COMPLIANCE INSPECTION REPORT

ST. ISIDORE de PRESCOTT

SEWAGE TREATMENT SYSTEM

REPORT PREPARED BY THE DISTRICT INSPECTIONS GROUP

CORNWALL DISTRICT - EASTERN REGION

MINISTRY OF ENVIRONMENT AND ENERGY

Inspected By: Larry L. Benoit
Date Of Inspections: April 25 and october 4, 1995
Date Of Report: October 16, 1995

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COMPLIANCE INSPECTION REPORT
St. ISIDORE SEWAGE TREATMENT SYSTEM

1 INTRODUCTION AND GENERAL INFORMATION

The purpose of this report is to assess the operating authority's compliance with standards of the Ministry of Environment and Energy (MOEE). The operational procedures utilized at the treatment facility will also be graded against Ministry of Environment and Energy policies and guidelines in order to provide a measure of guidance towards the goal of achieving consistency in the production of an effluent which conforms with MOEE Guidelines F-5 and F-8 for sewage discharges to surface water courses.

Background Information:

The community of St. Isidore de Prescott is situated 45 kilometres north-east of the City of Cornwall about 1 kilometre east of the South Nation River and is accessible from County Road 9 from Highway 417. The sewage treatment lagoon is located in the northwest of the village in part of lots 9, Concession 17, Township of South Plantagenet. The main pumping station is situated on St Catherine Street in the south part of the village.

A communal water system is currently under construction to replace the small core area system previously run by a local water syndicate.

The Certificate of Approval for St Isidore's three cell lagoon system was issued in 1976.

For background purposes we have included excerpts of the January 1993 watershed study report prepared by Gore and Storrie Limited entitled WASTE WATER ASSIMILATION STUDY OF THE SOUTH NATION RIVER WATERSHED.

The Assimilation Study expresses concern regarding waste loadings to the drainage system and suggests recommendations for the long term. The Study Summary from the document is listed as Appendix "D".

As discussed further in section 14 below, most deficiencies and recommendations identified in the previous inspection report have been addressed. Appendix"F" lists those deficiencies and includes status comments by the operating authority.

GENERAL:

Plant:	**St. ISIDORE de PRESCOTT VILLAGE**
Works Number:	**110002210**
Plant Certification:	**The facility is classified as a WWT 1 Wastewater Treatment System and a WWC 2 Wastewater Collection system as defined by the Association of Boards of Certification.**
Date(s) of Inspection:	**April 25 and October 4, 1995**
Previous Inspection:	**August 5, 1993 (J. Mahoney)**
Operating Authority:	**Ontario Clean Water Agency** **P.O. Box 605** **382 Drouin Street** **Casselman, Ontario** **K0A 1M0**
Persons Contacted:	**C. Levesque, Chief Operator** **Frank Benson, Operator** **Dan Lafleche, Operator**
Certification:	**C. Levesque: WD 4, WT 2** **F. Benson: WD 2, WT 2** **D. Lafleche: WD 2, WT 2**

(TEL: 613-764-5678; FAX: 764-5424)

(see Appendix "E" for more detailed information)

2 SYSTEM DESCRIPTION

2.1 Treatment Process:

2.1.1 Description:

The system consists of three facultative lagoon cells totalling 14.6 Hectare, with batch treatment phosphorous removal, discharged annually (usually in May) to the South Nation River system. The sewage collection system consists of gravity flow to one pumping station which then pumps to the splitter box at the lagoon site. Standby diesel power is available at the pumping station (see the previous report for a more detailed description of the system).

2.1.2 Process Flow Diagram:

For detailed descriptions of each component of the system; see the previous inspection reports. A flow chart and system schematic is contained in appendix "B".

2.1.3 Receiving Water Course:

The system discharges annually into the Scotch River, which is a tributary of the South Nation River, which in turn, outfalls to the Ottawa River. The assimilation study identifies the river as sensitive and presents recommendations to reduce pollution inputs from the sewage treatment facility to within provincial water quality objectives for dissolved oxygen, hydrogen sulphide, and un-ionized ammonia (see Appendix "F").

2.1.4 Effluent Routing:

Lagoon effluent is discharged by gravity flow every spring via 244 meters of buried 46 cm diameter pipe from the outlet control structure.

2.2 Flow Assessment

2.2.1 Rated Capacity: **655 m^3/Day (C of A)**

2.2.2 Connected Population: **740 (clerk's office)**

2.2.3 Average Day Flows:

1992 -	**311 m^3/Day**
1993 -	**316 m^3/Day**
1994 -	**311 m^3/Day**
1995 -	**328 m^3/Day**

2.2.4 Maximum Day Flow): **790 m^3/Day in May 1993 & 630 m^3/Day in March 1994**

2.2.5 Source of data: **OCWA Compliance Status Reports.**

(see Appendix "A" for flow graphs and data).

Comments:

Average daily flows for the period between January 1992 to May 1995 indicate that the system is being operated within design capacity.

3 ASSESSMENT OF COMPLIANCE WITH LEGAL OBLIGATIONS

3.1 Sewage Works Certificates of Approval:

C of A No: 1-0190-69-763856

Appendix "C" of this report contains copies of Certificates of Approval issued for the treatment system in February 1976.

3.1.1 Does the operating authority comply with the sampling methodology and the sampling frequency requirements specified in the sewage works Certificate of Approval?

For approvals issued in the early 1970's, sampling programs were not required by the Certificate of Approval.

