LECOMPTE ENGINEERING LTD.

CONSULTING ENGINEERS - INGÉNIEURS CONSEILS

ONTARIO CLEAN WATER AGENCY

REC'D DEC - 2 2004

ALFRED HUB

TRANSMITTAL LETTER

TO : Ontario Clean Water Agency Alfred Hub P.O. Box 252 2017 Main St. Lefaivre, Ontario K0B 1J0	**Date :** November 26, 2004 **Attention:** Jacques Breen, Operations Manager

By Mail : ☐	**By Messenger :** ☑	**By Hand :** ☐

Re : The Nation Municipality Village of St-Isidore Emergency Response for Water Supply	**Our file :** 54102.21 **Your File:**

We Transmit For :

Approval	☐	Approved	☐
Information	☑	Approved As Noted	☐
Your Use	☐	Not Approved	☐
Your Files	☐	Do Not Resubmit	☐
As Requested	☐	Return After Correction	☐

Item No.	Quantity	Description
1	1	Copy of Report for Emergency Response for Water Supply St-Isidore

Remark :

LECOMPTE ENGINEERING LTD.

By : Wendy Gagnon

1417-C CYRVILLE ROAD., SUITE 201, OTTAWA, ONTARIO K1B 3L7 - TEL. (613) 236-6662 FAX (613) 236-2945

Corporation de la Municipalité de La Nation
Corporation of The Nation Municipality

November 24, 2004

Ministry of the Environment
Drinking Water Management Division
133 Dalton Avenue Eastern
Kingston, Ont.
K7M 6C2

Attention: James D. Mahoney, Supervisor, Kingston-Ottawa-Cornwall Safe Drinking Water Branch

Re: **Emergency Response for Water Supply**
Village of St-Isidore
Corporation of the Nation Municipality

Dear Sir,

Recently, the well water supply system for the village of St-Isidore has been experiencing significant quality and quantity problems. The hydrogeological document brief prepared by Golder Associates Ltd. summarizes this present situation (Appendix 1).

My colleagues and I are very concerned regarding the long-term water supply for St-Isidore and would like to request your **permission** to proceed immediately with remediation works. This action will ensure the safety and reliability of the water supply for the Village of St-Isidore.

Council passed resolutions on October 4, 2004 and November 15, 2004 to mandate Lecompte Engineering Ltd. and Golder Associates Ltd. to proceed immediately with an "Emergency Response" (Appendix 2).

On October 6, 2004, Lecompte Engineering Ltd. presented to Council a proposal for a connecting watermain from the Ottawa River at Treadwell within the r-o-w of County Road No. 9 to the existing Plantagenet Water Treatment Plant and then to St. Isidore (Appendix 12). The associated engineering and construction works amount to $7.032M (Appendix 13). Therefore, the proposed emergency source is the Ottawa River being treated with the existing Water Treatment Plant at Plantagenet Station.

The connecting watermain is approximately 27.6 kilometres long and will require booster pumps at the Ottawa River and at the Plantagenet water treatment plant.

Along with the proposed new alignment, we have included all associated costs for crossing the South Nation River at two different locations.

The actual serviced population of the Village of St-Isidore is 1,260 persons or 420 eq.h. For cost distribution purposes, we used 500 eq.h, since 40 existing dwellings are not yet connected to the communal water system. Whereas the serviced population of Plantagenet is 800 people with a reserve population of 300 people (Appendix 3).

It should be noted that the Plantagenet water treatment plant's maximum design capacity is 1700 m^3/d, which corresponds to an average daily flow of 325 LCD for 2,600 people (Plantagenet water system Certificate of Approval, Appendix 4). Therefore, the existing Plantagenet Water Treatment Plant could serve the Villages of St-Isidore and Plantagenet.

Without major modifications at the St-Isidore treatment plant, the bacteria originating from wells 1, 2 and 3 cannot be treated adequately since the concentration of hydrogen sulphide (H_2S) is too high. The injection of chlorine for bacteria control is responsible for a very high turbidity level in the treated water. Treatment by filtration and coagulation will be required to remove this turbidity. Unfortunately, the St-Isidore plant does not provide chemically assisted filtration as required by the Safe Drinking Act, Reg. 170-03 and the existing wells' capacity does not justify major treatment facilities at this location.

The permit to take water for the taking from 5 wells to serve the Village of St-Isidore was issued by the Ministry of Environment and Energy on September 20, 1995 (Appendix 6) for a total capacity of 1,252.80 m^3/d. However, due to higher microbiological contamination measured in the raw water, the following wells were put off line:

(1) on September 1997, Well #4
(2) on December 2002, Well #3
(3) On September 2004, Well #1

As a result of these shut offs, only wells 2 and 5 are operating for a total of 423.36 m^3/d (Appendix 9).

Furthermore, since well no. 1 has been shut down, well no. 2 has experienced low water levels. This well is now operating 18 hours a day in order to maintain the water supply for the village (Appendix 6) and any failure in the system could result in a dire situation for the residents.

The duration of this pumping is far above the average normal design operational time. It is unlikely that these operational conditions can remain in place for many months without failure. Therefore, we request that an "Emergency Response" take place within a very short period of time.

Sincerely,

Denis Pommainville, Mayor
Corporation of The Nation Municipality

Cc: Indra R. Prashad, P.Eng
Jacques Breen, OCWA
Don Munroe, MOE Cornwall
B.J. Velderman, Golder Associates Ltd.
Dr. Robert Bourdeau, MOH, EOHN
Jean Marc Lalonde, M.P.P., G.P.R.

LIST OF APPENDICES

APPENDIX 1

HYDROGEOLOGICAL DOCUMENT BRIEF
DATED NOVEMBER 23, 2004
BY
GOLDER ASSOCIATES

Golder Associates Ltd.

1796 Courtwood Crescent
Ottawa, Ontario, Canada K2C 2B5
Telephone 613-224-5864
Fax 613-224-9928

November 23, 2004

021-2805

Lecompte Engineering Ltd.
1417-C Cyrville Road, Suite 201
Ottawa, Ontario
K1B 3L7

Attention: Mr. Jacques Lecompte, P.Eng.

RE: HYDROGEOLOGICAL STATUS SUMMARY
ST. ISIDORE COMMUNAL WELL SYSTEM
ST. ISIDORE, ONTARIO

Dear Mr. Lecompte,

Further to your request Golder Associates Ltd. (Golder) is providing a summary of the hydrogeological status of the Village of St. Isidore (the Village) communal well system. It is understood that the purpose of this letter is to provide supporting hydrogeology information for an emergency application to the Ontario Ministry of the Environment to provide an alternate source of water to the Village in the next year or so. Lecompte Engineering is assembling the application to the Ministry of the Environment, and will provide details on the capacity of the well system, current required demands and other engineering matters, such as may be required for an application.

Figure 1 attached herewith shows the five well locations that supply the Village. Golder carried out groundwater under the direct influence of surface water (GUDI) studies on Well Nos. 1, 2 , 3 and 5 in 2002. These studies provide good background information on the wells and their setting. In consideration of "GUDI" Wells Nos. 1, 2 and 5 are located in a textbook case of a non-GUDI setting, isolated by the geology from the surface by a thick clay and by distance from surface water. Well No. 3 was located in a potentially GUDI setting due to its proximity to surface water. Well No. 4 was not assessed in terms of GUDI because it has been bacteriologically contaminated since its construction. Based on the GUDI evaluation, operation of the Village water supply, due to the investment required for GUDI well treatment, continued with three wells (Nos. 1, 2, and 5).

During 2003 Well No. 1 started to show elevated bacteriological contamination, which should not be present in a GUDI well. Information provided by Ontario Clean Water Agency (OCWA) staff indicated that Well No. 1 had been shock-chlorinated twice since September 2004, without any success in reducing the bacteria levels in the well. OCWA staff informed us that submersible camera work by a local contractor did not reveal any unusual issues, other than that the well depth was shallower than indicated on the well log, possibly due to caving. The treated water supply is however always free of bacteria. Typically bacteriological issues with a well arise because of a GUDI condition, a faulty seal with the surface (through either poor grout or casing failure or similar) or local nearby short circuits to the aquifer. When these scenarios were raised with OCWA staff it was noted that a hydrogeologist was present during well construction of the Village wells, therefore the well construction of the Village wells was likely of good quality. OCWA staff further noted that Well No. 4 has always had bacteriological contamination. Well No. 4 has always been excluded from the water supply system, and because of the bacteriological counts, had automatically been declared GUDI on that basis.

Limited investigation of Well No. 1 by Golder in early November of 2004, suggests that there is a high potential that a nearby well is providing a pathway of bacterial contamination from surface to the groundwater source tapped by Well No. 1. Currently a hydrogeological investigation is on- going to determine if such a well or other pathway can be effectively identified and subsequently corrected. It is considered unlikely that a natural GUDI setting is responsible for the condition observed.

All wells in the Village use the same aquifer and are located in the same setting. It is not difficult to envisage poorly constructed wells acting as potential pathways to exist elsewhere in this area, therefore without further action it is considered that all of the Village water supply is potentially at future risk of bacteriological contamination such as observed at Well No. 1. Also given the proximity of Well No. 1 to Well No. 2, there is the potential that Well No. 2 may capture the contamination intercepted by Well No. 1 in the future.

In order to correct the situation investigation and corrective action will be required. It is considered that the aquifer would correct itself, in the area of Well No. 1, if the offending pathways and sources of bacteria can be identified and removed.

The Municipality is considering appropriate actions as promulgated by the Ontario Ministry of the Environment as applicable to well head protection strategies with regard to the Village water supply. Specifically, in the short term the following actions are being completed specific to Well No. 1:

- an inventory of potential contaminant sources within the well head capture zone;
- an inventory of all water supply wells within the well head capture zones;
- inspect and sample all these locations; and
- consider corrective action for improperly constructed/located wells.

If the potential pathways to the aquifer as described herein are removed/corrected, there would be a good potential that the quality issues would be resolved for Well No. 1 in the short term. It is considered that if the offending pathway is identified that the well could return to its non-GUDI classification. However the findings at Well No. 1 show the vulnerability of a system that was planned without well head protection considerations.

We have been informed by OCWA that the water supply system without Well No.1 leaves the Village water system vulnerable in terms of quantity. Wells Nos. 2 and 5 currently meet the average daily demand, however a water shortage would occur if a water line would break or a fire demand would occur. Also Mr. Lecompte of Lecompte Engineering notes that the water supply of the Village with its current configuration does not meet appropriate quantity demands even if Well No 1 was put back into service, due to the absence of Wells No. 3 and 4 in the system.

We trust that the above is adequate for your needs. Please do not hesitate to contact one of the undersigned if you have any questions or comments.

