methylene Chloride	mg/L	0.003	<0.003	<0.003
Tetrachloroethylene	mg/L	0.0002	<0.0002	<0.0002
Total Trihalomethanes	mg/L	0.001	<0.001	<0.001
Trichloroethylene	mg/L	0.0001	<0.0001	<0.0001
Vinyl Chloride	mg/L	0.0003	<0.0003	<0.0003
Diquat	µg/L	5	<5	<5
Paraquat	µg/L	1	<1	<1
1234678-HpCDD (Dioxins)	ppq	1	<1	<1
1234678-HpCDF (Furans)	ppq	1	<1	<1
1234789-HpCDF (Furans)	ppq	1	<1	<1
123478-HxCDD (Dioxins)	ppq	1	<1	<1
123478-HxCDF (Furans)	ppq	1	<1	<1
123678-HxCDD (Dioxins)	ppq	1	<1	<1
123678-HxCDF (Furans)	ppq	1	<1	<1
123789-HxCDD (Dioxins)	ppq	1	<1	<1
123789-HxCDF (Furans)	ppq	1	<1	<1
12378-PeCDD (Dioxins)	ppq	1	<1	<1
12378-PeCDF (Furans)	ppq	1	<1	<1
234678-HxCDF (Furans)	ppq	1	<1	<1
23478-PeCDF (Furans)	ppq	1	<1	<1
2378-TCDD (Dioxins)	ppq	1	<1	<1
2378-TCDF (Furans)	ppq	1	<1	<1

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Attention: **J.P. Gelinas**

Report: 210009014
Project: WTP- St. Isidore
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water Well #3	Raw Water Well #5
OCDD (Dioxins)	ppq	2		<2
OCDD (Dioxins)	ppq	3	<3	
OCDF (Furans)	ppq	1	<1	<1
Total HpCDDs (Dioxins)	ppq	1	<1	<1
Total HpCDFs (Furans)	ppq	1	<1	<1
Total HxCDDs (Dioxins)	ppq	1	<1	<1
Total HxCDFs (Furans)	ppq	1	<1	<1
Total PeCDDs (Dioxins)	ppq	1	<1	<1
Total PeCDFs (Furans)	ppq	1	<1	<1
Total TCDDs (Dioxins)	ppq	1	<1	<1
Total TCDFs (Furans)	ppq	1	<1	<1
Toxic Equivalent (TEQ)	ppq		0	0
NTA	mg/L	0.05	<0.05	<0.05
N-Nitrosodimethylamine	µg/L	0.0004	<0.0004	<0.0004

This is a correction certificate and superceds all previous reports of this number. Benzo(a) pyrene D.L. corrected.

Caduceon Environmental Laboratories

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Certificate of Analysis

Client:
Ontario Clean Water Agency
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Attention: **J.P. Gelinas**

Report: 210009025
Project: WW# 220003573
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification
			TRT Water - WTP
Fluoride	mg/L	0.1	0.3
Nitrite- Nitrogen	mg/L	0.1	<0.1
Nitrate- Nitrogen	mg/L	0.1	<0.1
Turbidity	NTU	0.1	0.2
Mercury	mg/L	0.0001	<0.0001
Cadmium	mg/L	0.0001	<0.0001
Lead	mg/L	0.0002	<0.0002
Arsenic	mg/L	0.001	<0.001
Selenium	mg/L	0.001	<0.001
Total Cyanide	mg/L	0.005	<0.005
Total Uranium	mg/L	0.001	0.003
Boron	mg/L	0.01	0.30
Barium	mg/L	0.005	0.490
Chromium	mg/L	0.01	<0.01
2,3,4,6-Tetrachlorophenol	µg/L	0.5	<0.5
2,4,5-T	µg/L	1	<1
2,4,6-Trichlorophenol	µg/L	0.5	<0.5
2,4-D	µg/L	1	<1
2,4-Dichlorophenol	µg/L	0.5	<0.5
Alachlor	µg/L	0.5	<0.5
Aldicarb	µg/L	5	<5
Aldrin	µg/L	0.02	<0.02
Atrazine	µg/L	0.5	<0.5

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Report: 210009025
Project: WW# 220003573
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification
			TRT Water - WTP
Bendiocarb	µg/L	2	<2
Bromoxynil	µg/L	0.5	<0.5
Carbaryl	µg/L	5	<5
Carbofuran	µg/L	5	<5
Chlordane	µg/L	0.7	<0.7
Chlorpyrifos (Dursban)	µg/L	1	<1
Cyanazine (Bladex)	µg/L	1	<1
DDT	µg/L	3	<3
Diazinon	µg/L	1	<1
Dicamba	µg/L	1	<1
Diclofop-methyl	µg/L	0.9	<0.9
Dieldrin	µg/L	0.05	<0.05
Dimethoate	µg/L	3	<2.5
Dinoseb	µg/L	1	<1
Diuron	µg/L	10	<10
Guthion (Azinphos-methyl)	µg/L	2	<2
Heptachlor	µg/L	0.1	<0.1
Heptachlor epoxide	µg/L	0.2	<0.2
Lindane	µg/L	0.4	<0.4
Malathion	µg/L	5	<5
Methoxychlor	µg/L	90	<90
Metolachlor	µg/L	0.5	<0.5
Metribuzin (Sencor)	µg/L	5	<5

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Attention: J.P. Gelinas

Report: 210009025
Project: WW# 220003573
Date Sampled: December 13, 2001
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Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification
			TRT Water - WTP
Parathion	µg/L	1	<1
Pentachlorophenol	µg/L	0.5	<0.5
Phorate	µg/L	0.5	<0.5
Picloram	µg/L	5	<5
Prometryn	µg/L	0.3	<0.25
Simazine	µg/L	1	<1
Temephos	µg/L	10	<10
Terbufos	µg/L	0.7	<0.7
Total PCB	µg/L	0.3	<0.3
Triallate	µg/L	1	<1
Trifluralin	µg/L	1	<1
Glyphosate	µg/L	10	<10
1,1-Dichloroethylene	mg/L	0.0001	<0.0001
1,2-Dichlorobenzene	mg/L	0.0001	<0.0001
1,2-Dichloroethane	mg/L	0.0001	<0.0001
1,4-Dichlorobenzene	mg/L	0.0002	<0.0002
Benzene	mg/L	0.0005	<0.0005
Bromodichloromethane	mg/L	0.0001	0.0425
Bromoform	mg/L	0.0001	0.0115
Carbon Tetrachloride	mg/L	0.0002	<0.0002
Chlorobenzene	mg/L	0.0002	<0.0002
Chloroform	mg/L	0.0003	0.0400
Dibromochloromethane	mg/L	0.0001	0.0476

Michael Zigbeil, General Manager

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Report: **210009025**
Project: WW# 220003573
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification
			TRT Water - WTP
Methylene Chloride	mg/L	0.003	<0.003
Tetrachloroethylene	mg/L	0.0002	<0.0002
Total Trihalomethanes	mg/L	0.001	0.142
Trichloroethylene	mg/L	0.0001	<0.0001
Vinyl Chloride	mg/L	0.0003	<0.0003
Diquat	µg/L	7	<7
Paraquat	µg/L	1	<1
1234678-HpCDD (Dioxins)	ppq	1	<1
1234678-HpCDF (Furans)	ppq	1	<1
1234789-HpCDF (Furans)	ppq	1	<1
123478-HxCDD (Dioxins)	ppq	1	<1
123478-HxCDF (Furans)	ppq	1	<1
123678-HxCDD (Dioxins)	ppq	1	<1
123678-HxCDF (Furans)	ppq	1	<1
123789-HxCDD (Dioxins)	ppq	1	<1
123789-HxCDF (Furans)	ppq	1	<1
12378-PeCDD (Dioxins)	ppq	1	<1
12378-PeCDF (Furans)	ppq	1	<1
234678-HxCDF (Furans)	ppq	1	<1
23478-PeCDF (Furans)	ppq	1	<1
2378-TCDD (Dioxins)	ppq	1	<1
2378-TCDF (Furans)	ppq	1	<1
OCDD (Dioxins)	ppq	2	<2

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Report: **210009025**
Project: WW# 220003573
Date Sampled: December 13, 2001
Date Received: December 14, 2001
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Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification
			TRT Water - WTP
OCDF (Furans)	ppq	1	<1
Total HpCDDs (Dioxins)	ppq	1	<1
Total HpCDFs (Furans)	ppq	1	<1
Total HxCDDs (Dioxins)	ppq	1	<1
Total HxCDFs (Furans)	ppq	1	<1
Total PeCDDs (Dioxins)	ppq	1	<1
Total PeCDFs (Furans)	ppq	1	<1
Total TCDDs (Dioxins)	ppq	1	<1
Total TCDFs (Furans)	ppq	1	<1
Toxic Equivalent (TEQ)	ppq		0
NTA	mg/L	0.05	<0.05
N-Nitrosodimethylamine	µg/L	0.0009	<0.0009

Benzo(a)pyrene not analyzed for due to laboratory error.

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Ontario Clean Water Agency
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Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report: **210009026**
Project: St.Isidore -22000357
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water , Well #1	Raw Water , Well #2
Fluoride	mg/L	0.1	<0.1	0.6
Nitrite- Nitrogen	mg/L	0.1	<0.1	<0.1
Nitrate- Nitrogen	mg/L	0.1	<0.1	<0.1
Turbidity	NTU	0.1	1.8	0.3
Mercury	mg/L	0.0001	<0.0001	<0.0001
Cadmium	mg/L	0.0001	<0.0001	<0.0001
Lead	mg/L	0.0002	<0.0002	<0.0002
Arsenic	mg/L	0.001	<0.001	0.001
Selenium	mg/L	0.001	<0.001	<0.001
Total Cyanide	mg/L	0.005	<0.005	<0.005
Total Uranium	mg/L	0.001	0.001	0.006
Boron	mg/L	0.01	0.15	0.46
Barium	mg/L	0.005	0.775	0.150
Chromium	mg/L	0.01	<0.01	<0.01
Benzo(a)pyrene	µg/L	0.01	<0.01	<0.01
2,3,4,6-Tetrachlorophenol	µg/L	2	<2	<2
2,4,5-T	µg/L	20	<20	<20
2,4,6-Trichlorophenol	µg/L	0.2	<0.2	<0.2
2,4-D	µg/L	10	<10	<10
2,4-Dichlorophenol	µg/L	2	<2	<2
Alachlor	µg/L	1	<1	<1
Aldicarb	µg/L	5	<5	<5
Aldrin	µg/L	0.1	<0.1	<0.1