3.1.2 Does the operating authority comply with the effluent quality requirements specified in the sewage works C of A?

The C's of A for this facility do not specify effluent quality requirements. The operating authority keeps monthly performance assessment reports and submits monthly UMIS data sheets and an annual report to the MOEE.

3.2 Provincial Statutes (Regulation 435/93 under OWRA)

Does the owner comply with the licensing, training, and record keeping provisions of O. Reg. 435/93?

The operators are licensed in conformance with the Regulation.

A questionnaire assessing compliance with O. Reg. 435/93 was completed in conjunction with this inspection. A copy of the completed questionnaire is affixed as Appendix "E".

4 ASSESSMENT OF CONFORMANCE WITH MINISTRY OF ENVIRONMENT AND ENERGY GUIDELINES

a) **Does the operating authority comply with the level of treatment guidelines as specified by Ministry of Environment and Energy Guideline F-5?**

Guideline F-5 states that the normal level of treatment required for municipal and private sewage treatment works discharging to surface waters is secondary treatment or better. For seasonal retention lagoon treatment with phosphorous removal the effluent design objectives are as follows:

- ***Biochemical Oxygen Demand (BOD_5) - 25 mg/L** maximum monthly average concentration averaged over a calendar year,*
- ***Suspended Solids (SS) - 25 mg/L** maximum monthly average concentration averaged over a calendar year.*

ANNUAL AVERAGES LAST 3 YEARS

YEAR	BOD_5 (mg/L)	SS (mg/L)	Phos.(mg/L)
1992 Discharges	15.30	33.70	.65
1993 "	14.25	28.50	.45
1994 "	13.25	10.75	.17
1995 "	7.63	11.50	.12
Guideline Criteria	25	25	1.0

Refer to Appendix "A" for data prepared from monthly performance assessment

reports maintained by the operating Authority.

The data indicates that the facility was not operated in conformity with Guideline F-5 for suspended solid levels in the 1992 and 1993 discharge. The deviations were attributed by the operator to unusual algae growths. Modifications to the alum batch treatment procedure was implemented in 1994 and conformance with the guideline has been achieved.

b) Does the operating authority comply with effluent quality specified by Ministry of Environment and Energy in Guideline F-8?

Guideline F-8 states that "All municipal and institutional sewage treatment works, having nominal design capacities of 4,546 m^3/d, or more, discharging into the Lake Superior basin, Lake Huron basin, Lake Ontario basin, St. Lawrence River basin, or Ottawa River basin shall have effluent not exceeding a total phosphorous concentration of 1.0 mg/l."

Effluent compliance is assessed on the basis of monthly average total phosphorous concentrations.

In 1992, 1993, 1994 and 1995 discharges, the facility met the effluent guideline of 1 mg/L for total phosphorus. The annual average total phosphorus for those years are tabled above.

Analytical results and time/concentration graphs are attached in Appendix "A".

c) Does the operating authority comply with the sampling guidelines specified by Ministry of Environment and Energy Guideline F-10?

Guideline F-10 describes the Ministry of Environment and Energy sampling and analysis requirements for Municipal and Private Sewage Treatment Works, for the purpose of assessing the works' performance and conformance with effluent quality requirements prescribed under Ministry Guidelines F-5 and F-8.

Special sampling and analysis requirements, which may include additional analytical parameters, increased frequency of sample collection and analysis, in-plant analysis requirements and more stringent composite sampling procedures, etc., may be prescribed by the Ministry's Regions in consultation with other relevant Ministry branches, on a case-by-case basis, for sewage treatment works discharging to sensitive receiving waters. Sampling and analysis requirements, less stringent than those required under the Routine Sampling and Analysis Program, may also be considered in special cases, such

as for small sewage treatment works discharging to non-critical receiving waterbodies. Grab samples are acceptable for lagoon systems.

BOD_5, suspended solids, ammonia plus nitrogen and total phosphorus analyses are completed weekly on raw sewage samples and 3 to 5 times on final effluent during the discharge period.

The St. Isidore de Prescott facility is meeting requirements for the number of samples taken and for the sampling parameters required in the past; however, the sensitive nature of the receiving stream, as identified by recent assimilation studies of the watershed, dictates a need to review and revise the sampling program to allow assessment of impacts of sewage treatment discharges in the drainage basin. Of particular interest at the point of impact are concentrations of un-ionized ammonia and Hydrogen sulphide (H_2S) in addition to BOD_5. (The Study Summary from the assimilation study is contained in Appendix "F")

The operating authority has been provided a copy of the MOEE Policy F-10. In consultation with Regional and District staff of this ministry, OCWA should develop and implement a special sampling program specific to the St. Isidore lagoon system and consistent with other point source discharges in the drainage basin. The program should include, but not be limited to, an expanded pre-discharge analyses of lagoon cell contents and include interpretation of upstream & downstream samples in addition to effluent samples during the discharge period. Downstream samples should be collected within 300 to 500 meters of the outfall to be of value in assessing dilution effects of the receiving stream.

Analytical results of samples taken are summarized on the monthly/annual PERFORMANCE STATUS REPORTS attached in Appendix "A".

d) Laboratories which are utilized by the operating authority to demonstrate compliance with Certificates of Approval and conformance with Ministry of Environment and Energy Policies and Guidelines:

Ministry of Environment and Energy,
133 Dalton Avenue,
P.O. Box 822
Kingston, Ontario.
K7L 4X6

Metals and organics only:

Laboratory Services Branch
Ministry of the Environment and Energy
125 Resources Road
Hwy 410 & Islington Avenue
Toronto, Ontario
M9W 5L1

5 SAMPLING PERFORMED BY MINISTRY OF ENVIRONMENT AND ENERGY PERSONNEL DURING THE INSPECTION

PARAMETER		UPSTREAM	FINAL EFFLUENT	DOWNSTREAM
BOD5	mg/L	3.2	11	3.2
SS	mg/L	27	16	60
TKN	mg.L	1.0	3.0	.6
T.P.	mg/L	.08	.28	.08
AMMONIA	mg/L	<. 01	1.1	.05
NITRITE	mg/L	.026	.18	.026
NITRATE	mg/L	1.29	.12	1.43

The above GRAB SAMPLE data is indicative of results obtained from samples collected by the operating authority for the 1995 discharge.