Yours truly,

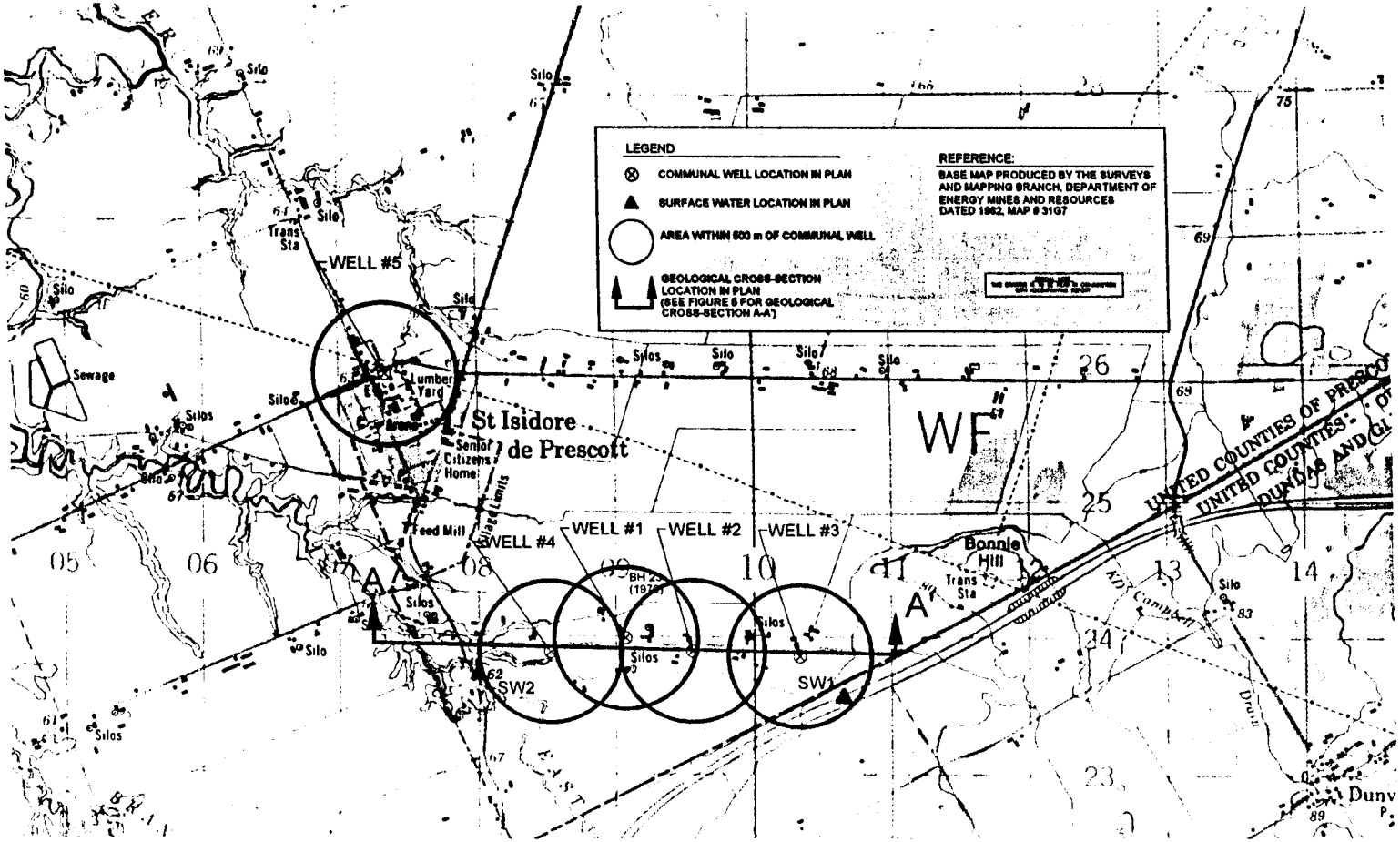
GOLDER ASSOCIATES LTD.

B.J. Welderman, M.Sc., P.Geo.
Senior Hydrogeologist/Associate

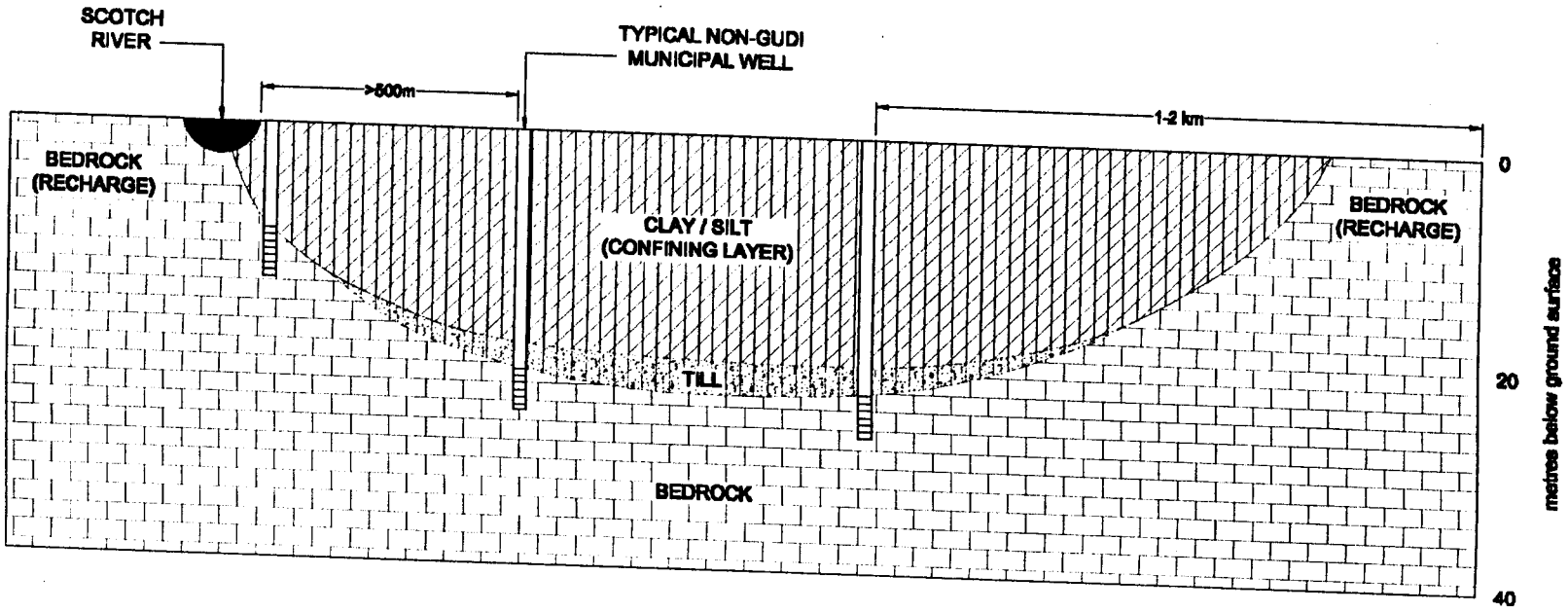
BJV:cr
w:\active\2800\021-2805 st isidore summary\wellstatus\stisidore.doc

c.c. Mrs. Mary McCuaig, Nation Municipality

Well Locations



Conceptual Model



① Flat lying topography

② Varying thickness of clay depending on location

③ Clay deposits act as a confining layer

④ Till may or may not be present depending on location

⑤ Water is drawn from the Bedrock Aquifer (or Till / Bedrock Auquifer where till is present)

⑥ Bedrock Aquifer is recharged in areas where the bedrock is exposed at surface (outcrops) or where the overburden overlying the bedrock is thin

Communal Well 1

STRATIGRAPHIC AND INSTRUMENTATION LOG — WELL NO. 1

PROJECT NAME AND No.: St. Isidore, 868-003
BOREHOLE No.: Test Well - 1
CLIENT: Enercom Engineering Ltd.
DATE COMPLETED: November 1, 1988
LOCATION: Township of Caledonia
DRILLING METHOD: Mud Rotary and Air Hammer
REFERENCE ELEVATION:
DRILL SUPERVISOR: A. Sweeny

DEPTH m BG	SAMPLE AND No.	STRATIGRAPHIC DESCRIPTION AND REMARKS
0		Overburden, clay, grey
12.2		Clay with layers of shale
14.0		Minor granite and limestone pebbles
		Limestone, grey
17.7		

INSTALLATION

0.8m stickup
Grout
10" (25cm)
6.7m
Steel Well Casing 6.25" (15.9cm)
14.4m
6" (15cm)
Bottom of Hole

INTERA Technologies Ltd.

Ministry of the Environment — The Ontario Water Resources Act — WELL ID

WATER WELL RECORD

Prescott-Russell | South Plantagenet | II
Intera Technologies Ltd | St. Isidore, Ont.

LOG OF OVERBURDEN AND BEDROCK MATERIALS

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	DEPTH FEET TO
Gray			clay	0	40
Gray		layers of brown plate	clay	40	47
Gray			limestone	47	58

WATER RECORD

	KIND OF WATER	DEPTH FEET
51	Fresh / Salty	
53	Fresh / Salty	
56	Fresh / Salty	

CASING & OPEN HOLE RECORD

	MATERIAL	WALL THICKNESS	DIAMETER	DEPTH FEET
68	Steel	188	+3	48
6	Open Hole		48	58

SCREENS

PLUGGING & SEALING RECORD

DEPTH SET AT FEET FROM	TO	MATERIAL AND TYPE
0	22	cement grout

PUMPING TEST

Static Level	16	Pumping Level	55	Pumping Rate	100 approx.	Duration of Pumping	1
Final Level After Pumping	16	Water Level Recovery	16	16	16	16	
Recommended Pump Depth	55	Recommended Pump Rate	40				100 approx.

FINAL STATUS OF WELL
WATER USE
METHOD OF CONSTRUCTION

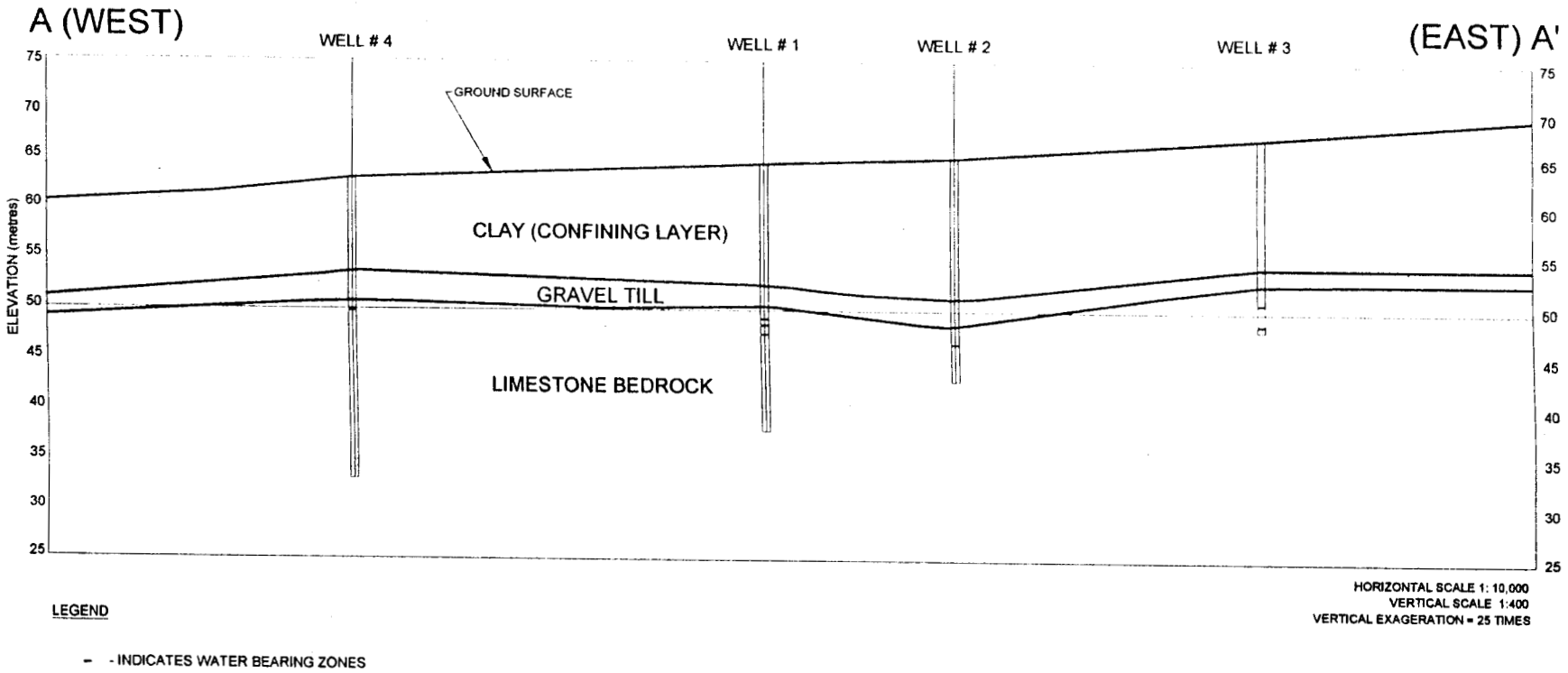
LOCATION OF WELL

17786

CONTRACTOR: G. Charbonneau Son Drilling Ltd. 1504
Box 194, Orleans, Ont. K1C 1T1
Benoit Charbonneau
T-0136
01 — 11 — 88