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Project: St.Isidore -22000357
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water , Well #1	Raw Water , Well #2
Atrazine	µg/L	3	<3	<3
Bendiocarb	µg/L	5	<5	<5
Bromoxynil	µg/L	0.5	<0.5	<0.5
Carbaryl	µg/L	5	<5	<5
Carbofuran	µg/L	10	<10	<10
Chlordane	µg/L	0.5	<0.5	<0.5
Chlorpyrifos (Dursban)	µg/L	5	<5	<5
Cyanazine (Bladex)	µg/L	1	<1	<1
DDT	µg/L	1	<1	<1
Diazinon	µg/L	2	<2	<2
Dicamba	µg/L	10	<10	<10
Diclofop-methyl	µg/L	0.5	<0.5	<0.5
Dieldrin	µg/L	0.1	<0.1	<0.1
Dimethoate	µg/L	2	<2	<2
Dinoseb	µg/L	1	<1	<1
Diuron	µg/L	10	<10	<10
Guthion (Azinphos-methyl)	µg/L	2	<2	<2
Heptachlor	µg/L	0.2	<0.2	<0.2
Heptachlor epoxide	µg/L	0.2	<0.2	<0.2
Lindane	µg/L	0.4	<0.4	<0.4
Malathion	µg/L	10	<10	<10
Methoxychlor	µg/L	10	<10	<10
Metolachlor	µg/L	5	<5	<5

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Report: **210009026**
Project: St.Isidore -22000357
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water , Well #1	Raw Water , Well #2
Metribuzin (Sencor)	µg/L	5	<5	<5
Parathion	µg/L	5	<5	<5
Pentachlorophenol	µg/L	0.2	<0.2	<0.2
Phorate	µg/L	0.5	<0.5	<0.5
Picloram	µg/L	10	<10	<10
Prometryn	µg/L	0.2	<0.2	<0.2
Simazine	µg/L	1	<1	<1
Temephos	µg/L	20	<20	<20
Terbufos	µg/L	1	<1	<1
Total PCB	µg/L	0.2	<0.2	<0.2
Triallate	µg/L	20	<20	<20
Trifluralin	µg/L	2	<2	<2
Glyphosate	µg/L	25	<25	<25
1,1-Dichloroethylene	mg/L	0.0001	<0.0001	<0.0001
1,2-Dichlorobenzene	mg/L	0.0001	<0.0001	<0.0001
1,2-Dichloroethane	mg/L	0.0001	<0.0001	<0.0001
1,4-Dichlorobenzene	mg/L	0.0002	<0.0002	<0.0002
Benzene	mg/L	0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/L	0.0001	<0.0001	<0.0001
Bromoform	mg/L	0.0001	<0.0001	<0.0001
Carbon Tetrachloride	mg/L	0.0002	<0.0002	<0.0002
Chlorobenzene	mg/L	0.0002	<0.0002	<0.0002
Chloroform	mg/L	0.0003	<0.0003	<0.0003

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Report: **210009026**
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Date Sampled: December 13, 2001
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Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water , Well #1	Raw Water , Well #2
Dibromochloromethane	mg/L	0.0001	<0.0001	<0.0001
Methylene Chloride	mg/L	0.003	<0.003	<0.003
Tetrachloroethylene	mg/L	0.0002	<0.0002	<0.0002
Total Trihalomethanes	mg/L	0.001	<0.001	<0.001
Trichloroethylene	mg/L	0.0001	<0.0001	<0.0001
Vinyl Chloride	mg/L	0.0003	<0.0003	<0.0003
Diquat	µg/L	5	<5	<5
Paraquat	µg/L	1	<1	<1
1234678-HpCDD (Dioxins)	ppq	1	<1	<1
1234678-HpCDF (Furans)	ppq	1	<1	<1
1234789-HpCDF (Furans)	ppq	1	<1	<1
123478-HxCDD (Dioxins)	ppq	1	<1	<1
123478-HxCDF (Furans)	ppq	1	<1	<1
123678-HxCDD (Dioxins)	ppq	1	<1	<1
123678-HxCDF (Furans)	ppq	1	<1	<1
123789-HxCDD (Dioxins)	ppq	1	<1	<1
123789-HxCDF (Furans)	ppq	1	<1	<1
12378-PeCDD (Dioxins)	ppq	1	<1	<1
12378-PeCDF (Furans)	ppq	1	<1	<1
234678-HxCDF (Furans)	ppq	1	<1	<1
23478-PeCDF (Furans)	ppq	1	<1	<1
2378-TCDD (Dioxins)	ppq	1	<1	<1
2378-TCDF (Furans)	ppq	1	<1	<1

Caduceon Environmental Laboratories
2378 Holly Lane, Ottawa, Ontario, K1V 7P1, Canada
Tel: (613)526-0123, Fax: (613)526-1244
Michael Ziebell, General Manager

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report: **210009026**
Project: St.Isidore -22000357
Date Sampled: December 13, 2001
Date Received: December 14, 2001
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification	
			Raw Water , Well #1	Raw Water , Well #2
OCDD (Dioxins)	ppq	2	<2	<2
OCDF (Furans)	ppq	1	<1	<1
Total HpCDDs (Dioxins)	ppq	1	<1	<1
Total HpCDFs (Furans)	ppq	1	<1	<1
Total HxCDDs (Dioxins)	ppq	1	<1	<1
Total HxCDFs (Furans)	ppq	1	<1	<1
Total PeCDDs (Dioxins)	ppq	1	<1	<1
Total PeCDFs (Furans)	ppq	1	<1	<1
Total TCDDs (Dioxins)	ppq	1	<1	<1
Total TCDFs (Furans)	ppq	1	<1	<1
Toxic Equivalent (TEQ)	ppq		0	0
NTA	mg/L	0.05	<0.05	<0.05
N-Nitrosodimethylamine	µg/L	0.0004	<0.0004	<0.0004

This is a corerction certificate and superceds all previous reports of this number. Benzo(a) pyrene Detection limit was corrected.

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Michael Ziebell, General Manager

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report:	**220000834**
Project:	St.Isidore WTP
Date Sampled:	January 29, 2002
Date Received:	January 29, 2002
Date Printed:	March 08, 2002
Matrix:	Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
Chloride	mg/L	0.5				40.1	
Fluoride	mg/L	0.1				0.4	
Nitrite- Nitrogen	mg/L	0.1				<0.1	
Nitrate- Nitrogen	mg/L	0.1				<0.1	
Sulphate	mg/L	1	109	9	12	70	22
Hardness as CaCO3	mg/L	1				312	
Total Dissolved Solids	mg/L	1	456	422	362	414	442
Turbidity	NTU	0.1				4.8	
Odour						2	
Taste						N/A	
Alkalinity as CaCO3	mg/L	1	297	334	250	279	283
Mercury	mg/L	0.0001				<0.0001	
Organic Nitrogen	mg/L	0.05				0.21	
Cadmium	mg/L	0.0001				<0.0001	
Lead	mg/L	0.0002				<0.0002	

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Michael Ziebell, General Manager

Mar 08 02 10:11a Caduceon Env. Labs. 613-526-1244 p.40

Caduceon Environmental Laboratories

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Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report:	**220000834**
Project:	St.Isidore WTP
Date Sampled:	January 29, 2002
Date Received:	January 29, 2002
Date Printed:	March 08, 2002
Matrix:	Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
Arsenic	mg/L	0.001				<0.001	
Selenium	mg/L	0.001				<0.001	
Total Cyanide	mg/L	0.005				<0.005	
Total Uranium	mg/L	0.001				0.002	
Aluminum	mg/L	0.01	0.01	<0.01	0.02	0.01	<0.01
Boron	mg/L	0.01				0.10	
Barium	mg/L	0.005				0.520	
Chromium	mg/L	0.01				<0.01	
Copper	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.02				0.89	
Manganese	mg/L	0.01				0.08	
Sodium	mg/L	0.2				38.6	
Zinc	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	units	0.10				8.03	
Benzo(a)pyrene	µg/L	0.01				<0.01	

Mar 08 02 10:11a Caduceon Env. Labs. 613-526-1244 p.41

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report:	**220000834**
Project:	St.Isidore WTP
Date Sampled:	January 29, 2002
Date Received:	January 29, 2002
Date Printed:	March 08, 2002
Matrix:	Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
2,3,4,6-Tetrachlorophenol	µg/L	0.5				<0.5	
2,4,5-T	µg/L	1				<1	
2,4,6-Trichlorophenol	µg/L	0.5				<0.5	
2,4-D	µg/L	1				<1	
2,4-Dichlorophenol	µg/L	0.5				<0.5	
Alachlor	µg/L	0.5				<0.5	
Aldicarb	µg/L	5				<5	
Aldrin	µg/L	0.02				<0.02	
Atrazine	µg/L	0.5				<0.5	
Bendiocarb	µg/L	2				<2	
Bromoxynil	µg/L	0.5				<0.5	
Carbaryl	µg/L	5				<5	
Carbofuran	µg/L	5				<5	
Chlordane	µg/L	0.7				<0.7	
Chlorpyrifos (Dursban)	µg/L	1				<1	

Mar 08 2002 10:12a Caduceon Env. Labs. 613-526-1244 P.12

Caduceon Environmental Laboratories

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Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: J.P. Gelinas

Report:	**220000834**
Project:	St.Isidore WTP
Date Sampled:	January 29, 2002
Date Received:	January 29, 2002
Date Printed:	March 08, 2002
Matrix:	Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
Cyanazine (Bladex)	µg/L	1				<1	
DDT	µg/L	3				<3	
Diazinon	µg/L	1				<1	
Dicamba	µg/L	1				<1	
Diclofop-methyl	µg/L	0.9				<0.9	
Dieldrin	µg/L	0.05				<0.05	
Dimethoate	µg/L	3				<2.5	
Dinoseb	µg/L	1				<1	
Diuron	µg/L	10				<10	
Guthion (Azinphos-methyl)	µg/L	2				<2	
Heptachlor	µg/L	0.1				<0.1	
Heptachlor epoxide	µg/L	0.2				<0.2	
Lindane	µg/L	0.4				<0.4	
Malathion	µg/L	5				<5	
Methoxychlor	µg/L	90				<90	

Caduceon Environmental Laboratories
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Michael Ziebell, General Manager