6 DISINFECTION

The final effluent is not disinfected before discharge. This is not required by the Certificate of Approval or MOEE guidelines.

7 BYPASSING

7.1 Bypassing conduits located within the confines of the treatment plant grounds?

Bypass conduits are located within the lagoon system to permit bypassing; however, this is for emergency measures only and reportedly has not been done in the past.

7.2 Bypass conduits located at off site sewage pumping stations?

A bypass overflow and level alarm system is operational at the pumping station. Bypassing has never been necessary.

8 SLUDGE MANAGEMENT

Sludge accumulation in the lagoon cells were checked in 1994 were not found to be significant.

9 LABORATORY EQUIPMENT AND PROCEDURES

Compliance data analyses are completed at the M.O.E.E. lab in Kingston. However, a HACH DR/2000 digital spectrophotometer has been purchased recently for the local OCWA home base at Casselman and can be used to determine various parameters for process control purposes.

10 FLOW MEASUREMENT

10.1 Does the Sewage Treatment Plant incorporate the use of equipment for the monitoring of raw sewage flows?

Raw sewage flow volumes are measured using a magnetic flow meter installed at the pumping station. All sewage from the community is funnelled through this one station.

10.2 Does the Sewage Treatment Plant incorporate the use of equipment for the monitoring of final effluent flows?

Final effluent is not measured.

10.3 Comments:

The raw sewage flow meter was calibrated by the Technical Services Unit of MOEE in 1994. All plant flow measurement devices should be

calibrated by a qualified person every two years and reports should be kept on file at the plant.

11 CONTINGENCY PLANNING

11.1 Have contingency plans been formulated for this facility?

The chief operator indicates that a comprehensive plan, as outlined in the comments below, has been completed and will be updated on an annual basis.

Emergency response phone numbers are posted, routine equipment maintenance & repair procedures and safety instructions are maintained in a software file.

11.2 Where are the contingency plans maintained? Who has access to the plans?

Plans should be kept at the municipal office as well as the Water treatment Plant and should be available to and understood by all appropriate municipal employees and emergency agencies [local fire department(s), the roads department, excavation & repair contractors, etc.] as well as all operators.

11.3 Comments:

A contingency plan should document reporting procedures and actions to be taken in the event of such occurrences as a prolonged hydro outage, equipment failures, main breaks or blockages and failure of the system to operate in compliance with the requirements of the Ministry of Environment and Energy and other regulatory agencies. The contingency plan should also stipulate actions to be taken to comply with Certificate of Approval Terms and Conditions.

12 RECORD KEEPING AND DATA SUBMISSION

12.1 Is there a method for reporting flow and analytical data to the Ministry of Environment and Energy?

Flow data and sample results are maintained on a monthly basis and annual reports are prepared from the standard performance status reports

in Appendix "A". UMIS (Utility Monitoring Information System) reports are summarized monthly. Consideration should be given to expand the data compiled by OCWA into a comprehensive Self Assessment Report. Details of such a report should be established during discussions with MOEE staff.

The self assessment report should include review comments on appropriate monitoring programs, history of complaints, an assessment of compliance with MOEE control documents (Certificates of Approval, Director Instruction, Field Orders, etcetera), violation of municipal Sewer-Use By-Laws (if applicable), and conformance with MOEE policies and guidelines.

12.2 Is there a documented method for reporting preventative maintenance?

OCWA maintains and updates a software inventory system. An acceptable Preventative Plant Maintenance Program is in place.

13 DEFICIENCIES

NON-COMPLIANCE WITH CONTROL DOCUMENTS:

The facility is being operating in compliance with the Certificate of Approval.

NON-CONFORMANCE WITH MINISTRY GUIDELINES:

Suspended Solids of 33.7 mg/L in 1992 and 28.52 mg/L in 1993, indicates that the facility has not been operated in conformity with Guideline F-5. Modifications to the alum batch treatment procedure produced an improved effluent in 1994 and 1995 and conformance with the guideline has been achieved.

14 RECOMMENDATIONS

1) The operating authority has been provided a copy of the MOEE Policy F-10. In consultation with Regional and District staff of this ministry, OCWA should develop and implement a special sampling program specific to the Casselman lagoon system and consistent with other point source discharges in the drainage basin. Downstream river samples should be collected within 300 to 500 meters of the outfall to be of value in assessing

dilution effects of the receiving stream.

2) **The cell formulas that calculate percent removal for BOD, SS and P on the annual performance assessment reports should be revised to calculate on the basis of annual averages of raw and treated values.**

3) **Consideration should be given by OCWA to expand the annual report into a comprehensive Self Assessment Report. Details of such a report should be established during discussions with MOEE staff.**

Date of report: October 16, 1995

The above report is a compilation of information obtained for the purposes of the Compliance Inspections conducted on April 25 and October 4, 1995, and subsequent information provided by the operating authority and does not imply by omission that the facility does or does not meet all applicable laws and regulations.