OFFICE USE ONLY

Local Cross Section



GUDI Study Results

- Communal Wells 1, 2 and 5 were classified as being not under the direct influence of surface water

- Well 3 was classified as being potentially under the direct influence of surface water

Well 1 – Bacteriological History

- 1999 to 2002 – sporadic events of unexplained bacteriological contamination (primarily elevated levels of total coliform)

- Fall 2003 to present – persistent elevated levels of total coliform with occasional high levels of E. coli

APPENDIX 2

COUNCIL RESOLUTIONS

- **#634-2004, APPOINTING LECOMPTE ENGINEERING LTD.**

- **#727-2004, APPOINTING GOLDER ASSOCIATES LTD.**

CORPORATION OF THE NATION MUNICIPALITY
CORPORATION DE LA MUNICIPALITÉ DE LA NATION

11.1

Type: En Committee

Date: Le 4 oct 2004

Résolution No.: 634-2004

Proposé par / Moved by: Raquel Pearl

Appuye par / Seconded by: Yvon Bourgeois

SYSTÈME D'EAU DE ST-ISIDORE

Attendu que l'approvisionnement en eau à St-Isidore s'est détérioré serieusement suite à la fermeture des puits 3 et 4;

Attendu que les résultats des analyses de laboratoires de juillet et septembre démontrent une contamination en E.Coli dans le puits no 1;

Attendu que le puits no 1 est maintenant fermé suite aux recommandations de l'Agence ontarienne des eaux;

Attendu que des mesures pour corriger la situation doivent être prises immédiatement;

Attendu que le Conseil reconnait sa responsabilité de fournir de l'eau potable selon la loi et ses reglements sur la salubrité de l'eau;

Attendu que des fonds seront demandés au Ministère de l'Environnement pour des mesures correctives d'urgence;

Qu'il soit résolu qu'un mandat soit donné à Lecompte Engineering de procéder immédiatement à l'analyse d'ingénierie et des devis et d'implanter les mesures correctives au problème existant de l'approvisionnement en eau;

Qu'il soit de plus résolu que le maire et la greffière soient autorisés à signer une entente entre la municipalité de La Nation et Lecompte Engineering pour les etudes telles que décrites ci-haut ainsi que les services d'ingénierie selon les tarifs publiés par l'Association PEO

Soumettre avec la solution à long terme

ST-ISIDORE WATER SYSTEM

Whereas the St-Isidore water supply has been seriously depleted due to the shutdown of production wells no. 3 and 4;

Whereas the July and September laboratory results show the presence of E.Coli bacteria in well no. 1;

Whereas production well no. 1 has been taken off line under the recommandations of OCWA;

Whereas actions must be taken immediately to rectify the situation;

Whereas Council acknowledges it's responsibility to supply safe drinking water in accordance with the Safe Drinking Water Act and its regulations;

Whereas financial assistance will be requested from the Ministry of the Environment for emergency remedial action;

Be it resolved that Lecompte Engineering be mandated to proceed immediately with an engineering analysis, design and implementation to correct the existing water supply problem;

Be it further resolved that the Mayor and Clerk be authorized to sign an engineering agreement between The Nation Municipality and Lecompte Engineering for the provision of studies as described above and for engineering services in accordance with the schedule of fees as published by the PEO Association.

VOTE

Pour / For	Contre / Against

Cette résolution est:
This resolution is:

Adoptée / Carried: D P
Defeated:
Modifiée / Amended:

DÉCLARATION D'INTÉRÊT / DISCLOSURE OF INTEREST

Nom / Name: _____

a (ont) déclaré ses (leur) intérêts, laissé son (leur) siège(s) et quitté la salle du Conseil.
Disclosed his (hers, their) interests, vacated his (hers, their) seat(s) and left Council chambers

Greffière ou Greffière intérimaire

Corporation de la Municipalité de La Nation
Corporation of The Nation Municipality

November 22, 2004

Golder Asscciates Ltd.
Attention: Barend J. Verderman
1796 Courtwood Crescent
Ottawa, Ontario
K2C 2B5

Dear Sir:

Please be acvised that the foilowirg resolution number 727-2004 was adopted by the Council of The Nation Municipality on November 15th, 2004:

"Council hereby approves that Golder Associates proceed to the investigation stage for the St-Isidore water contaminated wells as per the estimate prepared by Barend Jan Velderman dated November 15th, 2004. The cost of said investigation is estimated to be $16,000,00 plus G.S.T.;
Further steps shall be approved by Council only after the report has been presented to Council and MOE;
The Clerk is hereby authorized to request a boil water advisory from the Eastern Ontario Health Unit in the meantime."

Should you require additional information, please do not hesitate to contact the undersigned.

Yours truly,

Mary J. McCuaig, A.M.C.T.
Clerk

MJM/mc

cc: James Mahoney, Ministry of the Environment, Kingston
Don Munro, Ministry of the Environment, Cornwall
Jacques Breen & J.P. Gélinas, Ontario Clean Water Agency
Jacques Lecompte, Lecompte Engineering
Dr. Robert Bourdeau, Eastern Ontario Health Unit

APPENDIX 3

DESIGN CRITERIA
FOR
THE VILLAGES OF PLANTAGENET
AND
ST-ISIDORE

APPENDIX 3

The Nation Municipality
Villages of St-Isidore & Plantagenet
Communal Water Systems
LEL FILE NO. 54102.21

Design Criteria

	St-Isidore	Plantagenet
• Design Population		
Existing Population Served:	1,260p (420 eq.h)	800p (267 eq.h)
Existing Population Not Served:	120p (40 eq.h)	- -
Future Growth:	120p (40 eq.h)	300p (100 eq.h)
	1,500p (500eq.h)	1,100p (367 eq.h)

Ultimate Design Population: 2.600p

- Average Daily Water Consumption: 325 LCD
- Average Daily Demand: 845m³/day or 9.8L/sec
- Minimum Rate Factor: 0.50
- Maximum Day Factor: 2.00
- Peak Hour Factor: 3.00
- Maximum Day Demand: 1690m³/day Or 19.6 L/sec
- Commercial and Industrial uses are included in the equivalent average daily water consumption per home.
- Three person per equivalent home was used in the calculation above.
- The Plantagenet water intake as well as the packaged water treatment plant are rated at a maximum daily flow of 1700m³ as per Certificate of Approval No. 0585-5XBRRE dated April 8, 2004.

Prepared by:

LECOMPTE ENGINEERING LTD.

Gaetan Beauchesne

Gäetan Beauchesne, P.Eng.
54102.21

Note: the existing Plantagenet WTP MDF Design (1700 m³/d) meets the proposed Max Day Demand of 1,690 m³/d

APPENDIX 3

The Nation Municipality
Villages of St-Isidore & Plantagenet
Communal Water Systems
LEL FILE NO. 54102.21

Design Criteria

	St-Isidore	Plantagenet
• Design Population		
Existing Population Served:	1,260p (420 eq.h)	800p (267 eq.h)
Existing Population Not Served:	120p (40 eq.h)	- -
Future Growth:	120p (40 eq.h)	300p (100 eq.h)
	1,500p (500eq.h)	1,100p (367 eq.h)

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- Average Daily Demand: 845m³/day or 9.8L/sec
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- Three person per equivalent home was used in the calculation above.
- The Plantagenet water intake as well as the packaged water treatment plant are rated at a maximum daily flow of 1700m³ as per Certificate of Approval No. 0585-5XBRRE dated April 8, 2004.

Prepared by:

LECOMPTE ENGINEERING LTD.

Gaetan Beauchesne

Gäetan Beauchesne. P.Eng.
54102.21

APPENDIX 4

CERTIFICATE OF APPROVAL
PLANTAGENET WATER TREATMENT PLANT
#0585-5XBREE

Ministry of the Environment | Ministère de l'Environnement

Ontario

CERTIFICATE OF APPROVAL
MUNICIPAL DRINKING WATER SYSTEMS
NUMBER 0585-5XBRRE

The Corporation of the Township of Alfred and Plantagenet
PO Box 350
Plantagenet, Ontario
K0B 1L0

Site Location: Plantagenet Water Treatment Plant
656 County Road 9
Alfred and Plantagenet Township, United Counties of Prescott and Russell

Pursuant to the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this approval is issued under Part V of the Safe Drinking Water Act, 2002, S.O. 2002, c.32 to:

The Corporation of the Township of Alfred and Plantagenet
PO Box 350
Plantagenet, Ontario
K0B 1L0

PART 1 - DRINKING-WATER SYSTEM DESCRIPTION

1.1 for a surface water based drinking-water system serving the community of Plantagenet within the Township of Alfred and Plantagenet, located on the west side of the South Nation River on County Road 9, approximately 2.5 km south of old Highway 17, rated as set out in Part 4 consisting of the following:

PROPOSED WATER WORKS
(as per application for approval dated June 27, 2003)

Backwash Wastewater System

a de-chlorination system consisting of a basket holding de-chlorination agent in pallet form inserted into the backwash pipe, designed to let pallets in contact with water during the backwash and filter-to-waste procedures;

piping, appurtenances, instrumentation and controls consisting of an ORP sensor and transducer for continuously monitoring of chlorine residual in the effluent discharged from the backwash wastewater

facilities.

process modifications to facilitate effluent discharge from backwash wastewater system to the South Nation River and concentrated sludge discharge to sanitary sewer.

PROPOSED WATER WORKS
(as per application for approved dated December 3, 2002)

Packaged Water Treatment Plant

a dual operating mode (back-up and filter backwash water separation) flocculation/clarification unit consisting of:

- one (1) pulsator clarifier equipped with settling tubes and having dimensions of 5.5 m x 3.1 m x 3.5 m (nominal) deep and a surface area of 15.56 m^2 operating at an overflow rate of 4.5 m/hr complete with an in-line mixer and pulsator equipment;

- one (1) 1.22 m diameter sludge transfer buffer basin with an effective storage volume of 1.32 m^3 equipped with high level alarms and overflow pipe, used for sludge storage transferred from the clarifiers;

a provisional polyelectrolyte feed system consisting of:

- two (2) chemical feed pumps (duty and standby), each rated at 60 L/hr, dosing polyelectrolyte into the backwash water separation clarifier;

- one (1) 1,000 L storage tank;

150 mm diameter filter-to-waste piping at each of the two filters, complete with sampling taps and control valves;

two (2) turbidity analyzers, complete with alarms and controls, at each filter effluent lines;

Alum Feed System

two (2) chemical feed pumps (duty and standby), each rated at 32 L/hr, dosing alum solution to the raw water piping before the static mixer;

one (1) 1,000 L day tank, complete with a transfer pump;

310 mm high concrete containment curb, at alum solution day tank area;

1380 mm high concrete containment curb, at alum solution main storage tank area;

Polyelectrolyte Feed System

two (2) chemical feed pumps (duty and standby), rated at 108 L/hr, dosing polyelectrolyte to the raw water piping before the static mixer;

230 mm high concrete containment curb, at polyelectrolyte tanks area;

Soda Ash Feed System

one (1) chemical feed pump (standby), rated at 11 L/hr, dosing soda ash solution to filter effluent piping before the clearwell;

one (1) 100 L storage tank, completed with a mixer (manual operated);

130 mm high concrete containment curb, at soda ash tanks and powered activated carbon mixing tank area;

Sodium Hypochlorite Feed System

two (2) chemical feed pump (standby), rated at 4.4 L/hr, for pre-chlorination dosing sodium hypochlorite solution to the raw water piping before the static mixer;

two (2) chemical feed pump (standby), rated at 10.5 L/hr, for post-chlorination dosing sodium hypochlorite solution to filter effluent piping before the clearwell;

two (2) 100 L day tanks, complete with transfer pump, at each of the two chlorination systems;

310 mm high concrete containment curb, at chlorine solution tanks area;

Clearwells

a 300 mm diameter check valve at clearwell overflow discharge pipe;

Plant Water Service Line

a 50 mm diameter backflow prevention valve at plant treated water service line;

Appurtenances

including piping, electrical and mechanical works, plumbing and ventilation, piping, instrumentation, control and metering, and alarm systems

EXISTING WATER WORKS

(as per the Engineer's Report entitled " **Township of Alfred-Plantagenet Plantagenet** Water Treatment Plant Engineer's Report", **prepared by Stantec Consulting Limited** and dated November, 2000 and **amended based on the information from Stantec Consulting** Limited dated March 24, 2004)

Raw Water Intake

a 400 mm diameter polyethylene pipe approximately 50 m long with an intake crib surrounding a 650 mm diameter flared elbow, to provide a maximum inlet velocity of 60 mm/s at the design maximum daily flow of 1,700 m^3.