Mar 08 02 10:13a Caduceon Env. Labs. 613-526-1244 P.43

Caduceon Environmental Laboratories

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Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report:	**220000834**
Project:	St.Isidore WTP
Date Sampled:	January 29, 2002
Date Received:	January 29, 2002
Date Printed:	March 08, 2002
Matrix:	Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
Metolachlor	µg/L	0.5				<0.5	
Metribuzin (Sencor)	µg/L	5				<5	
Parathion	µg/L	1				<1	
Pentachlorophenol	µg/L	0.5				<0.5	
Phorate	µg/L	0.5				<0.5	
Picloram	µg/L	5				<5	
Prometryn	µg/L	0.3				<0.25	
Simazine	µg/L	1				<1	
Temephos	µg/L	10				<10	
Terbufos	µg/L	0.7				<0.7	
Total PCB	µg/L	0.3				<0.3	
Triallate	µg/L	1				<1	
Trifluralin	µg/L	1				<1	
Glyphosate	µg/L	10				<10	
1,1-Dichloroethylene	mg/L	0.0001				<0.0001	

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Caduceon Environmental Laboratories

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Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: J.P. Gelinas

Report: 220000834
Project: St.Isidore WTP
Date Sampled: January 29, 2002
Date Received: January 29, 2002
Date Printed: March 08, 2002
Matrix: Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
1,2-Dichlorobenzene	mg/L	0.0001				<0.0001	
1,2-Dichloroethane	mg/L	0.0001				<0.0001	
1,4-Dichlorobenzene	mg/L	0.0002				<0.0002	
Benzene	mg/L	0.0005				<0.0005	
Bromodichloromethane	mg/L	0.0001				<0.0001	
Bromoform	mg/L	0.0001				<0.0001	
Carbon Tetrachloride	mg/L	0.0002				<0.0002	
Chlorobenzene	mg/L	0.0002				<0.0002	
Chloroform	mg/L	0.0003				<0.0003	
Dibromochloromethane	mg/L	0.0001				<0.0001	
Ethylbenzene	mg/L	0.0005				<0.0005	
m/p-Xylene	mg/L	0.002				<0.002	
Methylene Chloride	mg/L	0.003				<0.003	
o-Xylene	mg/L	0.002				<0.002	
Tetrachloroethylene	mg/L	0.0002				<0.0002	

Mar 08 02 10:14a Caduceon Env. Labs. 613-526-1244 p.45

Caduceon Environmental Laboratories

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Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report:	**220000834**
Project:	St.Isidore WTP
Date Sampled:	January 29, 2002
Date Received:	January 29, 2002
Date Printed:	March 08, 2002
Matrix:	Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
Toluene	mg/L	0.0005				<0.0005	
Total Trihalomethanes	mg/L	0.001				<0.001	
Trichloroethylene	mg/L	0.0001				<0.0001	
Vinyl Chloride	mg/L	0.0003				<0.0003	
Diquat	µg/L	5				<5	
Paraquat	µg/L	1				<1	
1234678-HpCDD (Dioxins)	ppq	1				<1	
1234678-HpCDF (Furans)	ppq	1				<1	
1234789-HpCDF (Furans)	ppq	1				<1	
123478-HxCDD (Dioxins)	ppq	1				<1	
123478-HxCDF (Furans)	ppq	1				<1	
123678-HxCDD (Dioxins)	ppq	1				<1	
123678-HxCDF (Furans)	ppq	1				<1	
123789-HxCDD (Dioxins)	ppq	1				<1	
123789-HxCDF (Furans)	ppq	1				<1	

Mar 08 02 10:15a Caduceon Env. Labs. 613-526-1244 P.46

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report:	**220000834**
Project:	St.Isidore WTP
Date Sampled:	January 29, 2002
Date Received:	January 29, 2002
Date Printed:	March 08, 2002
Matrix:	Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
12378-PeCDD (Dioxins)	ppq	1				<1	
12378-PeCDF (Furans)	ppq	1				<1	
234678-HxCDF (Furans)	ppq	1				<1	
23478-PeCDF (Furans)	ppq	1				<1	
2378-TCDD (Dioxins)	ppq	1				<1	
2378-TCDF (Furans)	ppq	1				<1	
OCDD (Dioxins)	ppq	1				<1	
OCDF (Furans)	ppq	1				<1	
Total HpCDDs (Dioxins)	ppq	1				<1	
Total HpCDFs (Furans)	ppq	1				<1	
Total HxCDDs (Dioxins)	ppq	1				<1	
Total HxCDFs (Furans)	ppq	1				<1	
Total PeCDDs (Dioxins)	ppq	1				<1	
Total PeCDFs (Furans)	ppq	1				<1	
Total TCDDs (Dioxins)	ppq	1				<1	

Caduceon Environmental Laboratories
2378 Holly Lane, Ottawa, Ontario, K1V 7P1, Canada
Tel: (613)526-0123, Fax: (613)526-1244

Michael Ziebell, General Manager

Mar 08 02 10:16a Caduceon Env. Labs. 613-526-1244 P.47

Caduceon Environmental Laboratories

Division of Caduceon Enterprises Inc.

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: **J.P. Gelinas**

Report:	**220000834**
Project:	St.Isidore WTP
Date Sampled:	January 29, 2002
Date Received:	January 29, 2002
Date Printed:	March 08, 2002
Matrix:	Drinking Water

Parameter	Unit	MDL	Sample Identification				
			Raw Water - Well #1	Raw Water - Well #2	Raw Water - Well #3	Raw Water - Well #4	Raw Water - Well #5
Total TCDFs (Furans)	ppq	1				<1	
Toxic Equivalent (TEQ)	ppq					0	
Methane	L/m3	0.2				<0.2	
Gross Alpha	Bq/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Gross Beta	Bq/L	0.1	0.3	0.2	0.4	0.2	0.3
Tritium	Bq/L	1,000	<1000	<1000	<1000	<1000	<1000
NTA	mg/L	0.05				<0.05	
N-Nitrosodimethylamine	µg/L	0.002				<0.002	
Dissolved Organic Carbon	mg/L	0.2				2.8	
Hydrogen Sulphide (H2S)	mg/L	0.01	0.02	0.95	0.08	0.06	0.01
Colour	TCU	1				5	

N/A - Not available on Raw Water.This is a corerction certificate and superceds all previous reports of this number. Benzo(a) pyrene Detection limit was corrected.

Caduceon Environmental Laboratories
2378 Holly Lane, Ottawa, Ontario, K1V 7P1, Canada
Tel: (613)526-0123 Fax: (613)526-1244

Michael Ziebell, General Manager

Mar 08 02 10:16a Caduceon Env. Labs. 613-526-1244 p.48

Nov 26 01 02:07p Caduceon Env. Labs. 613-526-1244 p.1

Caduceon Enterprises Inc.
Environmental Laboratory

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Attention: J.P. Gelinas

Report: **210007925**
Project: St-Isidore WTP
Date Sampled: November 6, 2001
Date Received: November 7, 2001
Date Printed: November 26, 2001
Matrix: Drinking Water

Parameter	Unit	MDL	Raw Water Well #1	Raw Water Well #2	Raw Water Well #3	Raw Water Well #6	TRT H2B W.T.P
Chloride	mg/L	0.5	103	53.3	112	88.8	92.9
Fluoride	mg/L	0.1	0.5	0.8	0.3	0.3	0.7
Nitrite- Nitrogen	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate- Nitrogen	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.1
Hardness as CaCO3	mg/L	1	209	31	286	273	139
Turbidity	NTU	0.1	0.4	0.6	1.8	0.7	0.3
Total Kjeldahl Nitrogen	mg/L	0.05	0.88	0.60	0.88	1.10	0.25
Total Ammonia Nitrogen	mg/L	0.01	0.81	0.53	0.72	1.19	0.18
Iron	mg/L	0.02	0.09	0.06	0.38	0.14	<0.02
Manganese	mg/L	0.01	0.02	<0.01	0.01	0.02	<0.01
Sodium	mg/L	0.2	154	191	73.7	77.0	155
pH	units	0.10	8.17	8.66	8.19	8.19	8.45
Dissolved Organic Carbon	mg/L	0.2	2.4	1.4	0.6	0.6	1.6
Total Organic Carbon	mg/L	0.3	2.6	1.7	0.7	0.8	1.8
Colour	TCU	1	6	3	<1	<1	1

Caduceon Enterprises Inc. Environmental Laboratory
2378 Holly Lane, Ottawa, Ontario K1V 7P1, Canada
Tel (613)526-0123, Fax (613)526-1244

Dave Pealer, Lab Supervisor

Caduceon Enterprises Inc.

Environmental Laboratory

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O.Box 70, 209 Limoges Rd.
Limoges, ON
K0A 2M0

Report: 210007925
Project: St-Isidore WTP
Date Sampled: November 6, 2001
Date Received: November 7, 2001
Date Printed: November 19, 2001
Matrix: Drinking Water

Attention: J.P. Gelinas

Parameter	Unit	MDL	Sample Identification				
			Raw Water Well #1	Raw Water Well #2	Raw Water Well #3	Raw Water Well #5	TRT H20 W.T.P
Conductivity	uMho/cm	1	951	1360 —	2080 —	1900 —	818 —

Caduceon Enterprises Inc. Environmental Laboratory
2378 Holly Lane, Ottawa, Ontario, K1V 7P1, Canada
Tel (613)526-0123, Fax (613)526-1244

Michael Zrebiec, General Manager

Seprotech Laboratories

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O. Box 70, 209 Limoges Rd.
Limoges, Ontario K0A 2M0

Report: 200008402
Project: St. Isidore WTP
Date sampled: December 18, 2000
Date submitted: December 19, 2000
Date printed: January 26, 2001

Attention: Daniel Lafleche
page 2 of 4

Matrix: drinking water

Parameter	Units	Det. Limit	Raw Water Well #1	Raw Water Well #2	Raw Water Well #3	Treated Water Well #5	Treated Water WTP
Metolachlor	µg/L	0.5	nd	nd	nd	nd	nd
Metribuzin(Sencor)	µg/L	5	nd	nd	nd	nd	nd
Parathion	µg/L	1	nd	nd	nd	nd	nd
Pentachlorophenol	µg/L	0.5	nd	nd	nd	nd	nd
Phorate	µg/L	1	nd	nd	nd	nd	nd
Picloram	µg/L	5	nd	nd	nd	nd	nd
Prometryn	µg/L	0.5	nd	nd	nd	nd	nd
Simazine	µg/L	2	nd	nd	nd	nd	nd
Temephos	µg/L	200	nd	nd	nd	nd	nd
Terbufos	µg/L	0.5	nd	nd	nd	nd	nd
Triallate	µg/L	1	nd	nd	nd	nd	nd
Trifluralin	µg/L	1	nd	nd	nd	nd	nd
Total PCB	µg/L	2.5	nd	nd	nd	nd	nd
Glyphosate	µg/L	10	nd	nd	nd	nd	nd
Paraquat	µg/L	8	nd	nd	nd	nd	nd
Diquat	µg/L	20	nd	nd	nd	nd	nd
NDMA	µg/L	0.0009	0.0009	0.001	0.001	0.002	0.004
NTA	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01	nd	nd	nd	nd	nd
Methane	L/m3	0.02	nd	nd	nd	nd	nd