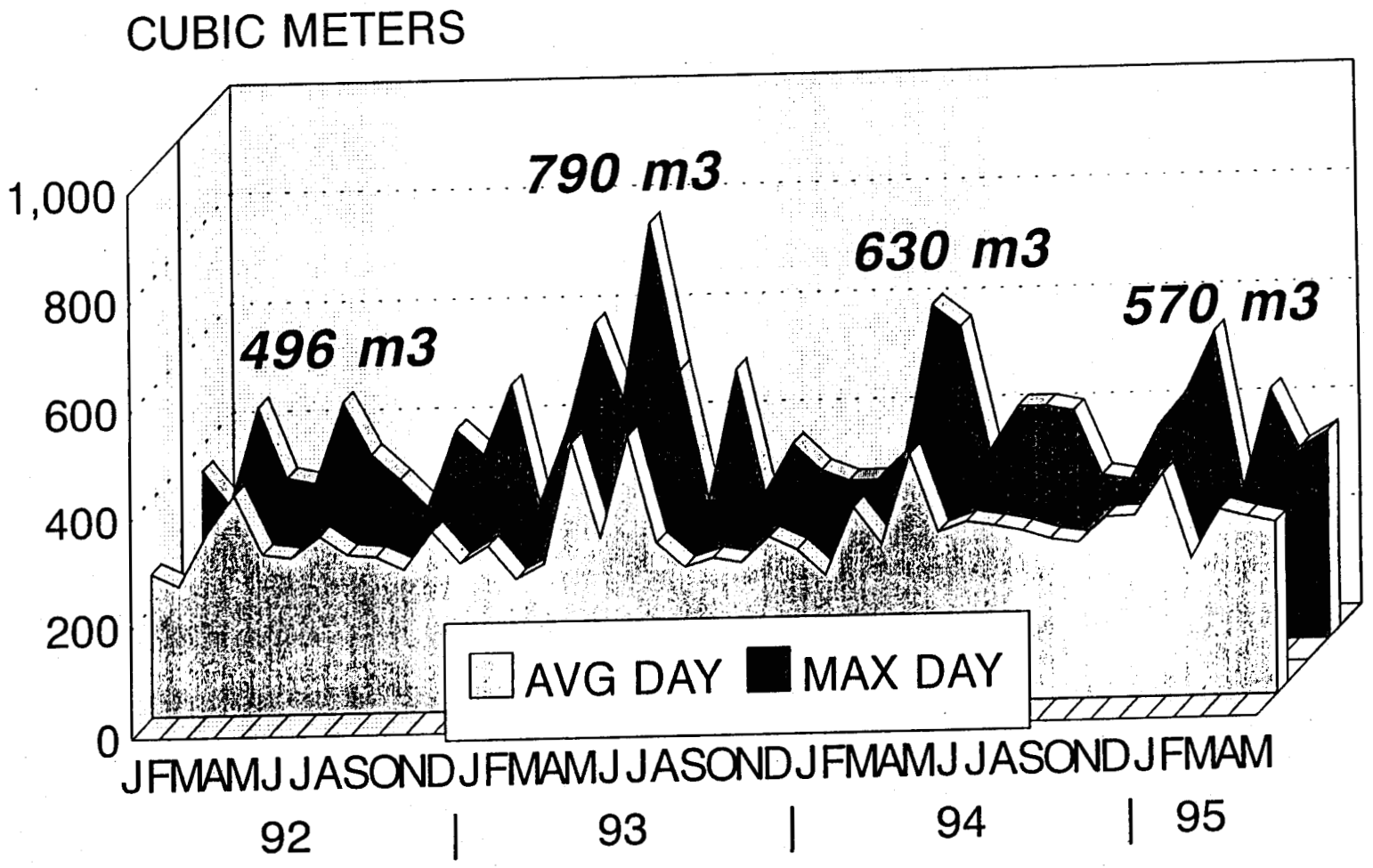
Provincial Officer/Inspector: _____

Larry L. Benoit, Senior Environmental Officer

APPENDIX "A" - PLANT PERFORMANCE GRAPHS & DATA

ST. ISIDORE LAGOON SYSTEM

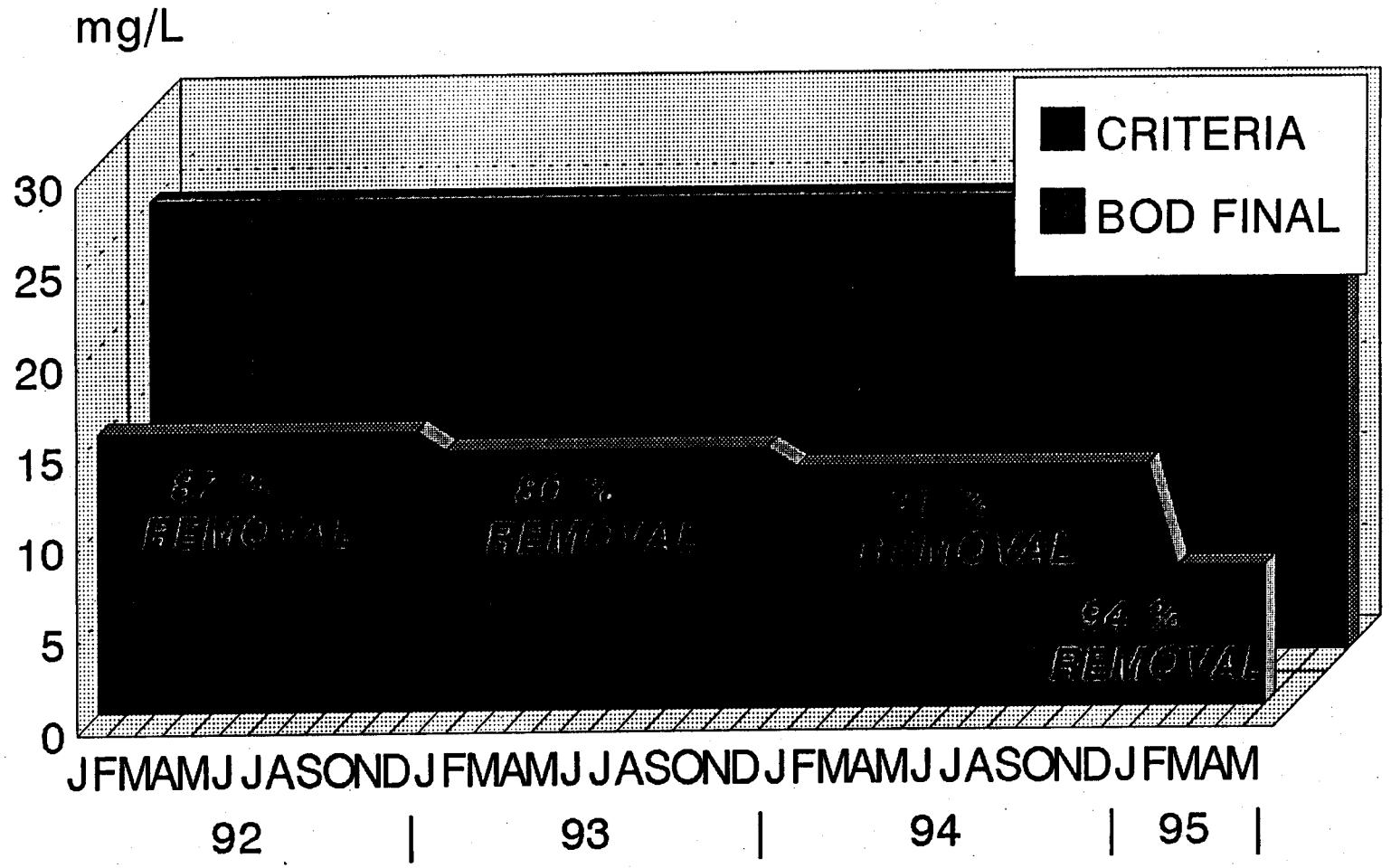
SEWAGE FLOW DATA



1995 COMPLIANCE INSPECTION

ST. ISIDORE LAGOON SYSTEM