Low Lift Pumping Station

a 4.8 m x 4.8 m concrete block and brick building housing the pumping equipment with an adjoining 6.3m x 5.8m concrete block and brick building (NAD 27; UTM co-ordinates: Zone 18; 501066.00 E; 5040118.00 N) housing chemical feed equipment to dose lime and powdered activated carbon, all located 20 m east of the main water treatment plant building, including following equipment:

- an inlet gate and removable screen,
- a wet well approximately 4.8 m x 4.8 m x 14.1 m deep,
- three (3) vertical turbine low lift pumps each rated at 12.9 L/s at 13.1 m total dynamic head (TDH),
- three (3) (two duty, one standby) chemical feed pumps each rated at 37.8 Lph at 345 kPa, located in the pump room, for dosing lime and powdered activated carbon into the low lift discharge header
- a powdered activated carbon feed system with a 4.25 kg/h screw-type volumetric feeder and a 150 L side mounted solution tank complete with mixer, and
- a lime feed system with a 4.25 kg h screw-type volumetric feeder and a 150 L side mounted solution tank complete with mixer.

Raw Water Transmission Main

approximately 32 m of 200 mm diameter pipe to convey raw water from the low lift pumping station to the water treatment plant building.

Water Treatment Plant

a 22.8 m x 13.6 m concrete block and brick building located on the west bank of the South Nation River approximately 215 m east of County Road No. 9 at approximately 2.5 km south of the intersection with old Highway 17 (NAD 27; UTM Coordinates: Zone 18; 501063.00 E; 5040118.00 N) housing an office laboratory, washroom, alum storage room, chemical feed and storage room, diesel generator room, high lift pump area, a filter room in addition to the following:

Packaged Water Treatment Plant

a steel packaged water treatment plant to treat a maximum daily flow of 1,700 m^3 providing coagulation, flocculation, sedimentation and filtration, and consisting of:

- one (1) pulsator clarifier equipped with settling tubes and having dimensions of 4.8 m x 3.05 m x 3.5 m deep and a surface area of 14.6 m^2 operating at an overflow rate of 4.84 m/h complete with an in-line mixer and pulsator equipment, and

- two (2) dual media filters (silica sand and anthracite), each with a filtration area of 6 m^2, each capable of operating at a filtration rate of 5.87 m/h at normal conditions (two filters operating) and 11.74 m/h with one filter operating, and each equipped with an underdrain system, backwash trough and air scour system.

Clearwells

a three (3) cell reservoir located below the packaged water treatment plant consisting of two (2) clearwells (each clearwell measuring 6.275 m x 10.1 m x 3.51 m deep with a storage volume of 222.46 m^3 and equipped with an overflow) and one (1) pumping well, measuring 7.7 m x 2.3 m x 4.51 m deep with a volume of 79.9 m^3.

High Lift Pumps

three (3) vertical turbine high lift pumps rated as follows:

- 9.8 L/s at 49.7 m TDH

- 18.9 L/s at 53 m TDH

- 60.5 L/s at 82.3 m TDH

Backwash Pump

one (1) vertical turbine backwash pump rated at 37.5 L/s

Chemical Feed System

Chemical feed system consisting of chemical pumps, storage tanks, piping and associated appurtenances to dose aluminum sulphate (alum) based coagulant, polyelectrolyte, sodium carbonate (soda ash), powdered activated carbon and sodium hypochlorite as follows:

Alum feed System

one (1) 22,700 L vertical storage tank

Polyelectrolyte Feed System

one (1) 450 L batching tank complete with mixer and hot water supply.

one (1) 1,000 L day tank

Soda Ash Feed System

one (1) volumetric dry feeder and a 190 L solution tank complete with mixer dosing soda ash solution by gravity from the solution tank to filter effluent piping before the clearwell.

Powdered Activated Carbon Feed System

one (1) volumetric dry feeder and a 190 L solution tank.

one (1) two-head chemical feed pump rated at 34.7 Lph at 670 kPa dosing powdered activated carbon from the solution tank to the raw water piping before the static mixer.

Sodium Hypochlorite Feed System

four (4) chemical feed pumps, two (2) rated at 4.4 L/h for pre-chlorination dosing from a day tank to the raw water piping before the static mixer and two (2) rate at 10.5 L/h for post chlorination dosing from a day tank at to the filter effluent piping before the clearwell;

four (4) 100 L day tanks (two per system)

Metering and Monitoring

two (2) flow meters located as follows:

one (1) flow meter in the raw water line before the static mixer.

one (1) flow meter in the treated water discharge line after the duty high lift pumps but before the fire flow pump

two(2) turbidity meters to continuously monitor the filtered effluent water turbidity, one meter per filter;

one (1) chlorine residual analyzer to continuously monitor the finished water free or total chlorine residual.

Backwash Wastewater System

one (1) backwash waste storage tank 8.5 m x 4.8 m x 3.05 m deep with a storage volume of 124.4 m^3 and an overflow to the river

one (1) submersible backwash waste pump rated at 4.5 L/s at 5 m TDH pumping to the sanitary sewers via a 100 mm diameter forcemain approximately 235 m long.

Sanitary Sewage System

one (1) sewage pump chamber equipped with a submersible sewage pumps rated at 4.5 L/s at 5 m TDH discharging to the 100 mm diameter forcemain.

Standby Power Facility

a 150 kW Diesel engine standby power generator set and associated equipment located in a separate room over the backwash water storage tank.

Appurtenances

including piping, electrical and mechanical works, plumbing and ventilation, piping, instrumentation, control and metering, and alarm systems

1.2 all in accordance with the applications and plans and other supporting documents listed in Schedule "A", and all other Schedules, which are attached to, and form part of this approval, except as specified in the conditions contained herein.

PART 2 - DEFINITIONS AND INFORMATION

2.1 In this approval, unless the context otherwise requires, words and phrases shall be given the same meaning as those set out in the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 and any regulations made in accordance with that act.

2.2 In this approval

"approval" means this entire approval document, issued in accordance with section 36 of the *SDWA*, and includes any schedules to it

"Director" means a director appointed pursuant to s. 6 of the *SDWA* for the purposes of Part V of the *SDWA*

"drinking-water system" includes the works set out in Part 1

"provincial officer" means a provincial officer appointed pursuant to s. 8 of the *SDWA*

"rated capacity" means the maximum flow rate of water which can be treated when operating the drinking-water system under design conditions

"SDWA" means the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, as amended

2.3 The following information is applicable to this approval

"owner" is The Corporation of the Township of Alfred and Plantagenet, its successors and assignees

"operating authority" is Ontario Clean Water Agency (OCWA), its successors and assignees.

PART 3 - GENERAL

Compliance

3.1 The owner and operating authority shall operate the drinking-water system in accordance with the *SDWA*, any applicable regulations made thereunder, and this approval.

3.2 Despite any condition of this approval to the contrary, the owner and operating authority set out in Part 2 are jointly and severally liable to comply with all conditions of this approval.

3.3 The owner and operating authority shall ensure that any person authorized to carry out work on or operate any aspect of the drinking-water system has been informed of the *SDWA*, all applicable regulations made in accordance with that act, and this approval and shall take all reasonable measures to ensure any such person complies with the same.

3.4 A copy of this approval shall be kept in a conspicuous place so that it is available for reference by all persons responsible for all or part of the operation of the drinking-water system.

Build, etc. in Accordance

3.5 Except as otherwise provided by this approval, the drinking-water system shall be designed, developed, built, operated and maintained in accordance with Part 1 above and the documentation listed in Schedule "A".

Interpretation

3.6 Where there is a conflict between the provisions of this approval and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

i. The *SDWA*;

ii. a condition imposed in this approval in accordance with s. 38 of the *SDWA*;

iii. any regulation made under the *SDWA*;

iv. this approval;

v. any application documents listed in Schedule "A" from most recent to earliest; and

vi. all other documents listed in Schedule "A" from most recent to earliest.

3.7 The requirements of this approval are severable. If any requirement of this approval, or the application of any requirement of this approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this approval shall not be affected thereby.

3.8 Nothing in this approval shall be read to provide relief from the need for strict compliance with the *Environmental Assessment Act,* R.S.O. 1990, c E.18.

Other Legal Obligations

3.9 The issuance of, and compliance with the conditions of, this approval does not:

i. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

ii. limit in any way the authority of the ministry to require certain steps be taken or to require the owner to furnish any further information related to compliance with this approval.

3.10 For greater clarity, nothing in this approval shall be read to provide relief from regulatory requirements in accordance with section 38 of the *SDWA*, except as provided in Part 9.

Adverse Effects

3.11 Nothing in this approval shall be read as to permit: i) the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or ii) the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

3.12 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking-water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

3.13 Fulfillment of one or more conditions imposed by this approval does not eliminate the requirement to fulfill any other condition of this approval or the requirements of any applicable statute, regulation, or other legal requirement resulting from any act or omission that causes or is likely to cause an adverse effect on the natural environment or the impairment of water quality.

Change of Owner

3.14 The owner or the operating authority, as the case may be, shall notify the director, in writing, of any of the following changes within 30 days of the change occurring:

i. change of owner or operating authority;

ii. change of address;

iii. change of partners where the owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B17; or

iv. change of name of the corporation where the owner or operating authority is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C.39.

3.15 In the event of any change in ownership of the drinking-water system, other than change to a successor municipality, the owner shall notify the successor of and provide the successor with a copy of this approval, and the owner shall provide a copy of the notification to the district manager of the local office of the ministry and the director.

Inspections

3.16 No person shall hinder or obstruct a provincial officer in the performance of their duties, including any and all inspections authorized by the *SDWA*.

Information

3.17 Any information requested, by the ministry, concerning the drinking-water system and its operation under this approval, including but not limited to any records required to be kept by this approval shall be provided to the Ministry, upon request.

3.18 Records required by or created in accordance with this approval, unless specifically referenced in s. 12 of O. Reg. 170/03, shall be retained for at least 5 years in a location where a provincial officer who is inspecting the treatment system can conveniently view them.

PART 4 - PERFORMANCE

Rated Capacity

4.1 The drinking-water system shall not be operated to exceed the rated capacity for the maximum flow rate into the treatment system of 19.67 L/s.