*nd=Not detected

Seprotech Laboratories
2378 Holly Lane, Ottawa, Ontario, K1V 7P1, Canada
Tel: (613)523-1641, Fax: (613)731-0851

Dave Peeler, Lab Supervisor

Seprotech Laboratories

Certificate of Analysis

Client:
Ontario Clean Water Agency
P.O. Box 70, 209 Limoges Rd.
Limoges, Ontario K0A 2M0

Report: 200008402
Project: St. Isidore WTP
Date sampled: December 18, 2000
Date submitted: December 19, 2000
Date printed: January 26, 2001

Attention: Daniel Lafleche

Matrix: drinking water

Parameter	Units	Det. Limit	Raw Water Well #1	Raw Water Well #2	Raw Water Well #3	Treated Water Well #5	Treated Water WTP
benzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
bromodichloromethane	mg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0012
bromoform	mg/L	0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
carbon tetrachloride	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
chlorobenzene	mg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
chloroform	mg/L	0.0006	<0.0006	<0.0006	<0.0006	<0.0006	0.0018
dibromochloromethane	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
1,2-dichlorobenzene	mg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,4-dichlorobenzene	mg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
1,2-dichloroethane	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
1,1-dichloroethylene	mg/L	0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006
ethylbenzene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
methylene chloride	mg/L	0.004	<0.004	<0.004	<0.004	<0.004	<0.004
tetrachloroethylene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
toluene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
trichloroethylene	mg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
vinyl chloride	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
m/p-xylene	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
o-xylene	mg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

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Dave Peeler, Lab Supervisor

APPENDIX V

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE

Raw Water & Treated Water
Microbiological Characteristics

Number of samples with positive results
YEAR : 1999

Source Of Sample	Number Of Samples	Safe Results	Poor or Unsafe Results	Number of Samples having			
				Fecal Coli. >=1	Total Coli. >=1	HPC (SPC) 1-499	HPC (SPC) >=500
Raw Water							
Well no. 1	46	N/A	N/A	6	7	31	10
Well no. 2	46	N/A	N/A	4	5	28	10
Well no. 3	46	N/A	N/A	4	4	30	11
Well no. 5	47	N/A	N/A	0	0	34	-
Treated Water							
WTP	52	52	0	0	0	29	2
Well no. 5	49	49	0	0	0	20	0
WPS and Water Tower	159	159	0	0	0	59	3

Comments : ***No unsafe conditions are met at treated water.***

Compiled by:
LECOMPTE ENGINEERING LTD.

Jean Hébert

Jean Hébert. P.Eng.
December 3, 2001

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE

Raw Water & Treated Water
Microbiological Characteristics

Number of samples with positive results
YEAR : 2000

Source Of Sample	Number Of Samples	Safe Results	Poor or Unsafe Results	Number of Samples having			
				Fecal Coli. >=1	Total Coli. >=1	HPC (SPC) 1-499	HPC (SPC) >=500
Raw Water							
Well no. 1	55	N/A	N/A	0	11	43	5
Well no. 2	55	N/A	N/A	1	8	43	4
Well no. 3	55	N/A	N/A	2	8	41	3
Well no. 5	55	N/A	N/A	0	1	46	0
Treated Water							
WTP	55	55	0	0	0	17	0
Well no. 5	55	55	0	0	0	14	0
WPS and Water Tower	179	179	0	0	0	91	0

Comments : ***No unsafe conditions are met at treated water.***

Compiled by:
LECOMPTE ENGINEERING LTD.

Jean Hébert

Jean Hébert. P.Eng.
December 3. 2001

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE

Raw Water & Treated Water
Microbiological Characteristics

Number of samples with positive results
YEAR : 2001

Source Of Sample	Number Of Samples	Safe Results	Poor or Unsafe Results	Number of Samples having			
				Fecal Coli. >=1	Total Coli. >=1	HPC (SPC) 1-499	HPC (SPC) >=500
Raw Water							
Well no. 1	28	N/A	N/A	1	4	21	1
Well no. 2	28	N/A	N/A	0	3	6	2
Well no. 3	28	N/A	N/A	0	1	19	3
Well no. 5	28	N/A	N/A	0	0	5	
Treated Water							
WTP	28	28	0	0	0	2	0
Well no. 5	28	28	0	0	0	1	0
WPS and Water Tower	80	80	0	0	0	34	0

Comments : No unsafe conditions are met at treated water.

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LECOMPTE ENGINEERING LTD.

Jean Hébert

Jean Hébert, P.Eng.
December 3, 2001

APPENDIX VI

Table 2 – Microbiological Characteristics Raw Water From January 2000 to November 2001

(also included into Appendix XIII – Records of Microbiological Testings)

	Number Of Samples	Number of Samples having			
		Fecal *Coli.* >=1	Total *Coli.* >=1	HPC (SPC)	
				1-499	>=500
Year 2000					
Well no.1	55	0	11	43	5
Well no.2	55	1	8	43	4
Well no.3	55	2	8	41	3
Well no.5	55	0	1	46	0
Year 2001					
Well no.1	28	1	4	21	1
Well no.2	28	0	3	6	2
Well no.3	28	0	1	19	3
Well no.5	28	0	0	5	1

Well no. 4 was shut down in 1997 because of a high bacteria count and high iron and manganese concentrations.

Results at this well are as follows :

Parameter	Unit	Sept 1997	April 1997
Total Coliform	c/100 mL	1600	22
E. Coli or Fecal Coliform	c/100 mL	128	4

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LECOMPTE ENGINEERING LTD.

Jean Hébert

Jean Hébert, P.Eng.
December 3, 2001

Seprotech Laboratories

Certificate of Analysis

Client:
Ontario Clean Water Agency
832 Drouin St.
Casselman, Ontario
K0A 1M0

Report: 992719123
Program: St-Isidore WTP
Date sampled: September 27, 1999
Date received: September 28, 1999
Date printed: September 30, 1999

Attention: J.P. Gelinas

Matrix: drinking water

Sample Identification	Free Chlorine	Total Chlorine	fecal coliforms	total coliforms	standard plate count
Units	mg/L	mg/L	/100mL	/100mL	mL
Det. Limit			1	2	2
Raw Water Well #1			7	18	>3000
Raw Water Well #2			6	14	>3000
Raw Water Well #3			7	30	>3000
Raw Water Well #5			absent	absent	268
WTP Treated Water A	0.65	1.6	absent	absent	30
Dist. Fire Hydrant #3 ch. Campeau	0.60	1.1	absent	absent	>600
Dist. Fire Hydrant #6 Ranger St.	0.70	1.2	absent	absent	
Dist. Fire Hydrant #4 Jacques St.	0.60	1.3	absent	absent	>600
WTP Treated Water B	0.70	1.6	absent	absent	20
Dist. Treated at Well #5	0.80	1.4	absent	absent	absent

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Dave Peeler, Lab Supervisor

Seprotech Laboratories

Certificate of Analysis

Client:
Ontario Clean Water Agency
832 Drouin St.
Casselman, Ontario
K0A 1M0

Report: 992789302
Program: St-Isidore WTP
Date sampled: October 03, 1999
Date received: October 05, 1999
Date printed: October 08, 1999

Attention: J.P. Gelinas

Matrix: drinking water

Sample Identification	Free Chlorine	Total Chlorine	fecal coliforms	total coliforms	standard plate count
Units	mg/L	mg/L	/100mL	/100mL	/mL
Det. Limit			1	2	2
Raw Water Well #1			20	44	244
Raw Water Well #2			22	46	158
Raw Water Well #3			15	34	176
Raw Water Well #5			absent	absent	944
WTP Treated Water	0.52	0.77	absent	absent	absent
Dist. Fire Hydrant #6 Ranger St.	0.48	0.60	absent	absent	14
Dist. Fire Hydrant #3 ch. Campeau	0.50	0.70	absent	absent	[illegible]
Dist. Treated at Well #5	1.0	1.4	absent	absent	absent

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Dave Peeler, Lab Supervisor

Seprotech Laboratories

Certificate of Analysis

Client:
Ontario Clean Water Agency
832 Drouin St.
Casselman, Ontario
K0A 1M0

Report: 992869541
Program: St-Isidore WTP
Date sampled: October 12, 1999
Date received: October 13, 1999
Date printed: October 18, 1999

Attention: J.P. Gelinas

Matrix: drinking water

Sample Identification	Free Chlorine	Total Chlorine	fecal coliforms	total coliforms	standard plate count
Units	mg/L	mg/L	/100mL	/100mL	/mL
Det. Limit			1	2	2
Raw Water Well #1			6	42	>2000
Raw Water Well #2			15	48	600
Raw Water Well #3			10	18	350
Raw Water Well #5			absent	absent	4
WTP Treated Water	0.61	0.73	absent	absent	8
Dist. Water Tower	0.20	0.37	absent	absent	300
Dist. Fire Hydrant #7 Place Mad.	0.21	0.39	absent	absent	
Dist. Treated at Well #5	0.70	1.5	absent	absent	absent

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Seprotech Laboratories

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Client:
Ontario Clean Water Agency
832 Drouin St.
Casselman, Ontario
K0A 1M0

Report: 992929723
Program: St-Isidore WTP
Date sampled: October 18, 1999
Date received: October 19, 1999
Date printed: October 29, 1999

Attention: J.P. Gelinas

Matrix: drinking water

Sample Identification	Free Chlorine	Total Chlorine	fecal coliforms	total coliforms	standard plate count
Units	mg/L	mg/L	/100mL	/100mL	/mL
Det. Limit			1	2	2
Raw Water Well #1			4	10	>600
Raw Water Well #2			4	14	>600
Raw Water Well #3			10	24	>600
Raw Water Well #5			absent	absent	336
WTP Treated Water	0.10	0.20	absent	absent	112
Dist. Fire Hydrant #4 Jacques St.	0.25	0.40	absent	absent	absent
Dist. Fire Hydrant #3 ch. Campeau	0.85	1.0	absent	absent	absent
Dist. Treated at Well #5	1.6	2.0	absent	absent	absent

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Client:
Ontario Clean Water Agency
832 Drouin St.
Casselman, Ontario
K0A 1M0

Report: 992999908
Program: St-Isidore WTP
Date sampled: October 25, 1999
Date received: October 26, 1999
Date printed: October 29, 1999