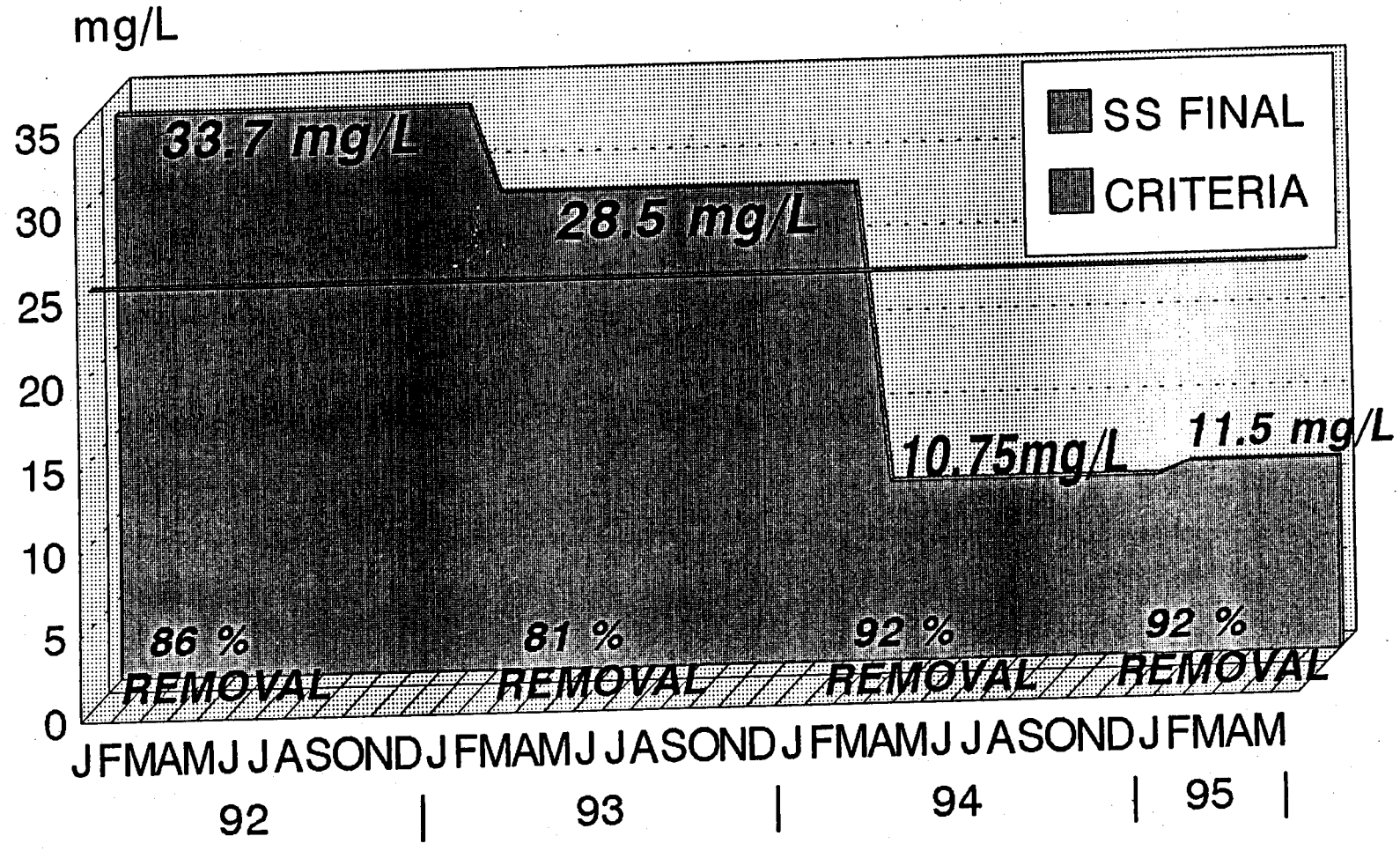
EFFLUENT BOD5



1995 COMPLIANCE INSPECTION

ST. ISIDORE LAGOON SYSTEM

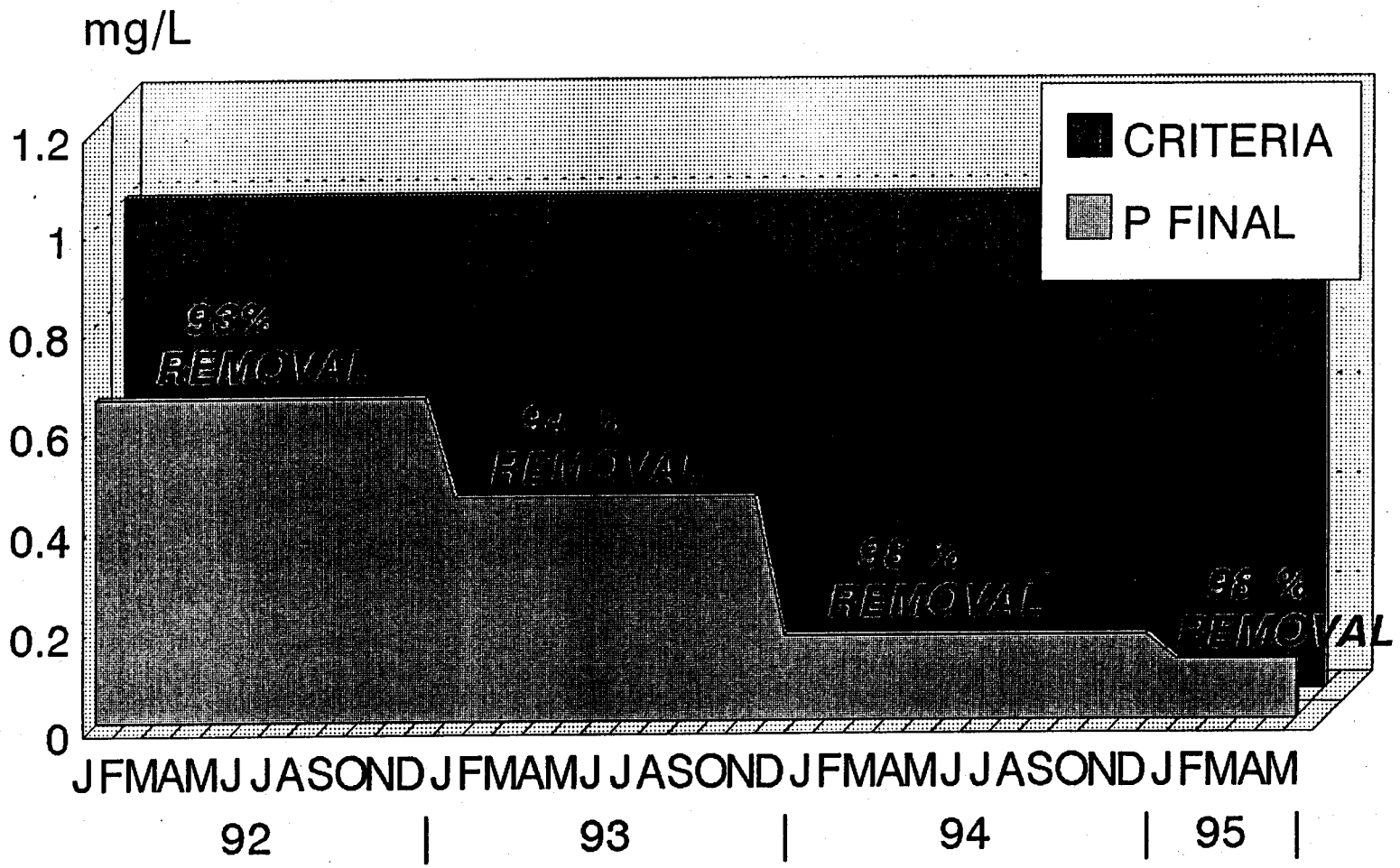
EFFLUENT SUSPENDED SOLIDS



1995 COMPLIANCE INSPECTION

ST. ISIDORE LAGOON SYSTEM

EFFLUENT PHOSPHOROUS LEVELS



1995 COMPLIANCE INSPECTION

XXXXXXXXXXXXXXXXXXXXXXXX PERFORMANCE ASSESSMENT REPORT - EASTERN AREA UTILITY OPERATIONS XXXXXXXXXXX
SEWAGE

MUNICIPALITY: ST.ISIDORE
PROJECT: ST.ISIDORE W.S.P.
PROJECT NUM.: 1-0191-69-00
DESCRIPTION: A THREE CELL LAGOON

YEAR: 1995
WATER COURSE: SCOTCH RIVER
DESIGN CAPACITY: 0.655 X 1000 M3/d

CONTINGENCY PLAN UPDATE (DD/MM/YY):