Increase to Rated Capacity

4.2 Despite condition 4.1, the drinking water system may be operated at a rate above the rated capacity set out in condition 4.1 where necessary for:

i. fighting a large fire; or

ii. the maintenance of the drinking-water system.

4.3 Condition 4.2 shall not be construed to allow drinking-water to be supplied that does not meet all other applicable standards and legal requirements.

Management of Residue

4.4 The average annual concentration of suspended solids in the effluent discharged from the backwash wastewater facilities shall not exceed 25 mg/L and free chlorine residual concentration in the effluent discharged from the backwash wastewater facilities shall not exceed 0.02 mg/L.

PART 5 - MONITORING AND RECORDING

Flow measuring devices

5.1 Install a sufficient number of flow-measuring devices within the drinking-water system to permit continuous measurement and recording of:

i. the flow rate and daily volume of water conveyed into the treatment system; and

ii. the flow rate and daily volume of water conveyed from the treatment system to the distribution system.

5.2 Records shall be maintained that set out the parameters recorded in accordance with condition 5.1, and where a measured flow rate into a treatment system, train or stage exceeds the maximum flow rate set out for the treatment system, train or stage in Part 4, the amount, date, time and duration of the exceedence shall also be recorded.

Calibration of flow measuring devices

5.3 All flow measuring devices must be checked and calibrated in accordance with the manufacturer's instructions.

5.4 If the manufacturer's instructions do not indicate how often to check and calibrate the flow measuring devices, the equipment must be checked and calibrated at least once every year during which the drinking-water system is in operation.

Additional Sampling - Management of Residue

5.5 In addition to any other sampling and analysis that may be required, sampling and analysis shall be undertaken for the parameters listed in Table 5.1 at the listed frequencies and locations.

Table 5.1: Management of Residue Sampling

Item	Parameter	Frequency	Location
1.	Suspended Solids (grab)	Quarterly	Point of discharge
2.	Free chlorine residual	Continuously	Point of discharge

PART 6 - OPERATIONS AND MAINTENANCE

Chemical standards

6.1 All chemicals and materials used in the operation of the drinking-water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60 and NSF/61.

6.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution shall be available at all times for each chemical and material used in the operation of the drinking-water system that comes into contact with water within the system.

6.3 Condition 6.2 does not apply in the context of any particular chemical or material where the Owner has written documentation signed by the director that indicates that the Ministry is satisfied that the chemical or material is acceptable for use within the drinking-water system and that chemical or material is only used as permitted by the documentation.

Operations manual

6.4 An up-to-date operations manual shall be maintained and available for reference by all persons responsible for all or part of the operation of the drinking-water system.

6.5 The operations manual shall include at a minimum:

i. the requirements of this approval and associated procedures;

ii. the operation and maintenance recommendations from the most recent engineers' report;

iii. procedures for the monitoring and recording of in-process parameters necessary for the control of the treatment system and assessing the performance of the drinking-water system;

iv. procedures for the operation and maintenance of monitoring equipment;

v. contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset and equipment breakdown;

vi. procedures for the dealing with complaints related to the drinking-water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint.

6.6 Procedures necessary to the operation of any physical alterations of the drinking-water system shall be incorporated into the operations manual prior to the alterations coming into operation.

Drawings

6.7 An up-to-date Process and Instrumentation Diagram for the treatment system shall be kept on site at the drinking water system.

6.8 All drawings and diagrams in the possession of the owner or operating authority that show the treatment system as constructed shall be retained.

6.9 An alteration to the treatment system shall be incorporated into Process and Instrumentation Diagrams (P&ID) and record drawings and diagrams within one year of the substantial completion of the alteration and shall be retained and shall be made readily available for inspection by Ministry staff.

PART 7 - FUTURE ALTERATIONS

Approved future alterations

7.1 *Not Applicable*

Certificate of compliance

7.2 *Not Applicable*

PART 8 - STUDIES AND UPGRADES REQUIRED

8.1 None

PART 9 - RELIEF FROM REGULATORY REQUIREMENTS

Relief from regulatory requirements

9.1 *Not Applicable*

Conditions in exchange for relief from regulatory requirements

9.2 *Not Applicable*

SCHEDULE - A

The following supporting documents form part of this approval.

1. Application dated June 27, 2003
   - Design Brief dated June 30, 2003
   - Final Plans
   - Correspondance from Stantec Consulting Limited dated March 24, 2004.

2. Application dated December 3, 2002, submitted by Stantec Consulting Limited, consulting engineers.
   - Correspondence dated Jan 09, 2003, Jan 30, 2003, Feb 11, 2003, Feb 19, 2003
   - Final Plans and Specifications

3. The original applications for approval, including design calculations, engineering drawings and reports, and other supporting documents prepared in support of any previous certificate(s) of approval issued for any works now approved and replaced by this approval, unless this approval states otherwise.

This Certificate of Approval revokes and replaces Certificate of Approval No. 6738-5JASN5 issued on February 28, 2003.

All or part of this approval may be reviewable with the provisions of Part X of the SDWA. In accordance with Section 129(1) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 129(2) sets out a procedure upon which the 15 days may be extended by the Tribunal. Section 129(3) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, provides that the Notice requiring the hearing shall state:

1. The aspect of the decision, including the portion of the permit, licence, approval, order or notice of administrative penalty in respect of which the hearing is required; and
2. The grounds for review to be relied on by the person at the hearing.

Except with leave of the Tribunal, a person requiring a hearing in relation to a reviewable decision is not entitled to,
(a) a review of an aspect of the decision other than that stated in the notice requiring the hearing; or
(b) a review of the decision other than on the grounds stated in the notice

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;

7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Part V, *Safe Drinking Water Act*
Ministry of Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted water works are approved under Part V of the Safe Drinking Water Act

DATED AT TORONTO this 8th day of April, 2004

Indra Prashad, P.Eng.
Director
Part V *of the Safe Drinking Water Act, 2002*

GM/

c: District Manager, MOE Cornwall
Jean Hebert, P.Eng., Stantec Consulting Ltd.
Jim Mahoney, Drinking Water Supervisor, MOE Kingston
Manager, Drinking Water, Wastewater and Watershed Standards Section, Standards Development Branch

APPENDIX 5

CERTIFICATE OF APPROVAL
ST-ISIDORE WATER TREATMENT PLANT
#9996-5ZXJS8

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL DRINKING WATER SYSTEMS
NUMBER 9996-5ZXJS8

The Corporation of the Nation Municipality
958 Route 500 West
Casselman, Ontario
K0A 1M0

Site Location: St.-Isidore Water Treatment Plant
Lot 22, Concession 11
The Nation Municipality, United Counties of Prescott and Russell

Pursuant to the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this approval is issued under Part V of the Safe Drinking Water Act, 2002, S.O. 2002, c.32 to:

The Corporation of the Nation Municipality
958 Route 500 West
Casselman, Ontario
K0A 1M0

PART 1 - DRINKING-WATER SYSTEM DESCRIPTION

1.1 for a drinking-water system serving the Village of St-Isidore, part of the Nation Municipality, rated as set out in Part 4 consisting of the following:

Existing Water Works
(as per the Engineer's Report dated May 2001, prepared by Lecompte Engineering Ltd.)

Supply

- Well No. 1, 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 a total dynamic head (TDH) of 38 m, 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, 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 a TDH of 53 m, 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, 200 mm diameter, 19.2 m deep drilled groundwater production well (not in use), 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 a TDH of 26 m, 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, 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 a TDH of 59 m, 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.

Treatment

- A water treatment plant supplied by Wells No. 1, No. 2, No. 3 and No. 4, located on Lot 22, Concession XI, along Caledonia Concession Road No. 2 (Mainville Road) 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:

  - one (1) Aeration Tower, 1,372 mm in diameter, 3,289 mm high rated at 12.7 L/s, complete with one air blower rated 35.4 m^3/h at a backpressure of 46 mm of water:

  - one (1) Contact Chamber, 2.8 m by 1.83 m by 0.89 m side water depth (SWD), baffled, complete with a water level measuring device;

  - two (2) Transfer Pumps, each rated 13.1 L/s at a TDH of 7.6 m, variable speed drive, discharging chemically pretreated raw water from the contact chamber to the filter splitter box described below;

  - one Splitter Box complete with a separate discharge to each filter compartment described below;

- two (2) greensand filters, 1,830 mm diameter, each filter having two compartments, each compartment packed with anthracite and greensand filter media;

- one (1) Clearwell, two cells, each cell 48 m^3 usable volume;

- three (3) High Lift Pumps (two duty and one standby), one rated 6.5 L/s at a TDH of 45 m and two rated 8.8 L/s at a TDH of 46.4 m; and

- one (1) Submersible Filter Backwash Pump, rated 13.6 L/s at a TDH of 8.5 m discharging filtrate to each filter compartment.

Process Chemicals

- A Potassium Permanganate Feed System consisting of one (1) chemical solution tank, 200 L usable volume complete with mixer and two (2) chemical metering pumps (one duty and one standby) complete with automatic switchover, each rated 0.74 L/h with chemical feed line discharging potassium permanganate solution upstream of the contact chamber.

- A Disinfection System consisting of one (1) chemical solution tank, 200 L usable volume and two (2) chemical metering pumps (one duty and one standby) complete with automatic switchover, each rated 6.3 L/h with chemical feed line discharging sodium hypochlorite solution to both upstream and downstream of the aeration tower, as well as to the filtrate and the high lift pump common discharge header.

Monitoring and Recording

- One (1) Chlorine Residual Analyzer measuring the concentration of free chlorine residual and connected to the high lift pump common discharge header.

- One (1) Turbidity Measuring Device connected to the high lift pump common discharge header.

- One (1) Flow Metering Device on the high lift pump common discharge header.

- One (1) flow metering device on the incoming raw water piping.

Residual Management

- One (1) Equalization Tank, 7.2 m^3 usable volume.

- Two (2) Submersible Transfer Pumps, each rated 2.8 L/s at a TDH of 10 m.

- One (1) Settling Tank, 7.2 m^3 usable volume.

- One (1) Infiltration Bed consisting of four 100 mm diameter and 19 m long perforated pipes.

Well No. 5 Supply and Treatment

- Well No. 5, 150 mm diameter, 35.9 m deep drilled groundwater production well, located on St-Isidore Street in the village of St-Isidore, Lot 5, Concession XVIII (NAD 27: Zone 18, UTM Co-ordinates Easting – 507440.00 m and Northing – 5025950.00 m) consisting of a submersible pump rated 1.8 L/s at a TDH of 59 m, 50 mm diameter discharge piping into the distribution system, magnetic flowmeter, emergency discharge line, well monitoring system, SCADA system, service building, housing the following:

    - a Disinfection System consisting of one (1) chemical solution tank, 100 L usable volume and two (2) chemical metering pumps (one duty and one standby), each rated 0.59 L/h discharging sodium hypochlorite solution to Well No.5 Pump discharge line;

    - one (1) Chlorine Residual Analyzer measuring the concentration of free chlorine residual, connected to Well No.5 Pump discharge line; and

    - one (1) Turbidity Measuring Device connected to Well No.5 Pump discharge line.

1.2 all in accordance with the applications and plans and other supporting documents listed in Schedule "A", and all other Schedules, which are attached to, and form part of this approval, except as specified in the conditions contained herein.

PART 2 - DEFINITIONS AND INFORMATION

2.1 Words and phrases not defined in this approval shall be given the same meaning as those set out in the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 and any regulations made in accordance with that act, unless the context requires otherwise.