Attention: J.P. Gelinas

Matrix: drinking water

Sample Identification	Free Chlorine	Total Chlorine	fecal coliforms	total coliforms	standard plate count
Units	mg/L	mg/L	/100mL	/100mL	/mL
Det. Limit			1	2	2
Raw Water Well #1			7	24	
Raw Water Well #2			absent	absent	
Raw Water Well #3			absent	absent	
Raw Water Well #5			absent	absent	
WTP Treated Water	0.32	0.44	absent	absent	absent
Dist. Fire Hydrant #7 Place Mad.	0.71	0.90	absent	absent	
Dist. Fire Hydrant #4 Jacques St.	1.0	1.5	absent	absent	
Dist. Water Tower	0.65	1.1	absent	absent	
Dist. Treated at Well #5	2.0	2.5	absent	absent	

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Certificate of Analysis

Client:
Ontario Clean Water Agency
832 Drouin St.
Casselman, Ontario
K0A 1M0

Report: 993070135
Program: St-Isidore WTP
Date sampled: November 01, 1999
Date received: November 02, 1999
Date printed: November 08, 1999

Attention: J.P. Gelinas

Matrix: drinking water

Sample Identification	Free Chlorine	Total Chlorine	fecal coliforms	total coliforms	standard plate count
Units	mg/L	mg/L	/100mL	/100mL	/mL
Det. Limit			1	2	2
Raw Water Well #1			7	14	>5000
Raw Water Well #2			absent	24	>600
Raw Water Well #3			absent	absent	>600
Raw Water Well #5			absent	absent	248
WTP Treated Water	1.2	1.4	absent	absent	absent
Dist. Fire Hydrant #6 Ranger St.	.90 0.72	1.00 0.99	absent	absent	absent
Dist. Fire Hydrant #3 ch. Campeau	0.60	0.92	absent	absent	absent
Dist. Treated at Well #5	1.4	2.0	absent	absent	absent

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Dave Peeler, Lab Supervisor

APPENDIX VI

APPENDIX VI

The Nation Municipality
Village of St-Isidore

Raw Water and Treated Water
Clostridium Perfringens Counts
Number of samples at each Source

Source of Sample Combined	1997	1998	1999	2000	2001
Wells no. 1, 2 and 3	9	10	12	2	7
Treated Water at WTP	9	10	12	2	7
Treated Water at Well no. 5	0	0	0	0	7

Number of samples with positive results at all locations = 0

Compiled by:
LECOMPTE ENGINEERING LTD.

Jean Hébert, P.Eng/
April 17, 2002

5918-app.VI

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality:	ST-ISIDORE	Report To:	ONTARIO CLEAN WATER AGENCY
	GROUND WATER	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario
Date Sampled:	21 APRIL 97		
Date Analyzed:	APR 22 1997	Fax:	K0A 1M0 764-5678 FAX: 764-5404.

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
	ST-ISI #1	RAW H_2O ST-ISIDORE W.T.P.		N/A
	ST-ISI #2	TREATED H_2O " " "		0.51

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	*Clostridium perfringens* /100 mL	Comments
									42	
									0 * per 1000 mL	

01/24/97 THU 20:33 FAX 519 681 7150 GAP ENVIROMIC 002

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London, Ontario N6E 1P5

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Fax: (519) 681-7150

002 → CASSELMAN ST 1ST GAP ENVIRONMENTAL 05/06/97 TUE 07:00 FAX 07

Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GRAND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario K0A 1M0 764-5678 FAX 613-764-5424	
Date Sampled: MAY 05 1997			
Date Analyzed: MAY 06 1997	Fax:		

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.2 T

RECEIVED MAY 8 1997

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	Clostridium perfringens /100 mL	Comments
[illegible]									0	
[illegible]									0 * per 1000mL	

mw

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1020 Hargrieve Road
London, Ontario N6E 1P5

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06/05/97 THU 14:23 FAX 519 681 7150 GAP ENVIROMIC 001

Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GROUND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario K0A 1M0 764-5678 FAX 613-764-5424	
Date Sampled: JUN 02 1997			
Date Analyzed: JUN 03 1997	Fax:		

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
0-15355	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
0-15356	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		.34 F

JUN 5 1997

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
0-15355									L2	
0-15356									0 * per 800mL	

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London, Ontario N6E 1P5

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Municipality: ST-ISIDORE
Source: GROUND WATER
Date Sampled: JUL 02 1997
Date Analyzed: JUL 03 1997

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5624

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
17713	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
17714	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		.90 T

FAXED JUL 4 1997

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
17713									0	
17714									0 * 1000 mL	

MW

07/07/97 MON 10:25 FAX 519 681 7150 GAP ENVIROMIC 001

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1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
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Municipality: ST-ISIDORE.		Report To:	ONTARIO CLEAN WATER AGENCY
Source: GROUND WATER.		Address:	CASSELMAN WTP
Date Sampled: AUG 05 1997			832 Drouin Street
			Casselman, Ontario
Date Analyzed:	AUG 06 1997	Fax:	K0A 1M0 764-5678 FAX 613-764-5424

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
20207	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
20208	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.0 T.

FAXED AUG 8 1997

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
20207									0	
20208									0 * per 1000 mL	

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London, Ontario N6E 1P5

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09/05/97 FRI 10:47 FAX 519 681 7150 GAP ENVIROMIC 002

Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GROUND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario	
Date Sampled: SEP 02 1997			
Date Analyzed: SEP 03 1997	Fax:	K0A 1M0 764-5678 FAX 613-764-5424	

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
022321	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
022322	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.2 T

FAXED
SEP 5 1997

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
022321									0	
022322									0 *	per 100mL

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London, Ontario N6E 1P5

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Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GROUND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario	
Date Sampled: OCT 06 1997		K0A 1M0 764-5678	FAX 613-764-5424
Date Analyzed: OCT 07 1997	Fax:		

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
00581	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
00582	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		-30T

FAXED
OCT - 9 1997

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
00581									0	
00582									0	* per 1000mL

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Municipality: ST-ISIDORE
Source: GRAIND WATER
Date Sampled: 1120 3-97
Date Analyzed: NOV 04 1997

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5424
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
003035	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
003036	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		.36F .84T

FAXED NOV 6 1997

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*)*Clostridium perfringens* /100 mL	Comments
003035									0	
003036									0	* per 1000mL

11/06/97 THU 12:40 FAX 519 681 7150 GAP ENVIROMIC 001

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12/03/97 WED 14:06 FAX 519 681 7150 GAP ENVIROMIC 001

Municipality: ST-ISIDORE
Source: GROUND WATER
Date Sampled: DEC 01 1997
Date Analyzed: DEC 02 1997

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5424
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
005702	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
005703	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		.91

FAXED
DEC 3 1997

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
005702									0	
005703									3	*per 900mL

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Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GROUND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario	
Date Sampled: JAN 05 1998		K0A 1M0 764-5678	
Date Analyzed: JAN 06 1998	Fax:		Fax 613-764-5424

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
008214	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
008215	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.0 T

FAX JAN 9 1998

FAX JAN 8 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
008214									0	
008215									0 +per 900mL	

01/19/98 MON 11:51 FAX 519 681 7150 GAP ENVIRO TC ... CASSELMAN

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality:	ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY
Source:	GRAIND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario K0A 1M0 764-5678 FAX 613-764-5624
Date Sampled:	FEB 02 1998		
Date Analyzed:	FEB 03 1998	Fax:	

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
0910924	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
0910925	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		.87

FAX
FEB 5 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
0910924									0	
0910925									0 *Pour 900mL	

02/05/98 THU 14:47 FAX 519 681 7150 GAP ENVIROMIC +++ CASSELMAN ST ISI

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE.
Source: GRAND WATER.
Date Sampled:
Date Analyzed: MAR 10 1998

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
632 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5624
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
014239	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
014240	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.	Total Cl²	1.1

MAR 12 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
014239									0	
014240									0	* per 1000mL

03/12/98 THU 09:41 FAX 519 681 7150 GAP ENVIROMIC +++ CASSELMAN

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE
Source: GRAND WATER
Date Sampled: April 6-98
Date Analyzed: APR 07 1998

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5424
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
017001	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
017002	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.1

APR 9 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
017001									0	
017002									0	*per 100mL

04/09/98 THU 10:54 FAX 519 681 7150 GAP ENVIROMIC +++ CASSELMAN ST ISI 002

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-[illegible]-0571

REPORT TO: Ontario Clean Water Agency
656 County Rd. #9
Plantagenet, Ontario
K0B-1L0
Phone: 1-613-673-4708
Fax: 1-613-673-1539
ATTN: Operations

7150

Municipality: ST-ISIDORE. Report To:
Source: GRAND WATER. Address:
Date Sampled: JUN 01 1998
Date Analyzed: JUN 02 1998 Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
190	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
191	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.4 mg/L

JUN 4 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
190									0	
191									0 * per 1000 mL	

06/04/98 THU 14:56 FAX 519 681 7150 GAP ENVIROMIC 001

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

07/09/98 THU 09:49 FAX 519 681 7150 GAP ENVIROMIC +++ CASSELMAN ST ISI 002

Municipality: ST-ISIDORE
Source: GRAND WATER
Date Sampled: July 6-98
Date Analyzed: JUL 07 1998

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 Fax 613-764-5424
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
025464	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
025465	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.	T.	1.6

AXIE
JUL 9 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
025464									0	
025465									0 *per 1000mL	

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
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Fax: (519) 681-7150

08/13/98 THU 09:42 FAX 519 681 7150 GAP ENVIROMIC +++ CASSELMAN ST ISI 001

Municipality: ST-ISIDORE
Source: GROUND WATER
Date Sampled: 10-Aug-98
Date Analyzed: AUG 11 1998

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5624
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.3 T

AUG 13 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
[illegible]									0	
[illegible]									0 * per 1000 mL	

GAP EnviroMicrobial Services Inc.

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Telephone: (519) 681-0571
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Municipality: ST-ISIDORE
Source: GROUND WATER
Date Sampled: 31 Aug 98
Date Analyzed: SEP 07 1998

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5624
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.7 ppm

SEP 8 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
[illegible]									0	
[illegible]									0	* per 100mL
[illegible]	[illegible]	[illegible]								
[illegible]	[illegible]	[illegible]								

08/08/98 TUE 11:33 FAX 519 681 7150 GAP ENVIRONMENTAL 002

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GRAND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario K0A 1M0 764-5678 FAX 613-764-5424	
Date Sampled:			
Date Analyzed: OCT 07 1998	Fax:		

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
007768	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
007769	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		2.1 PPM

RECEIVED
OCT - 9 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
007768									0	
007769									0	4 per 1000mL

11/27/98 FRI 12:21 FAX TO GAP ENVIRONMENTAL 001

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-660-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GRAIND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario	
Date Sampled: 2 NOV 98			
Date Analyzed: NOV 03 1998	Fax:	K0A 1M0 764-5678 FAX 613-764-5424	

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
103418	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
103419	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		2.4 T

RECEIVED
NOV 10 1998

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
103418									0	
103419									0 *	per 1000mL

11/10/98 TUE 08:40 FAX 519 681 7150 GAP ENVIROMIC +++ CASSELMAN ST ISI 002

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE
Source: GROUND WATER
Date Sampled: 2 JAN 99
Date Analyzed: JAN 05 1999

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5424
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
105900	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
105901	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		0.7 TOTAL

JAN 15 1999

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
105900									0	
105901	2								0	per 900mL

D

GAP EnviroMicrobial Services Inc.