2.2 In this approval

"adverse effect", "contaminant", "impairment" and "natural environment" shall have the same meanings as in the *Environmental Protection Act*, R.S.O.1990, c. E.19 and the *Ontario Water Resources Act*, R.S.O.1990, c. O.40;

"approval" means this entire approval document, issued in accordance with section 36 of the *SDWA*, and includes any schedules to it;

"Director" means a Director appointed pursuant to s. 6 of the *SDWA* for the purposes of Part V of the *SDWA*;

"drinking-water system" includes the works set out in Part 1;

"provincial officer" means a provincial officer appointed pursuant to s. 8 of the *SDWA*;

"rated capacity" means the maximum flow rate of water which can be treated when operating the drinking-water system under design conditions;

"*SDWA*" means the *Safe Drinking Water Act, 2002, S.O. 2002, c. 32,* as amended.

2.3 The following information is applicable to this approval

"owner" is The Corporation of the Municipality of the Nation, its successors and assignees;

"operating authority" is the Ontario Clean Water Agency (OCWA), its successors and assignees.

PART 3 - GENERAL

Compliance

3.1 The owner and operating authority shall operate the drinking-water system in accordance with the *SDWA*, any applicable regulations made thereunder, and this approval.

3.2 Despite any condition of this approval to the contrary, the owner and operating authority set out in Part 2 are jointly and severally liable to comply with all conditions of this approval.

3.3 The owner and operating authority shall ensure that any person authorized to carry out work on or operate any aspect of the drinking-water system has been informed of the *SDWA*, all applicable regulations made in accordance with that act, and this approval and shall take all reasonable measures to ensure any such person complies with the same.

3.4 A copy of this approval shall be kept in a conspicuous place so that it is available for reference by all persons responsible for all or part of the operation of the drinking-water system.

Build, etc. in Accordance

3.5 Except as otherwise provided by this approval, the drinking-water system shall be designed, developed, built, operated and maintained in accordance with Part 1 above and the documentation listed in Schedule "A".

Interpretation

3.6 Where there is a conflict between the provisions of this approval and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

i. The *SDWA*;

ii. a condition imposed in this approval in accordance with s. 38 of the *SDWA*;

iii. any regulation made under the *SDWA*;

iv. this approval;

v. any application documents listed in Schedule "A" from most recent to earliest; and

vi. all other documents listed in Schedule "A" from most recent to earliest.

3.7 The requirements of this approval are severable. If any requirement of this approval, or the application of any requirement of this approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this approval shall not be affected thereby.

3.8 Nothing in this approval shall be read to provide relief from the need for strict compliance with the *Environmental Assessment Act*, R.S.O. 1990, c E.18.

Other Legal Obligations

3.9 The issuance of, and compliance with the conditions of, this approval does not:

i. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

ii. limit in any way the authority of the Ministry to require certain steps be taken or to require the owner to furnish any further information related to compliance with this approval.

3.10 For greater clarity, nothing in this approval shall be read to provide relief from regulatory requirements in accordance with section 38 of the *SDWA*, except as provided in Part 9.

Adverse Effects

3.11 Nothing in this approval shall be read as to permit: i) the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or ii) the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

3.12 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking-water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

3.13 Fulfillment of one or more conditions imposed by this approval does not eliminate the requirement to fulfill any other condition of this approval or the requirements of any applicable statute, regulation, or other legal requirement resulting from any act or omission that causes or is likely to cause an adverse effect on the natural environment or the impairment of water quality.

Change of Owner

3.14 The owner or the operating authority, as the case may be, shall notify the Director, in writing, of any of the following changes within 30 days of the change occurring:

i. change of owner or operating authority;

ii. change of address;

iii. change of partners where the owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B17; or

iv. change of name of the corporation where the owner or operating authority is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C.39.

3.15 In the event of any change in ownership of the drinking-water system, other than change to a successor municipality, the owner shall notify the successor of and provide the successor with a copy of this approval, and the owner shall provide a copy of the notification to the district manager of the local office of the Ministry and the Director.

Inspections

3.16 No person shall hinder or obstruct a provincial officer in the performance of their duties, including any and all inspections authorized by the *SDWA*.

Information

3.17 Any information requested, by the Ministry, concerning the drinking-water system and its operation under this approval, including but not limited to any records required to be kept by this approval shall be provided to the Ministry, upon request.

3.18 Records required by or created in accordance with this approval, unless specifically referenced in s. 12 of O. Reg. 170/03, shall be retained for at least 5 years in a location where a provincial officer who is inspecting the treatment system can conveniently view them.

PART 4 - PERFORMANCE

Rated Capacity

4.1 The drinking-water system shall not be operated to exceed the rated capacity for the maximum flow rates into the treatment systems, trains, or stages set out below:

Treatment System/Train/Stage	Maximum Flow Rate (L/min.)
Wells Nos. 1, 2, 3, 4 WTP	522
Well No. 5 WTP	108

Increase to Rated Capacity

4.2 Despite condition 4.1, the drinking water system may be operated at a rate above the rated capacity set out in condition 4.1 where necessary for:

i. fighting a large fire; or

ii. the maintenance of the drinking-water system.

4.3 Condition 4.2 shall not be construed to allow drinking-water to be supplied that does not meet all other applicable standards and legal requirements.

PART 5 - MONITORING AND RECORDING

Flow measuring devices

5.1 Install a sufficient number of flow-measuring devices within the drinking-water system to permit continuous measurement and recording of:

i. the flow rates of water conveyed into the individual treatment systems, trains, and stages identified in Part 4, and the daily volumes of water conveyed into the individual treatment systems identified in Part 4; and

ii. the flow rates and daily volumes of water conveyed to the distribution system from each treatment system that has a separate line feeding the distribution system.

5.2 Records shall be maintained that set out the parameters recorded in accordance with condition 5.1, and where a measured flow rate into a treatment system, train, or stage exceeds the maximum flow rate set out for that treatment system, train, or stage in Part 4, the amount, date, time and duration of the exceedence shall also be recorded.

Calibration of flow measuring devices

5.3 All flow measuring devices must be checked and calibrated in accordance with the manufacturer's instructions.

5.4 If the manufacturer's instructions do not indicate how often to check and calibrate the flow measuring devices, the equipment must be checked and calibrated at least once every year during which the drinking-water system is in operation.

PART 6 - OPERATIONS AND MAINTENANCE

Chemical standards

6.1 All chemicals and materials used in the operation of the drinking-water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60 and NSF/61.

6.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution shall be available at all times for each chemical and material used in the operation of the drinking-water system that comes into contact with water within the system.

6.3 Condition 6.2 does not apply in the context of any particular chemical or material where the Owner has written documentation signed by the Director that indicates that the Ministry is satisfied that the chemical or material is acceptable for use within the drinking-water system and that chemical or material is only used as permitted by the documentation.

Operations manual

6.4 An up-to-date operations manual shall be maintained and available for reference by all persons responsible for all or part of the operation of the drinking-water system.

6.5 The operations manual shall include at a minimum:

i. the requirements of this approval and associated procedures;

ii. the operation and maintenance recommendations from the most recent engineers' report;

iii. procedures for the monitoring and recording of in-process parameters necessary for the control of the treatment system and assessing the performance of the drinking-water system;

iv. procedures for the operation and maintenance of monitoring equipment;

v. contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset and equipment breakdown;

vi. procedures for the dealing with complaints related to the drinking-water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;

vii. an inspection schedule for all wells associated with the water treatment system(s), including all production wells, standby wells, test wells and monitoring wells;

viii. defined well inspection and maintenance procedures for the entire well structure of each well, including all above and below grade well components;

ix. remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.

6.6 Procedures necessary to the operation of any physical alterations of the drinking-water system shall be incorporated into the operations manual prior to the alterations coming into operation.

Drawings

6.7 An up-to-date Process and Instrumentation Diagram for the treatment system shall be kept on site at the drinking water system.

6.8 All drawings and diagrams in the possession of the owner or operating authority that show the treatment system as constructed shall be retained.

6.9 An alteration to the treatment system shall be incorporated into Process and Instrumentation Diagrams (P&ID) and record drawings and diagrams within one year of the substantial completion of the alteration and shall be retained and shall be made readily available for inspection by Ministry staff.

PART 7 - FUTURE ALTERATIONS

Approved future alterations

7.1 *Not Applicable*

Certificate of compliance

7.2 *Not Applicable*

PART 8 - STUDIES AND UPGRADES REQUIRED

8.1 For the purpose of this Part, the following upgrade list(s) apply:

Upgrade List A

1. Provide primary disinfection appropriate for a groundwater raw water supply in accordance with O.Reg 170/03, Schedule 1, section 1-3.

8.2 In accordance with O. Reg. 170/03, for Wells Nos. 1, 2, and 5, the owner shall implement the requirements set out in Upgrade List A by **December 31, 2002.**

8.3 By **December 31, 2002**, the owner shall implement the following works and measures:

i. provide well head protection of Well No. 5 with steel bollards and extend the well casing of Well No. 5 to a minimum 300 mm above grade level or alternate upgrades acceptable to the Director.

8.4 The owner shall ensure that Wells Nos. 3 and 4 remain offline until proper treatment for the wells, approved by the Director, is put in place and is fully operational.

Requirement not an approval

8.5 The owner shall not construct any works required by this part until all associated approvals, licenses and permits have been obtained from the Ministry.

PART 9 - RELIEF FROM REGULATORY REQUIREMENTS

Relief from regulatory requirements

9.1 *Not Applicable*

Conditions in exchange for relief from regulatory requirements

9.2 *Not Applicable*

SCHEDULE - A

The following supporting documents form part of this approval.

1. Application dated November 24, 2003
   - Report entitled "Groundwater Under the Direct Influence of Surface Water, St. Isidore Communal Water Supply Wells", prepared by Golder Associates, dated February 2003.
   - Correspondence from Lecompte Engineering Ltd. to MOE, dated June 23, 2004.

2. The original applications for approval, including design calculations, engineering drawings and reports, and other supporting documents prepared in support of any previous certificate(s) of approval issued for any works now approved and replaced by this approval, unless this approval states otherwise.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 3543-5AZS52 issued on June 18, 2002

All or part of this approval may be reviewable in accordance with the provisions of Part X of the SDWA. In accordance with Section 129(1) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 129 (2) sets out a procedure upon which the 15 days may be extended by the Tribunal. Section 129(3) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, provides that the Notice requiring the hearing shall state:

1. The aspect of the decision, including the portion of the permit, licence, approval, order or notice of administrative penalty in respect of which the hearing is required; and
2. The grounds for review to be relied on by the person at the hearing.

Except with leave of the Tribunal, a person requiring a hearing in relation to a reviewable decision is not entitled to,
- a) a review of any aspect of the decision other than that stated in the notice requiring the hearing; or
- b) a review of the decision other than on the grounds stated in the notice

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Part V, *Safe Drinking Water Act, 2002*
Ministry of Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted water works are approved under Part V of the Safe Drinking Water Act.

DATED AT TORONTO this 12th day of July, 2004

THIS CERTIFICATE
ON July 12 2004

Indra Prashad, P.Eng.
Director
Part V *of the Safe Drinking Water Act, 2002*

GZ/

c: District Manager, MOE Cornwall
Drinking Water Supervisor, MOE Cornwall
Manager, DWWWSS, Standards Development Branch
Gaetan Beauchesne, P.Eng., Lecompte Engineering Limited

APPENDIX 6

PERMIT TO TAKE WATER #95-P-4048
ST-ISIDORE WATER SUPPLY

Notice of Terms and Conditions
Section 100, Ontario Water Resources Act, R.S.O. 1990

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 permission is hereby granted

TO: The Corporation of the Village of St. Isidore
P.O. Box 10, 25 Church Street
St. Isidore, Ontario
K0C 2B0

for the taking of water from five (5) wells, four wells are located along Caledonia Concession XI, southeast of the Village of St. Isidore in the Township of Caledonia, and the fifth well is located on Rue St. Isidore in the Village of St. Isidore for municipal use. The rate of taking shall not exceed 252 Litres per minute, or 362,880 Litres per day from source well 1; 264 Litres per minute, or 380,160 Litres per day from source well 2; 78 Litres per minute, or 112,320 Litres per day from source well 3; 168 Litres per minute, or 241,920 Litres per day from source well 4 and 108 Litres per minute, or 155,520 Litres per day from source well 5.

Except where modified by this Permit the water taking shall be in accordance with the application dated May 4, 1995, and signed by James C. Johnston.

You are hereby notified that this Permit is issued to you subject to the following Definitions, General Conditions and Special Conditions.

DEFINITIONS

1. (a) "Director" means a Director, Section 34, Ontario Water Resources Act, R.S.O. 1990.

(b) "Ministry" means Ontario Ministry of Environment and Energy.

(c) "Permit" means this entire Permit to Take Water including its schedules, if any, issued in accordance with Section 34 of the Ontario Water Resources Act, R.S.O. 1990.

(d) "Permit Holder" means The Corporation of the Village of St. Isidore.

GENERAL CONDITIONS

2. This Permit shall be kept available in the offices of the Corporation of the Village of St. Isidore for inspection by Ministry staff at all times.

3. The Director may, from time to time, where a situation of interference or anticipated interference with water supplies exists, or in a situation requiring information on water takings for purposes of water resource inventory and planning, give written notice to the Permit Holder to undertake any of the following actions. The Permit Holder shall compiy with any such notice:

   (a) To establish and maintain a system for the measurement of the quantities of water taken;
   (b) To operate such a system and to record measurements of the quantities of water taken on forms provided by the Director, with such frequency or for such time periods as the Director may specify;
   (c) To return to the Director records made pursuant to clause 3(b) at such times or with such frequency as the Director may specify; and
   (d) To keep records made pursuant to clause 3(b) available for inspection until such time as they are returned to the Director pursuant to clause 3(c).

4. The Permit Holder shall immediately notify the Director of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint.

5. For Surface-Water Takings, the taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

6. For Ground-Water Takings, if the taking of water is forecast to cause any negative impact, or is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent the forecast negative impact or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of so doing.

7. Prior to the taking of water under the authority of this Permit to Take Water, the Permit Holder shall ensure that the works complies with Section 52 of the Ontario Water Resources Act, R.S.O. 1990.

8. Prior to the taking of water under the authority of this Permit to Take Water, the Permit Holder shall ensure that the discharge complies with Section 53 of the Ontario Water Resources Act, R.S.O. 1993.

9. The Permit Holder shall report to the Director any changes of address or telephone number, or change of ownership of the property for which this Permit is issued and shall report to the Director any changes in the general conditions of water taking from those described in the Permit application within thirty days of any such change. The Permit Holder shall not assign his rights under this Permit to another person without the written consent of the Director.

10. No water may be taken under authority of this Permit after the expiry date of this Permit, unless the Permit is renewed, or after the expiry date shown on any subsequent renewal of this Permit, unless it is likewise renewed.

11. This Permit does not release the Permit Holder from any legal liability or obligation and remains in force subject to all limitations, requirements, and liabilities imposed by law. This Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

12. The Permit Holder must forthwith, upon presentation of credentials, permit Ministry personnel, or a Ministry authorized representative(s) to carry out any and all inspections authorized by Section 15, 16 or 17 of the Ontario Water Resources Act, R.S.O. 1990, Section 156, 157 or 158 of the Environmental Protection Act, R.S.O. 1990 of Section 19 or 20 of the Pesticides Act, R.S.O. 1990.

SPECIAL CONDITIONS

13. Records with respect to the measurement and reporting criteria defined under General Conditions 3(b) and 3(c) listed above shall be kept by the Permit Holder. These records shall be submitted for the previous year of taking to the Director annually, beginning in 1996, on or before the thirty-first day of March during each year of water taking or until the Director has given notice in writing that these submissions are no longer required.

14. No water shall be taken under authority of this Permit after September 20, 2005.

15. A monitoring program will be conducted. This should include monitoring of the water levels in the communal wells on a minimum of a weekly basis and all existing wells within 500 metres of a communal well on a quarterly basis (four times per year).

The reason for the imposition of Special Condition 13 is to establish a record of water taking.

The reason for the imposition of Special Condition 14 is to ensure that this Ministry has an opportunity to review the continued availability of water to be taken under authorization by this Permit as it relates to interference with other established uses.

The reason for the imposition of Special Condition 15 is to ensure that no water well interference between the communal wells (TW1 through TW4) and the existing wells in the proximity to the communal wells occurs.

You may, by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each Term or Condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit number;
6. The date of the Permit;
7. The name of the Director;
8. The municipality within which the taking is located;

And the Notice should be signed and dated by the appellant.

This notice must be served upon:

The Secretary
Environmental Appeal Board
112 St. Clair Avenue West
Suite 502
TORONTO, Ontario
M4V 1N3

AND

The Director
Section 34, Ontario Water Resources Act
Ministry of Environment and Energy
133 Dalton Avenue, Box 820
KINGSTON, Ontario
K7L 4X6

Dated at Kingston this 20th day of September, 1995.

Director
Section 34, Ontario Water Resources Act
Ministry of Environment and Energy.

October 10, 1995.
File: 140-003

Ministry of the Environment and Energy
P.O. Box 820
Kingston, Ontario
K7L 4X6

Attention: Paul R. Moore, Director

Dear Sir: Re: Permit to Take Water No. 95-P-4048
Village of St. Isidore

The above permit dated September 20, 1995 includes in Special Condition 15 a requirement to monitor water levels in existing wells within 500 metres of a communal well on a quarterly basis.

Following the issue of the permit, this condition was discussed with Mr. Frank Crossley of the Groundwater Unit to clarify the extent of monitoring required. It was agreed that we should provide a letter indicating our understanding of this condition and how it will be complied with.

With the agreement of Mr. Crossley, it is understood that the Village of St. Isidore will monitor water levels in all existing wells within 500 metres of the communal wells (TW1 through TW4) provided that the well owner provides permission, and access to the well is suitable for water level monitoring.

We fully expect that the majority of private wells in the area will be made available for monitoring based on previous investigations in the area.

Yours very truly,

KOSTUCH ENGINEERING LIMITED

James C. Johnston, P. Eng.

JCJ/ld
c.c. OCWA - Attn: Mr. R. Dormer
Village of St. Isidore
OCWA - Casselman

APPENDIX 7

RAW WATER CHARACTERISTICS OF THE EXISTING MUNICIPAL WELLS

APPENDIX 7

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE
Table No. 4
Raw Water & Treated Water
Microbiological Characteristics

Number of Samples with Positive Results
From: January 2003 to December 2003

Source Of Sample	Number Of Samples	Safe Results	Poor or Unsafe Results	Number of Samples having			
				Fecal Coliform Count >=1	Total Coliform Count >=1	HPC (SPC) Count	
						1-499	>=500
Raw Water							
Well #1	51	N/A	N/A	14	35	33	9
Well #2	51	N/A	N/A	0	1	34	0
Well #3	46	N/A	N/A	2	9	10	28
Well #4	46	N/A	N/A	27	35	23	21
Well #5	51	N/A	N/A	1	2	32	1
Treated Water							
WTP	51	51	0	0	0	3	0
Well #5	51	51	0	0	0	14	0
WDS and Water Tower	153	153	0	0	0	37	0

Shortform: N/A – Not Applicable

Comments: 1. Laboratory results obtained from OCWA.

Compiled by:
LECOMPTE ENGINEERING LTD.

Gäetan Beauchesne. P.Eng.
November 24, 2004
54102.rawwatertable03

APPENDIX 7

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE
Table No. 5
Raw Water & Treated Water
Microbiological Characteristics

Number of Samples with Positive Results
From: January 2004 to November 2004

Source Of Sample	Number Of Samples	Safe Results	Poor or Unsafe Results	Number of Samples having			
				Fecal Coliform Count >=1	Total Coliform Count >=1	HPC (SPC) Count	
						1-499	>=500
Raw Water							
Well #1	43	N/A	N/A	12	34	36	3
Well #2	43	N/A	N/A	1	4	5	0
Well #3	43	N/A	N/A	4	7	29	0
Well #4	43	N/A	N/A	29	39	22	19
Well #5	43	N/A	N/A	2	3	5	0
Treated Water							
WTP	43	43	0	0	0	0	0
Well #5	43	43	0	0	0	2	0
WDS and Water Tower	129	129	0	0	0	3	0

Shortform: N/A – Not Applicable

Comments: 1. Laboratory results obtained from OCWA.

Compiled by:
LECOMPTE ENGINEERING LTD.

Gaetan Beauchesne

Gäetan Beauchesne, P.Eng.
November 24, 2004
54102.rawwatertable03

APPENDIX 8

WELLS' PHYSICAL CHARACTERISTICS

APPENDIX 8

The Nation Municipality
Village of St-Isidore Water Supply
Well Physical Characteristics
LEL FILE NO. 54102.21

Well No.	Pump Depth (m)	Well Depth (m)	Well Casing Dia. (mm)	*Maximum Approved Water Taking (L/s)	(USGPM)	Well Pump Capacity (L/s)	(USGPM)	Total Dynamic Head (m)	(ft)
1	16.0	17.4	150	4.2	66.6	4.2	66.6	38	125
2	20.1	22.3	200	4.4	69.7	3.1	49.1	53	174
3	16.0	19.2	200	1.3	20.6	1.3	20.6	26	85
4	14.5	29.9	200	2.8	44.4	1.9	30.1	59	194
5	22.3	35.9	150	1.8	28.5	18	28.5	59	194
			TOTAL	14.5	230	12.3	195		

*As per permit to take water No. 95-P-4048

Prepard by:
LECOMPTE ENGINEERING LTD.

Gaëtan Beauchesne, P.Eng.
November 24, 2004
54102.21

APPENDIX 9

WELL WATER CAPACITY ASSESSMENTS
AS OF
NOVEMBER 2004

APPENDIX 9

The Nation Municipality
Village of St-Isidore Water Supply
Well Water Capacity Assessment
LEL FILE NO. 54102.21

Well No.	Well Capacity as of							
	1995 (1)		Dec. 2002		Sept. 2004		Nov. 2004	
	L/sec	m³/day	L/sec	m³/day	L/sec	m³/day	L/sec	m³/day
1	4.2	362.88	4.2	362.88	4.2	362.88	(2)	
2	4.4	380.16	3.1 (5)	267.84	3.1(5)	267.84	3.1 (5)	267.84
3	1.3	112.32	1.3	112.32	(3)		(3)	
4	2.8	241.92	(4)		(4)		(4)	
5	1.8	155.52	1.8	155.52	1.8	155.52	1.8	155.52
TOTAL	14.5	1,252.80	10.4	898.56	9.1	786.24	4.9	423.36

Comment:

1. The actual combined well capacity is 423 m³/day when the required capacity should be 975 m³/day to meet the maximum daily demand with fire protection.

2. With the present situation, any water shortage resulting from a water line break or a fire demand will seriously jeopardize the security and safety of the residents.

Notes: (1) Approved maximum well capacity as per permit to take water no. 95-P-4048
(2) Well No. 1 was put off line in September 2004
(3) Well No. 3 was put off line in December 2002
(4) Well No. 4 was put off line in September 1997
(5) The actual well pump capacity was used.

Prepared by:
LECOMPTE ENGINEERING LTD.