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London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE
Source: GROUND WATER
Date Sampled: FEB 1-99
Date Analyzed: FEB 02 1999

Report To:
Address: ONTARIO CLEAN WATER AGENCY
CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5424
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
12013	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
12014	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		

RECEIVED
FEB 9 1999

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
12013									0	
12014									0	+ per 1000mL

(*) NOT TO BE CARRIED OUT UNLESS REQUESTED

GAP EnviroMicrobial Services Inc.

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London, Ontario N6E 1P5

Toll Free: 1-800-580-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GRAND WATER	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario K0A 1M0 764-5678	
Date Sampled: MARCH 1ST 99			
Date Analyzed: MAR 03 1999	Fax:	FAX 613-764-5624	

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
01532	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
01533	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		2.1

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
01520									0	
01521									0	* per 900mL

GAP EnviroMicrobial Services Inc.

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London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GROUND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario	
Date Sampled: APRIL 12-99			
Date Analyzed: APR 13 1999	Fax:	K0A 1M0 764-5678 FAX 613-764-5624	

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
119083	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
119084	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.0 mg/L TC

APR 20

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
119083									<0	
119084									0	* per 1000 mL

0'/20/99 TUE 16:32 FAX 519 681 7150 GAP ENVIROMIC 001

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality:	ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY
Source:	GRAND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario
Date Sampled:	MAY 3/MAY 4 1999		
Date Analyzed:		Fax:	K0A 1M0 764-5878 FAX 613-764-5424

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.2 MG/L

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
[illegible]									8 (*) per 1000mL	
[illegible]										

003 GAP ENVIROMIC 519 681 7150 WED 15:24 FAX 05/05/99

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE
Source: GROUND WATER
Date Sampled: 31/05/99
Date Analyzed: JUN 01 1999

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
Fax: K0A 1M0 764-5678 FAX 613-764-5624

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
[illegible]	[illegible]								0	
[illegible]	[illegible]								* 0 per 900mL	
[illegible]	[illegible]									
[illegible]	[illegible]									

06/04/99 FRI 08:53 FAX 519 681 7150 GAP ENVIROMIC 001

07/15/99 THU 11:42 FAX 519 681 7150 GAP ENVIROMIC ++→ CASSELMAN-ST ISI 001

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE
Source: GRAND WATER
Date Sampled: 05/07/97
Date Analyzed: JUL 06 1999

Report To: ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678 FAX 613-764-5424
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[redacted]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[redacted]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	*Clostridium perfringens* /100 mL	Comments
[redacted]									0	
[redacted]									0 *per 1000mL	

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London, Ontario N6E 1P5

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Fax: (519) 681-7150

08/10/99 TUE 08:55 FAX 519 681 7150 GAP ENVIROMIC → CASSELMAN-ST ISI 002

Municipality: ST-ISIDORE		Report To:	ONTARIO CLEAN WATER AGENCY
Source: GRAIND WATER		Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario
Date Sampled: 03/08/97			
Date Analyzed: AUG 04 1999		Fax:	K0A 1M0 764-5678 FAX 613-764-5424

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		1.0 mg/L

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count /1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
[illegible]									8	* per 1000mL
[illegible]										

1020 Hargrieve Road
London, Ontario N6E 1P5

GAP EnviroMicrobial Services Inc.

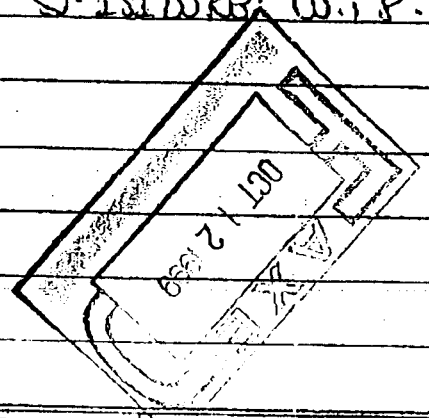
Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE
Source: GRAND WATER
Date Sampled: SEPT 07/99
Date Analyzed: SEP 08 1999

Report To:
ONTARIO CLEAN WATER AGENCY
Address: CASSELMAN WTP
832 Drouin Street
Casselman, Ontario
K0A 1M0 764-5878 FAX 613-764-5424
Fax:

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		



Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(*) *Clostridium perfringens* /100 mL	Comments
[illegible]									0	
[illegible]									0 per 1000 mL	
										KB

10/12/99 TUE 11:04 FAX 519 681 7150 GAP ENVIRONIC 001

GAP EnviroMicrobial Services Inc.
1020 Hargrieve Road
London, Ontario N6E 1P5
Toll Free: 1-800-680-9771
Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality:	ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY
Source:	GRAND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario
Date Sampled:	03/10/99		K0A 1M0 764-5678
Date Analyzed:	OCT 05 1999	Fax:	FAX 613-764-5424

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	*Clostridium perfringens* /100 mL	Comments
[illegible]									0	
[illegible]									0 per 1000mL	

GAP ENVIROMIC 519 681 7150 TUE 10:47 FAX 16/12/99 001

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GRAND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario	
Date Sampled: 11/11/99			
Date Analyzed: NOV 12 1999	Fax:	K0A 1M0 764-5678 FAX 613-764-5424	

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST ISIDORE W.T.P.		

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	*Clostridium perfringens* /100 mL	Comments
[illegible]									8 par 100 mL	
[illegible]										

11/11/99 THU 11:49 FAX 519 681 7150 GAP ENVIROMIC → CASSELMAN-ST ISI 003

GAP EnviroMicrobial Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE.	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GRAIND WATER.	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario	
Date Sampled: 06/12/99			
Date Analyzed: DEC 07 1999	Fax:	K0A 1M0 764-5678 FAX 613-764-5424	

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
[illegible]	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
[illegible]	ST-ISI #2	TREATED WATER ST ISIDORE W.T.P.		
				D.O.T.

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	*Clostridium perfringens* /100 mL	Comments
[illegible]	[illegible]								0	
[illegible]	[illegible]								0 *per 100mL	
										15

12/16/99 THU 11:36 FAX 519 681 7150 GAP ENVIROMIC +++ CASSELMAN-ST ISI

GAP EnviroMicro[illegible]l Services Inc.

1020 Hargrieve Road
London, Ontario N6E 1P5

Toll Free: 1-800-680-9771

Telephone: (519) 681-0571
Fax: (519) 681-7150

Municipality: ST-ISIDORE	Report To:	ONTARIO CLEAN WATER AGENCY	
Source: GROUND WATER	Address:	CASSELMAN WTP 832 Drouin Street Casselman, Ontario	
Date Sampled: 04/01/00			
Date Analyzed: JAN 05 2000	Fax:	K0A 1M0 764-5878 FAX 613-764-5434	

Lab Number	Sender's Number	Sampling Point Locations and Time	Nature of Sample and Environment	Chlorine and Amount
000742	ST-ISI #1	RAW WATER ST-ISIDORE W.T.P.		N/A
000743	ST-ISI #2	TREATED WATER ST-ISIDORE W.T.P.		

Lab Number	Sender's Number	Total Coliforms /100 mL	Background /100 mL	*Escherichia coli* /100 mL	Fecal Streptococci /100 mL	*Pseudomonas aeruginosa* /100 mL	Heterotrophic Plate Count / 1 mL	*Aeromonas* /100 mL	(X) *Clostridium perfringens* /100 mL	Comments
000741									0	
000742									0 per	1000mL

01/12/00 WED 08:55 FAX 519 681 7150 GAP ENVIROMIC +++ CASSELMAN-ST IS[illegible]

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571 — Fax: (519) 681-7150

MUNICIPALITY: NATION ST-ISIDORE

SOURCE: GROUND WATER

DATE SAMPLED: 13/03/00

DATE RECEIVED: MAR 15 2000

RECEIVED BY:

COMMENTS:

DATE ANALYZED: MAR 15 2000

REPORT & INVOICE TO: O.C.W.A.

ADDRESS: ONTARIO CLEAN WATER AGENCY
CASSELMAN WTP
632 Drouin Street
Casselman, Ontario
K0A 1M0 764-5678

PHONE: (613)

FAX: (613) 764-5424

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	Check Required Tests — Presence/Absence, Others Membrane Filtration: PA	HC	EC	TC	FS	PSA	CP	HPC
01-1268	ST-ISI #1	TREATED WATER W.T.P.	1.7							X	
01-1269	ST-ISI #2	RAW WATER COMBINED CAPS								X	

RESULTS - BACTERIA PER 100 MILLILITRES (mL)

LAB #	SENDERS #	Fecal Coliforms	Background	Enterococci only	Fecal Coliforms	Fecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	PER mL Heterotrophic Plate Count	COMMENTS:
01-1268								0		
01-1269								0		

VERIFIED BY LABORATORY MANAGER: Kimberly Green Date: March 17/00

03/22/00 WED 08:51 FAX 519 681 7150 GAP ENVIROMIC
01/15/00 WED 11:03 FAX 519 681 7150 OCWA ALFRED GAP ENVIROMIC

Phone: (519) 681-0571

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

A1203 Fax: (519) 681-7150

MUNICIPALITY: Nation St-Isidore W.T.P.	DATE RECEIVED: JUN 19 2001	REPORT TO: Jacques Breen	INVOICE TO: OCWA
SOURCE: Ground Water	RECEIVED BY: DD COMMENTS:	ADDRESS: P.O. Box 252, 2015 Lajoie St. Lefaivre On K0B 1J0	ADDRESS: P.O. Box 252, 2015 Lajoie St. Lefaivre On K0B 1J0
		PHONE: (613) 679-4631	PHONE: (613) 679-4631
DATE SAMPLED: 19-06-01	DATE ANALYZED: JUN 20 2001	FAX: (613) 679-4735	FAX: (613) 679-4735

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	TSA	CP	HPC
[illegible]	1	RAW WATER WELL 1-2-3 COMBINED									
[illegible]	2	RAW WATER WELL #5								X	
[illegible]	3	TREATED WATER W.T.P.	1.0 Free							X	
	4									X	
	5										

Check Required Tests (PA = Presence Absence, Others Membrane Filtration)