Gaëtan Beauchesne. P.Eng.
November 24. 2004
54102.21

APPENDIX 10

RAW WATER CHARACTERISTICS
- OTTAWA RIVER AT BRITANNIA
- SOUTH NATION RIVER AT PLANTAGENET

APPENDIX 10

The Nation Municipality
Village of St-Isidore

LEL FILE. NO 54102.21

Raw Water Characteristics @ Ottawa River & South Nation River				
Parameter	**Unit**	**Ottawa River @ Britannia Year 2000 Average**	**South Nation River @ Plantagenet Year 2003 Average**	**M.A.C. Treated Water**
Absorbency UV 254nm	cm^{-1}	0.24	-	-
Alkalinity	mg$CaC0_3$/L	25	187	30-500
Ammonium Nitrogen	mg N/L	0.02	0.099	-
Antimony	mg Sb/L	0.00059	0.0002	-
Arsenic	mg As/L	<0.00025	0.0011	0.025
Barium	mg Ba/L	0.0208	0.0534	1.0
Boron	mg B/L	0.011	0.045	5.0
Cadmium	mg Cd/L	<0.000025	0.00001	0.005
Calcium	mg $CaC0_3$/L	21.7	68.3	-
Chloride	mg Cl/L	3.3	63.4	250
Chromium	mg Cr/L	0.00025	0.0037	0.05
Colour	T.C.U.	29.8	65.9	5
Conductivity	µS/cm	-	665	<1500
Copper	mg Cu/L	0.0346	0.0832	1
Cyanide	mg CN/L	ND	<0.005	0.2
Dissolved Organic Carbon	mg C/L	6.5	10.4	THM IF >3
E.Coli	Counts/100mL	125	-	0
Fluoride	mg F/L	0.03	0.14	1.5
H.P.C.	Counts/mL	-	-	500
Iron	mg Fe/L	0.197	0.80	0.3
Lead	mg Pb/L	<0.0005	0.00081	0.01
Manganese	mg Mn/L	0.0157	0.0483	0.05
Mercury	mg Hg/L	<0.0005	<0.0001	0.001
Nickel	mg Ni/L	0.0004	0.0029	-
Nitrates	mg N/L	0.14	2.7	10
Nitrites	mg N/L	<0.02	0.047	1
pH	No Unit	7.3	8.0	6.5-8.5
Phosphorous (Total)	mg P/L	0.014	0.085	-

APPENDIX 10

The Nation Municipality
Village of St-Isidore

LEL FILE. NO 54102.21

Raw Water Characteristics @ Ottawa River & South Nation River				
Parameter	**Unit**	**Ottawa River @ Britannia Year 2000 Average**	**South Nation River @ Plantagenet Year 2003 Average**	**M.A.C. Treated Water**
Potassium	mg K/L	0.83	4.30	-
Selenium	mg Se/L	<0.0002	<0.001	0.01
Silver	mg Ag/L	<0.00005	0	-
Sodium	mg Na/L	3.67	42.7	20-200
Sulphate	mg S/L	6.90	64.8	500
Temperature	°C	10.1	-	15
THM	mg/L	<0.0005	<0.001	0.100
Total Coliforms	Counts/100mL	1699	-	0
Total Hardness	mg $CaC0_3$/L	36.6	256	80-100
Total Kjeldahl Nitrogen	mg N/L	0.29	0.91	-
Turbidity	N.T.U.	2.70	21.0	1
Uranium	mg U/L	<0.00005	0.00122	0.10
Zinc	mg Zn/L	0.0068	0.0097	5

Shortforms: mg/L = milligrams per litre = parts per million (ppm)
T.C.U. = True Colour Units
N.T.U. = Nephelometric Turbidity Units
M.A.C. = Maximum Allowable Concentration from Drinking Water Guidelines

Compiled by:
LECOMPTE ENGINEERING LTD.

Gaëtan Beauchesne

Gaëtan Beauchesne, P.Eng.
November 25, 2004
54102.21

APPENDIX 11

SOUTH NATION RIVER FLOW

Printer-friendly article display
February 2004, Vol. 28, No. 2
AgriNews Interactive **www.agrinewsinteractive.com**

South Nation flow four times normal

By **Catherine Thompson**

BERWICK — Water levels in the South Nation River were two to four times the normal flow in November, December and January, say South Nation Conservation officials, but they were only a fraction of the normal flow during spring flooding.

"Usually we don't get much flow at this time, the water is low," said Richard Pilon, SNC Director of Planning and Engineering. "And for the two years previous, there was low water with the drought situation, when the water was two to three times lower than normal, this balances it out."

"The numbers are two to four times the average at different places throughout the watershed. There was so much rain in the fall and at Christmas time we had a thaw, then snow, then rain on top of that, and the water ends up in the stream. But if you look at the long range over 10-20 years, it balances out."

Pilon said he hadn't received complaints of flooding, and there hasn't been much of a change in operations.

"The only thing is we monitor the water level closer and operate the Chesterville dam more often. We open the gate and let more water through, and close it when things go down," he said.

"The only time they contact us is with a lot more flow than that. We've been able to handle the extra water. It hasn't really been flooding, the river wasn't overflowing. Just the water wasn't draining away from the fields, but there were no flooding reports."

General Manager Dennis O'Grady explained there are 12 stream gauges up and down the watershed which measure the height times the cross section of the river. The flow is measured according to a formula in cubic meters per second, and the gauges are constantly monitoring the flow.

According to O'Grady, the average flows for December in Spencerville are 2.7 cubic meters per second. This past December, the average flow for the month was 6.2 per second, or 2.5 times higher than average.

In the Village of Russell, the normal flow for December is 4.4 cubic meters per second, but in December, 2003, the flow was 14.2 cubic meters per second, 3.2 times higher than normal.

In Plantagenet where the tributaries flow in, the average flow in December is 31 cubic meters per second, but in December, 2003, it was 80.7.

But during the average spring flow at Plantagenet is over 700 cubic meters per second: thus, the recent water levels are only about 10 per cent of the spring flow.

"The levels aren't even close to the normal spring flow," said O'Grady.

"It's a very lucky watershed, compared to some other watersheds which have seen similar increases. We can get a whole whack of water before it floods anyone out," said O'Grady. "I

guess that's why we haven't had any complaints from farmers. Once the farmers get their crops, a lot are worried about ice forming on their fields. With this small amount of flow for the most part, that's not an issue."

Eastern Ontario AgriNews is published on the third Monday of each month. The printed version is distributed free by postal mail to farms in Eastern Ontario, Canada.

APPENDIX 12

PROPOSED WATERMAINS – FIG. 1

- FROM OTTAWA RIVER AT TREADWELL TO PLANTAGENET W.T.P.
- FROM PLANTAGENET W.T.P. TO ST-ISIDORE EXISTING WATER TOWER

APPENDIX 13

PROPOSED CHARGES TO THE USERS OF ST-ISIDORE PER EQUIVALENT HOME

APPENDIX 13

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE
Preliminary Miscellaneous Eligible Cost
Upgrading Existing Plantagenet Water Treatment Plant
And
Connecting Watermain from St-Isidore to Treadwell
Table No. 1
LEL FILE. NO. 54102.21

Item No.	Description of Work	Totals ($)
1.0	Environmental Assessment Report, Phase 3 & 4	150,000
2.0	Expenses: travelling, telephone, printing, photographs	15,000
3.0	Legal and OLS fees	18,000
4.0	Final commissioning	25,000
5.0	Preparation of Operating and Maintenance Manuals	20,000
6.0	Decommissioning Wells No. 1 to 5	52,000
7.0	Soil Investigation	27,000
8.0	Soil Testing – Compaction – Concrete and Building Material Control	15,000
	Total (Table 1)	**322,000**

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November 24, 2004
54102.21

APPENDIX 13

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE
Preliminary Construction Cost

- **Connecting Raw Watermain from the Ottawa River at Treadwell Through Plantagenet**
- **Connecting Watermain from Plantagenet WTP to St-Isidore Water Tower**
- **Intake Pipe Associates Work**

Table No. 2
LEL FILE. NO. 54102.21

Item No.	Description of Work	Totals ($)
1.0	Intake Crib	25,000
2.0	Water intake pipe	200,000
3.0	Pumping Station including Auxiliary Power at intake pipe	185,000
4.0	Connecting Watermain a) Ottawa River to Plantagenet 10.2km b) Plantagenet to St-Isidore 17.4km 27.6km @ $155.00/m	4,278,000
5.0	Bridges crossing (3)	180,000
6.0	Plantagenet WTP Upgrade: 1. Telemetry 100,000 2. Chloramine 95,000 3. Booster Station 235,000	430,000
	Total (Table 2)	**5,348,000**

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November 24, 2004
54102.21

APPENDIX 13

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE
Preliminary Engineering Cost
Upgrading Existing Plantagenet Water Treatment Plant
Connecting Watermain and Associated Works
Table No. 3
LEL FILE. NO. 54102.21

Item No.	Description of Work	Totals ($)
2.0	Water Treatability Study	15,000
3.0	Laboratory Analysis and Report	14,000
4.0	Water Treatment Plant Upgrade & Water Intake and booster pumps	
.1	Preliminary and Final Design and Calling Tender (WTP excluding telemetry - $790,000 x 12%)	94,800
.2	Telemetry (sub-consultant)	18,500
.3	Site Supervision and General Coordination (8% of $890,000 including telemetry)	71,200
.4	Rehabilitation of existing building	22,500
5.0	Connecting Watermain (27.6km long)	
.1	Field Work	60,000
.2	Preliminary Final Design & calling tenders	175,000
.3	Site Supervision and General Coordination	251,600
	Total (Table 3)	**722,600**

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APPENDIX 13

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE
Summary Project Eligible Cost
Upgrading Existing Plantagenet Water Treatment Plant
and
Connecting Watermain via Treadwell & Plantagenet – St-Isidore
Table No. 4
LEL FILE. NO. 54102.21

Item No.	Description of Work	Totals ($)
1.0	Miscellaneous eligible costs (Table 1)	322,000
2.0	Plantagenet Water Treat Plant upgrade, water intake connecting watermain including booster pumping stations (Table 2)	5,348,000
3.0	Engineering Cost including Telemetry – Water Treatability and Laboratory Analysis (Table 3)	722,600
	Sub-Total (1) to (3)	6,392,600
	Contingency (10%)	639,260
	Total	**7,031,860 use 7,032,000**

Cost repartition as per the infrastructure program (5.0)

- Provincial Share $2,344,000
- Federal Share $2,344,000
- Municipal Share $2,344,000

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THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE
Summary Ineligible Cost
Upgrading Existing Plantagenet Water Treatment Plant
and
Connecting Watermain via Treadwell & Plantagenet – St-Isidore
Table No. 5
LEL FILE. NO. 54102.21

Item No.	Description of Work	Totals ($)
1.0	ESR Phase 1 & 2	55,000
2.0	Engineering Report for Emergency Response	35,000
3.0	Land Acquisition for pumping station at Treadwell	30,000
4.0	Application for Certificates of Approval including $5,400 of fees payable to the MOE by the Municipality (categories 1,2,5,6,9,10,16) *see Table 1	25,000
5.0	Hydrogeological Report	20,000
6.0	Application for Relief from Schedule 1 Re: Well #1	7,000
	Total (Table 5)	**172,000**

Notes: MOE Certificates of Approval Application cost (including C of A for Air, categories 1,2 & 16)

		($)
Category 1	-	400
2	-	5,400
5	-	1,000
6	-	2,000
9	-	3,000
10	-	1,200
16	-	1,000
Total		14,000

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APPENDIX 13

THE NATION MUNICIPALITY
VILLAGE OF ST-ISIDORE
Estimated Charges Per Equivalent Home
Upgrading Existing Plantagenet Water Treatment Plant
and
Connecting Watermain via Treadwell & Plantagenet – St-Isidore
Table No. 6
LEL FILE. NO. 54102.21

Item No.	Description of Work	Totals ($)
1.0	Municipal share (Table 4) including subsidies (F&P)	2,344,000
2.0	Ineligible cost (Table 5)	172,000
	Total for 500 eq.h	2,516,000

Estimated charges per equivalent home $5,032

NOTE: THE INTERIM FINANCING IS NOT INCLUDED.

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November 24, 2004
54102.21