LAB #	SENDERS #	Total Coliforms	Background	Escherichia coli	Faecal Coliforms	Faecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	Heterotrophic Plate Count (PER mL)	COMMENTS
[illegible]	1							0		
[illegible]	2							0		
007633	3							0 per	1000 ml	
	4									
	5									

RESULTS - BACTERIA PER 100 MILLILITRES (mL)

RESULTS CALCULATED BY:
Signature: [signature]

APPROVED BY:
Signature: [signature]

Date Issued: June 26/01

PA = Presence Absence; TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 4870 Hargrave Rd. #14, London, Ontario, N6E 1Y3

EXCEL/FORMS/SUBMIT01, Revision 1, August 1, 2000

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571 Fax: (519) 681-7150

A1259

MUNICIPALITY: Nation St-Isidore W.T.P.	DATE RECEIVED: JUL 11 2001	REPORT TO: Jacques Breen	INVOICE TO: OCWA
SOURCE: Ground Water	RECEIVED BY: JD	ADDRESS: P.O. Box 252 2015 Lajoie St. Lefaivre On K0B 1J0	ADDRESS: P.O. Box 252 2015 Lajoie St. Lefaivre On K0B 1J0
	COMMENTS:	PHONE: (613) 679-4631	PHONE: (613) 679-4631
DATE SAMPLED: July 10, 01	DATE ANALYZED: JUL 11 2001	FAX: (613) 679-4735	FAX: (613) 679-4735

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	EBA	CP	HPC
008450	1	Raw Water Well 1-2-3 Combined								X	
008451	2	Raw Water Well #5								X	
008452	3	Treated Water W.T.P.								X	
	4										
	5										

RESULTS - BACTERIA PER 100 MILLILITRES (mL)

LAB #	SENDERS #	Total Coliforms	Background	Escherichia coli	Fecal Coliforms	Fecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	Heterotrophic Plate Count (PER mL)	COMMENTS
008450	1							0 (in 100 ml)		
008451	2							0 (in 100 ml)		
008452	3							0 (in 1000 ml)		
	4									
	5									

RESULTS CALCULATED BY: Signature: [signature]

APPROVED BY: Signature: [signature]

Date Issued: July 17/01

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc, [illegible], London, Ontario, N6E 1Y3

08/15/2001 09:17 613-679-4735 OCWA ALFRED PAGE 02
08/14/01 MON 14:55 FAX 519 681 7150

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571 Fax: (519) 681-7150

A1337

MUNICIPALITY: Nation St-Isidore W.T.P	DATE RECEIVED: AUG · 8 2001	REPORT TO: Jacques Breen	INVOICE TO: OCWA
SOURCE: Ground Water	RECEIVED BY:	ADDRESS: P.O. Box 252, 2015 Lajoie St. Lefaivre On K0B 1J0	ADDRESS: P.O. Box 252, 2015 Lajoie St. Lefaivre On K0B 1J0
	COMMENTS:	PHONE: (613) 679-4631	PHONE: (613) 679-4631
DATE SAMPLED: Aug 7 2001	DATE ANALYZED: AUG 8 2001	FAX: (613) 679-4735	FAX: (613) 679-4735

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	GC	FC	FS	PSA	CP	HPC
008956	1	RAW WATER WELL 1-2-3 COMBINED								X	
008957	2	RAW WATER WELL #5								X	
008958	3	TREATED WATER W.T.P.								X	
	4										
	5										

Check Required Tests: PA = Presence Absence, Other Membrane Filtration

RESULTS - BACTERIA PER 100 MILLILITRES (mL) / PER mL

LAB #	SENDERS #	Total Coliforms	Background	Escherichia coli	Fecal Coliforms	Fecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	Heterotrophic Plate Count (PER mL)	COMMENTS:
008956	1							0		
008957	2							0		
008958	3							0 per	1000 ml	
	4									
	5									

RESULTS CALCULATED BY:
Signature: [signature]

APPROVED BY:
Signature: [signature]

Date Issued: Aug 17/01

PA = Presence Absence; TC = Total Coliforms; EC = E. coli; FC = Fecal Coliforms; FS = Fecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

09/15/2001 09:17 613-679-4735 OCWA ALFRED PAGE 02
09/14/01 MON 14:56 FAX 519 681 7150

A1435

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571 Fax: (519) 681-7150

MUNICIPALITY: Nation St-Isidore	DATE RECEIVED: SEP 11 2001	REPORT TO: Jacques Breen	INVOICE TO: OCWA
	RECEIVED BY: [signature]	ADDRESS: P.O. Box 252, 2015 Lajoie St., Lefaivre On, K0B 1J0	ADDRESS: P.O. Box 252, 2015 Lajoie St., Lefaivre On, K0B 1J0
SOURCE: Ground Water	COMMENTS:	PHONE: (613) 679-4631	PHONE: (613) 679-4631
DATE SAMPLED: Sept 10, 2001	DATE ANALYZED: SEP 11 2001	FAX: (613) 679-4735	FAX: (613) 679-4735

LAB #		SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	FSA	CP	HPC
009667	St-Isidore #1	1	Raw WATER WELL 1-2-3 COMBINED								X	
009668	St-Isidore #2	2	Treated WATER WELL #5								X	
009669	St-Isidore #3	3	TREATED WATER W.T.P.								X	
		4										
		5										

Check Required Tests: PA = Presence Absence; Others Membrane Filtration

RESULTS - BACTERIA PER 100 MILLILITRES (mL)

LAB #	SENDERS #	Total Coliforms	Background	Escherichia coli	Faecal Coliforms	Faecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	Heterotrophic Plate Count (PER mL)	COMMENTS:
009667	1							0		
009668	2							0 per 100mL		
009669	3							0 per 100mL		
	4									
	5									

RESULTS CALCULATED BY:
Signature: [signature]

APPROVED BY:
Signature: [signature]

Date Issued: Sept 17/01

PA = Presence-Absence; TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd. #14, London, Ontario, N6E 1P5

[illegible], Revision 7, August 1, 2000

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services,
1020 Hargrieve Road.
London, ON N6E 1P5

Phone: (519) 681- 0571
Fax: (519) 681-7150

CLIENT/PROJECT NAME: Nation St. Isidore WTP	DATE RECEIVED: October 17, 2001	REPORT TO: Jacques Breen	INVOICE TO:
	RECEIVED BY: T. Dodge	ADDRESS: PO Box 252, 2015 Lajoie Street, Lefaivre, ON K0B 1J0	ADDRESS:
GAP JOB NUMBER: A1541	COMMENTS:		
		PHONE: 613-679-4631	PHONE:
DATE SAMPLED: October 16, 2001	DATE ANALYZED: October 17, 2001	FAX: 613-679-4735	FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Matrix	COMMENTS
10273	1	Raw Water Well # 1,2,3 combined	water	
10274	2	Treated Well 5	water	
10275	3	Treated Water WTP		

LAB #	SENDERS #	MICROBIAL TEST RESULTS per 100 mL: *Clostridium perfringens*			Method Used	REPORTED AS
10273	1	0			CP-MF	CFU/100 mL
10274	2	0 per 1000 mL			CP-MF	CFU/1000 mL
10275	3	0 per 1000 mL			CP-MF	CFU/1000 mL

RESULTS CALCULATED BY: S. Unger, Client Services
Signature: [signature]

APPROVED BY: Quality Manager, S. Kajan or Technical Manager, M. VanDyke
Signature: [signature]
Date Issued: Oct 24/01

MF = Membrane Filtration; EC = E. coli; FC = Faecal Coliforms; CP = *Clostridium perfringens*; FS = Fecal streptococci; PSA = *Pseudomonas aeruginosa*; Accredited Method Code: MS2 Coliphage = MS2-0001
L=Less Than, G=Greater Than, A=Approximate Value, C=Crowded Filter, LA=Lab Accident, NA=No Result, TNTC=Too Numerous to Count; PFU=Plaque Forming Unit, CFU=Colony Forming Unit, SP=Spread Plate, MPN=Most Probable Number

FAX
GAP ENVIROMIC
11/12/01 MON 11:07 FAX 519 681 7150

FINAL RESULTS FORM

GAP EnviroMicrobial Services
1020 Hargrieve Road, Unit 14
London, ON N6E 1P5
Tel: (519) 681-0571 Fax: (519) 681-7150

GAP JOB # : A1610	DATE SAMPLED: 6-Nov-01	REPORT TO: Jacques Breen	INVOICE TO:
PAGE # : 1 of 1	COLLECTED BY:	ADDRESS: PO Box 252, 2015 Lajoie St	ADDRESS:
CLIENT / PROJECT NAME:	DATE RECEIVED: 7-Nov-01	Lefaivre, ON K0B 1J0	
Nation St. Isidore WTP	RECEIVED BY: T. Dodge	TEL: 613-679-4631	TEL:
	DATE ANALYZED: 7-Nov-01	FAX: 613-679-4735	FAX:

LAB #	SENDERS #	MATRIX	SAMPLE DESCRIPTION	COMMENTS
10706	1	water	Raw Water Well#1-2-3 Combined	
10707	2	water	Treated Water Well #5	
10708	3	water	Treated Water WTP	

TEST RESULTS

These test results relate only to the samples submitted and the analyses requested.

LAB #	SENDERS #	Clostridium perfringens 100 mL MF				
10706	1	0				
10707	2	0 per 1000 mL				
10708	3	0 per 1000 mL				

Calculated by: Shelley Unger Position: Client Services

Signature:

Approved by: M. Van Dyke (Technical Manager) or S. Kajan (Quality Manager)

Signature:

Date: NOV 10/01

L = Less Than ; G = Greater Than ; TNTC = To Numerous To Count , NR = No Result ; LA = Laboratory Accident ; A = Approximate Value ; C = Crowded Filter
CFU = Colony Forming Unit ; PFU = Plaque Forming Unit ; MF = Membrane Filtration ; MPN = Most Probable Number ; SP = Spread Plate
Accredited Method Codes: Presence/Absence Test = PA-0001 ; Numerical Value Tests = TCMF-0001, ECMF-0001, FCMF-0001, HPCMF-0001, MS2-0001, LEG-0001

01/16/2002 14:19 613-679-4735 OCWA ALFRED PAGE 07

T-006 P.001
GAP ENVIROMIC
12/14/01 FRI 16:15 FAX 519 681 7150
01/15/2002 14:19 613-679-4735 OCWA ALFRED PAGE 08

FINAL RESULTS FORM

GAP EnviroMicrobial Services
1020 Wargrieve Road, Unit 14
London, ON N6E 1P5
Tel: (519) 681-0671 Fax: (519) 681-7150

GAP JOB # : 1699	DATE SAMPLED: 11-Dec-01	REPORT TO: OCWA	INVOICE TO: OCWA
PAGE # : 1 of 1	COLLECTED BY:	ADDRESS: 2015 Lajoie St. PO Box 252	ADDRESS: 2015 Lajoie St. PO Box 252
CLIENT / PROJECT NAME:	DATE RECEIVED: 12-Dec-01	Lefaivre, ON K0B 1J0	Lefaivre, ON K0B 1J0
Nation St. Isidore WTP	RECEIVED BY: T. Dodge	TEL: 613-679-4631	TEL: 613-679-4631
	DATE ANALYZED: 12-Dec-01	FAX: 613-673-4735	FAX: 613-679-4735

LAB #	SENDERS #	MATRIX	SAMPLE DESCRIPTION	COMMENTS
11266	1	water	Raw Water Well #1, 2, 3 Combined	
11267	2	water	Treated Well # 5	
11268	3	water	Treated Water WTP	

TEST RESULTS

These test results relate only to the samples submitted and the analyses requested.

LAB #	SENDERS #	*Clostridium perfringens* 100 mL MF				
11266	1	0				
11267	2	0 per 1000 mL				
11268	3	0 per 800 mL				

Calculated by: Shelley Unger Position: Client Services

Signature:

Approved by M. Van Dyke (Technical Manager) or S. Kajan (Quality Manager)

Signature:

Date: Dec 14, 2001

L = Less Than ; G = Greater Than ; TNTC = To Numerous To Count ; NR = No Result ; LA = Laboratory Accident ; A = Approximate Value ; C = Crowded Filter
CFU = Colony Forming Unit ; PFU = Plaque Forming Unit ; MF = Membrane Filtration ; MPN = Most Probable Number ; SP = Spread Plate
Accredited Method Codes: Presence/Absence Test = PA-0001 ; Numerical Value Tests = TCMF-0001, ECMF-0001, FCMF-0001, HPCMF-0001, MS2-0001, LEG-0001.

APPENDIX VII

Well Head Protection Area Study

Terms of Reference

2.0 Wellhead Protection Area Studies...

At a local scale, one of the most important areas from a geographic perspective is the surface area and subsurface volume surrounding a water well or well-field that supplies a public water system. It is through this adjacent zone that contaminants are reasonably likely to move toward and reach the well supply. In particular, the production, storage, use, or release of biological and chemical contaminants can present potential risks to groundwater quality in these areas.

The following municipalities and City of Ottawa have confirmed their involvement in this Study. The following table indicates the number of active municipal wells located within each of the municipalities and City of Ottawa. Each of the active municipal wells must be included within the scope of the study. Each municipality and the City of Ottawa will be submitting a Wellhead Protection Zone Fact Sheet for each active municipal well. This will benefit the consulting firm in gathering information and estimating potential costs. The Fact Sheet will be included within the RFP.

United Counties of Stormont Dundas and Glengarry		
Township	**Village/Hamlet**	**Number of Active Municipal Wells**
North Glengarry	**Glen Robertson**	**1**
North Stormont	**Crysler** **Finch** **Moose Creek**	**2** **2** **3**
South Stormont	**Newington**	**2**
North Dundas	**Chesterville** **Winchester**	**2** **5**

United Counties of Prescott and Russell		
Township	**Village/Hamlet**	**Number of Active Municipal Wells**
Russell	**Embrun/Marionville** **Russell**	**2** **2**
Nation	**St. Isidore** **Limoges**	**5** **2**

City of Ottawa		
City	**Village/Hamlet**	**Number of Active Municipal Wells**
Ottawa	**Vars**	**2**

Submission of Request for Qualifications

If sent by mail please provide 22 copies of your Qualification document, clearly identified as to the contents to :

Raisin Region Conservation Authority
Ms. Chantal Whitaker
P.O. Box 429
6589 Boundary Rd.
Cornwall, ON
K6H 5T2
Fax: (613) 938-3221
Email: info@rrca.on.ca

Responses to the RFQ **MUST** be received at these locations **NOT LATER THAN 12:00 NOON EASTERN TIME** February 08, 2002.

Responses received after the due date and time will not be considered, but will be returned unopened, using the method by which it was received, to the proponent.

APPENDIX VIII

Factors Influencing Formation of THM's

Water Treatment Principles and Design

JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.

A Wiley-Interscience Publication
JOHN WILEY & SONS
New York · Chichester · Brisbane · Toronto · Singapore

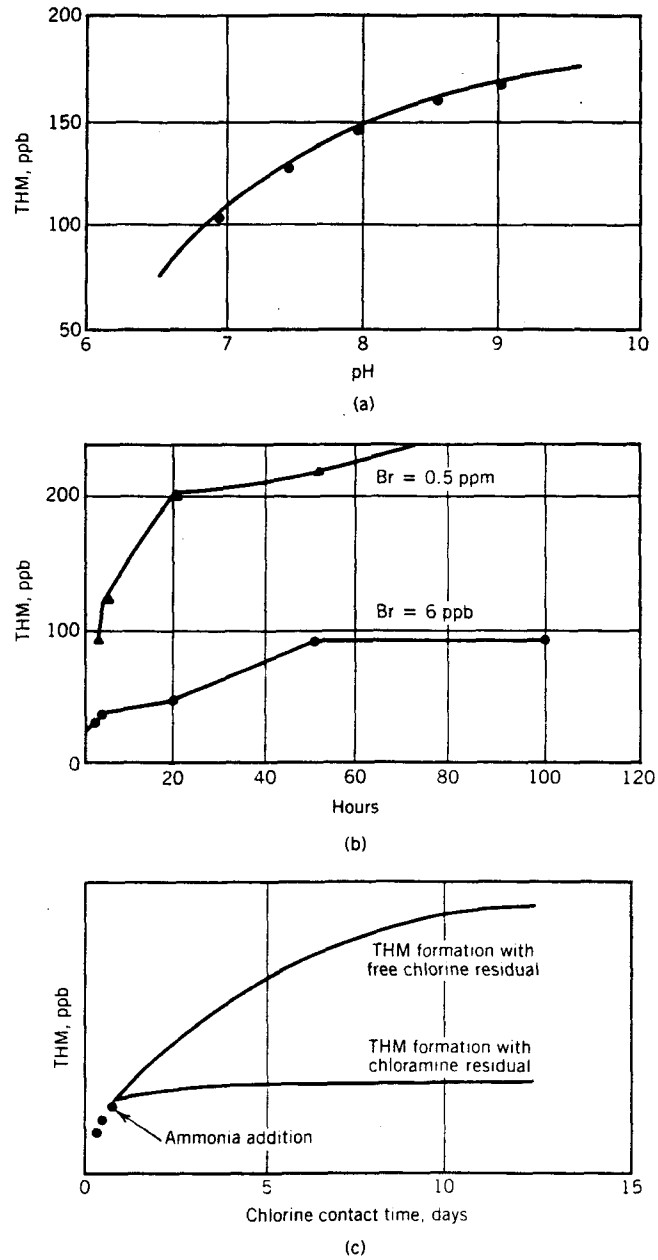


FIGURE 16-9. Factors influencing formation of THMs. (a) pH effect; (b) bromide effect; (c) ammonia effect.

substrates include aldehydes, ketones, carboxylic acids, phthalates, and, of course, carbon dioxide. The gas chromatogram depicted in Figure 16-10 shows the volatile organic by-products that resulted from treatment of a sample of water from the Colorado River with ozone. The most notable treatment products were a series of aliphatic aldehydes which contained from 4 to 10 carbon atoms. In this experiment, the ozone was applied at elevated levels (20 mg/L) in order to ensure the formation of products at sufficient concentrations (1–10 ppb) for identification by gas chromatography/mass spectrometry. At dosages of ozone typically used for water treatment (3 mg/L), aldehyde concentrations may range from 0.01 to 1 ppb.

Similar by-products are formed from the reac-

APPENDIX IX

Ontario Clean Water Agency
Performance Assessment Report - Ground Water Supply

Municipality: St-Isidore de Prescott
Project: [6915] - St. Isidore de Prescott Water Treatment Plant
Project Number: 7153691936
Works Number: 220003573
Description: A Five Well Facility System

Year: 2001
Water Source: Groundwater
Design Avg Day Flow(m³): 907.0
Effluent Group Selected:

	<<< --- Flows Treated		--- >>> <<< --- Effluent Physical/Chemical Parameters						--- >>> <<< --- Disinfection			--- >>> < - Bact. (# of Samples) - >				
													<----- Safe ----->		<---- Adverse ---->	
Month	Total Flow m³	Avg Day m³	Max Day m³	Avg Turb. (NTU)	Avg Colour (TCU)	THM (ug/L)	Avg Iron (ug/L)	Avg Sodium (mg/L)	Avg Nitrate mg/L	Avg Free Cl2 Resid. Treat (mg/L)	Avg Total Cl2 Resid. Treat (mg/L)	Min Free Cl2 Resid. Dist. (mg/L)	Min Total Cl2 Resid. Dist. (mg/L)	Treat	Dist	Treat	Dist
JAN	8,203	265	707	0.60	4.00					1.25	1.99		1.00	5	13		
FEB	6,716	240	299	0.20	1.00	4.000	0.02	131.00	0.10	1.75	2.16		1.10	4	10		
MAR	6,879	222	227	0.11	1.50					2.04	2.49		1.70	4	12		
APR	7,060	235	279	0.11	3.25					1.34	1.67		0.40	4	12		
MAY	7,047	227	284	0.15	1.30	55.000	0.02	123.00	0.20	1.55	1.86		0.50	5	15		
JUN	7,221	241	283	0.12	1.78					1.44	1.85		1.00	4	12		
JUL	7,690	248	293	0.13	2.00					1.16	2.05		0.50	5	15		
AUG	8,437	272	461	0.15	2.20	3.000	20.00	130.00	0.10	1.49	2.19		0.85	4	12		
SEP	7,036	235	253	0.12	2.00					1.76	2.32		0.50	4	13		
OCT	7,729	249	374	0.14	2.10					1.90	2.20		0.55	5	15		
NOV	7,045	235	255	0.11	2.11	140.000	-1.00	155.00	0.10				0.60	4	12		
DEC	7,118	230	255	0.14	2.29					1.85	2.23		0.55	4	12		
Total:	88,181													52	153	0	0
AVG:		242		0.17	2.13	50.500	4.76	134.75	0.13	1.59	2.09		0.77	4	13		
MAX:			707	0.60	4.00	140.000	20.00	155.00	0.20	2.04	2.49		1.70	5	15		
Criteria:				1.00	5.00	100.000											

LEGEND:

Effluent Group Selected:

NOTE: -1 Analysis result less than detectable limit