SIGNATURE OF OPERATIONS OFFICER: _____

MONTH	FLOWS			BIOCHEMICAL O2 DEMAND			SUSPENDED SOLIDS			PHOSPHORUS		
	TOTAL FLOW 1000M3	AVG DA FLOW 1000M3	MAX DA FLOW 1000M3	AVG RA BOD (mg/L)	AVG EF BOD (mg/L)	PERCEN REMOV	AVG RA SS (mg/L)	AVG EFF SS (mg/L)	PERCEN REMOV	AVG RA PHOS. (mg/L)	AVG EFF PHOS. (mg/L)	PERCEN REMOV
JAN	12.7	0.409	0.570	145.0			153.0			11.0		
FEB	7.0	0.251	0.280	180.0			246.0			10.0		
MAR	10.5	0.340	0.460	165.0			123.0			8.4		
APR	9.8	0.326	0.350	134.0	7.63	94.3	108.0	11.50	89.4	6.4	0.12	98.1
MAY	9.7	0.314	0.380	130.0			129.0			8.2		
JUN												
JUL												
AUG												
SEP												
OCT												
NOV												
DEC												
TOTAL	49.8											
AVG		0.328		150.8	7.63	94.3	151.8	11.50	ERR	8.8	0.12	98.1
MAX			0.570	180.0	7.63		246.0	11.50		11.0	0.12	
CRITERIA					25.00			25.00			1.00	
COUNT						1			1			1
COMPLIANCE					YES			YES			YES	

ANTICIPATED COMPLIANCE DATE (MM/YY) ——>

REASONS FOR FAILURE / OTHER PROBLEMS:

1. -
2. -
3. -

REMEDIAL ACTIONS:

1. -
2. -
3. -

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX COMPLIANCE STATUS REPORT - SOUTHEASTERN REGION UTILITY OPERATIONS XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

SEWAGE

MUNICIPALITY: ST.ISIDORE YEAR: 1994 CONTINGENCY PLAN UPDATED (DD/MM/YY):

PROJECT: ST.ISIDORE W.S.P. WATER COURSE: SCOTCH RIVER

PROJECT NUM.: 1-0191-69-00 DESIGN CAPACITY: 0.655 X 1000 M3/d SIGNATURE OF OPERATIONS OFFICER:

DESCRIPTION: A THREE CELL LAGOON

ONTH	FLOWS			BIOCHEMICAL O2 DEMAND			SUSPENDED SOLIDS			PHOSPHORUS		
	TOTAL FLOW 1000M3	AVG DAY FLOW 1000M3	MAX DAY FLOW 1000M3	AVG RAW BOD (mg/L)	AVG EFF BOD (mg/L)	PERCENT REMOVAL	AVG RAW SS (mg/L)	AVG EFF SS (mg/L)	PERCENT REMOVAL	AVG RAW PHOS. (mg/L)	AVG EFF PHOS. (mg/L)	PERCENT REMOVAL
JAN	7.3	0.235	0.310	195.0			165.0			10.4		
FEB	6.7	0.239	0.360	155.0			151.0			9.2		
MAR	9.0	0.290	0.630	35.0			127.0			8.0		
APR	13.7	0.456	0.590	76.0			79.0			3.8		
MAY	9.6	0.310	0.360	145.0	13.25	90.9	138.0	10.75	92.2	6.4	0.17	97.4
JUN	9.8	0.328	0.440	130.0			128.0			6.5		
JUL	9.9	0.320	0.440	175.0			180.0			8.3		
AUG	9.6	0.309	0.430	140.0			131.0			8.2		
SEP	8.8	0.293	0.310	140.0			117.0			8.0		
OCT	8.9	0.285	0.300	58.0			46.0			3.4		
NOV	9.9	0.331	0.400	170.0			186.0			7.2		
DEC	10.3	0.333	0.460	78.0			64.0			4.4		
TAL	113.6											
/G		0.311		124.8	13.25	90.9	126.0	10.75	ERR	7.0	0.17	97.4
X			0.630	195.0	13.25		186.0	10.75		10.4	0.17	
ITERIA					25.00			25.00			1.00	
UNT						1			1			1
MPLIANCE					YES			YES			YES	

ICIPATED COMPLIANCE DATE (MM/YY) ----->

SONS FOR FAILURE / OTHER PROBLEMS:

1. -
2. -
3. -

MEDIAL ACTIONS:

1. -
2. -
3. -

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX COMPLIANCE STATUS REPORT - SOUTHEASTERN REGION UTILITY OPERATIONS XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

SEWAGE

MUNICIPALITY: ST.ISIDORE YEAR: 1993 CONTINGENCY PLAN UPDATED (DD/MM/YY):

PROJECT: ST.ISIDORE W.S.P. WATER COURSE: SCOTCH RIVER

PROJECT NUM.: 1-0191-69-00 DESIGN CAPACITY: 0.655 X 1000 M3/d SIGNATURE OF OPERATIONS OFFICER:

DESCRIPTION: A THREE CELL LAGOON

MONTH	FLOWS			BIOCHEMICAL O2 DEMAND			SUSPENDED SOLIDS			PHOSPHORUS		
	TOTAL FLOW 1000M3	AVG DAY FLOW 1000M3	MAX DAY FLOW 1000M3	AVG RAW BOD (mg/L)	AVG EFF BOD (mg/L)	PERCENT REMOVAL	AVG RAW SS (mg/L)	AVG EFF SS (mg/L)	PERCENT REMOVAL	AVG RAW PHOS. (mg/L)	AVG EFF PHOS. (mg/L)	PERCENT REMOVAL
JAN	9.4	0.301	0.500	200.0			230.0			7.6		
FEB	6.7	0.239	0.280	72.0			68.0			5.5		
MAR	8.3	0.266	0.420	106.0			103.0			7.2		
APR	14.7	0.490	0.610	56.0	9.00	83.9	99.0	13.00	86.9	4.2	0.50	88.1
MAY	9.7	0.312	0.470	82.0	19.50	76.2	85.0	44.00	48.2	5.6	0.40	92.9
JUN	15.0	0.500	0.790	150.0			71.0			10.2		
JUL	8.7	0.301	0.520	135.0			266.0			8.6		
AUG	7.9	0.255	0.280	145.0			146.0			9.4		
SEP	8.1	0.271	0.520	190.0			251.0			8.6		
OCT	8.1	0.262	0.290	112.0			106.0			8.0		
NOV	9.2	0.307	0.380	175.0			112.0			5.4		
DEC	8.8	0.283	0.330	255.0			245.0			8.2		
TOTAL	114.7											
AVG		0.316		139.8	14.25	80.1	148.5	28.50	ERR	7.4	0.45	90.5
MAX			0.790	255.0	19.50		266.0	44.00		10.2	0.50	
CRITERIA					30.00			40.00			1.00	
COUNT						2			2			2
COMPLIANCE					YES			NO			YES	

ANTICIPATED COMPLIANCE DATE (MM/YY) ----->

REASONS FOR FAILURE / OTHER PROBLEMS:

1. -
2. -
3. -

REMEDIAL ACTIONS:

1. -
2. -
3. -

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX COMPLIANCE STATUS REPORT XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
SEWAGE

MUNICIPALITY: ST. ISIDORE DE PRESCOTT
PROJECT: WASTE STABILIZATION PONDS
WORKS NUM.: 110002210

YEAR: 1992
WATER COURSE: SCOTCH RIVER
DESIGN CAPACITY: 0.655 X 1000 m3/d

DESCRIPTION: A THREE CELLED WASTE STABILIZATION POND POSSESSING A TOTAL SURFACE AREA OF 36 ACRES. THE LAGOON IS DISCHARGED ON AN ANNUAL BASIS TO THE SCOTCH RIVER, A TRIBUTARY OF THE NATION RIVER. PHOSPHOROUS REMOVAL IS ACCOMPLISHED VIA "BATCH" TREATMENT WITH ALUMINUM SULPHATE. THE LAGOON SITE IS SITUATED ON LOT 9, CONCESSION XVII, TOWNSHIP OF SOUTH PLANTAGENET (NORTHERN TERMINUS OF CAMPEAU ROAD). THE PUMPING STATION WHICH PROVIDES THE IMPETUS TO DELIVER SEWAGE TO THE WSP IS LOCATED ON STE. CATHERINE ST.

MONTH	FLOWS			BIOCHEMICAL O2 DEMAND			SUSPENDED SOLIDS			PHOSPHORUS		
	TOTAL FLOW 1000M3	AVG DAY FLOW 1000M3	MAX DAY FLOW 1000M3	AVG RAW BOD (mg/L)	AVG EFF BOD (mg/L)	PERCENT REMOVAL	AVG RAW SS (mg/L)	AVG EFF SS (mg/L)	PERCENT REMOVAL	AVG RAW PHOS. (mg/L)	AVG EFF PHOS. (mg/L)	PERCENT REMOVAL
JAN	8.101	0.261	0.352	127.0			157.0			7.9		
FEB	6.876	0.237	0.287	93.0			139.0			7.9		
MAR	10.336	0.333	0.467	83.0			86.0			6.9		
APR	12.146	0.405	0.497	77.0			89.0			5.6		
MAY	9.115	0.294	0.336	116.0	15.30	86.8	158.0	33.70	78.7	8.8	0.65	92.6
JUN	8.571	0.286	0.325	111.0			126.0			6.7		
JUL	10.078	0.325	0.474	123.0			257.0			6.0		
AUG	8.985	0.290	0.377	153.0			211.0			9.4		
SEP	8.558	0.285	0.329	105.0			131.0			6.8		
OCT	7.837	0.261	0.276	133.0			76.0			6.8		
NOV	9.891	0.330	0.419	77.0			93.0			6.1		
DEC	8.368	0.270	0.372	118.0			129.0			7.3		
TOTAL	108.662											
AVG		0.298		109.7	15.30	86.80	137.7	33.70	78.70	7.2	0.65	92.60
MAX			0.497	153.0	15.30		257.0	33.70		9.4	0.65	
CRITERIA					25.00			25.00			1.00	

COMPLIANCE		YES		NO		YES	

COMMENTS: THE ABOVE DATA WAS DERIVED FROM THE OPERATING AUTHORITY'S UMIS (UTILITY MONITORING INFORMATION SYSTEM) SUBMISSIONS.

EFFLUENT QUALITY "CONFORMANCE" IS BASED UPON M.O.E.E. POLICY 08-01.

APPENDIX "B" - LOCATION MAP & PROCESS FLOW DIAGRAM

Ministry of the Environment
Ontario

SEWAGE

Instructions/specifications on reverse of form before completing.
All information must be filled in for request to be processed!
All analysis except pH recorded in mg/L unless otherwise indicated.

Southeastern Region
Sample Submission Form

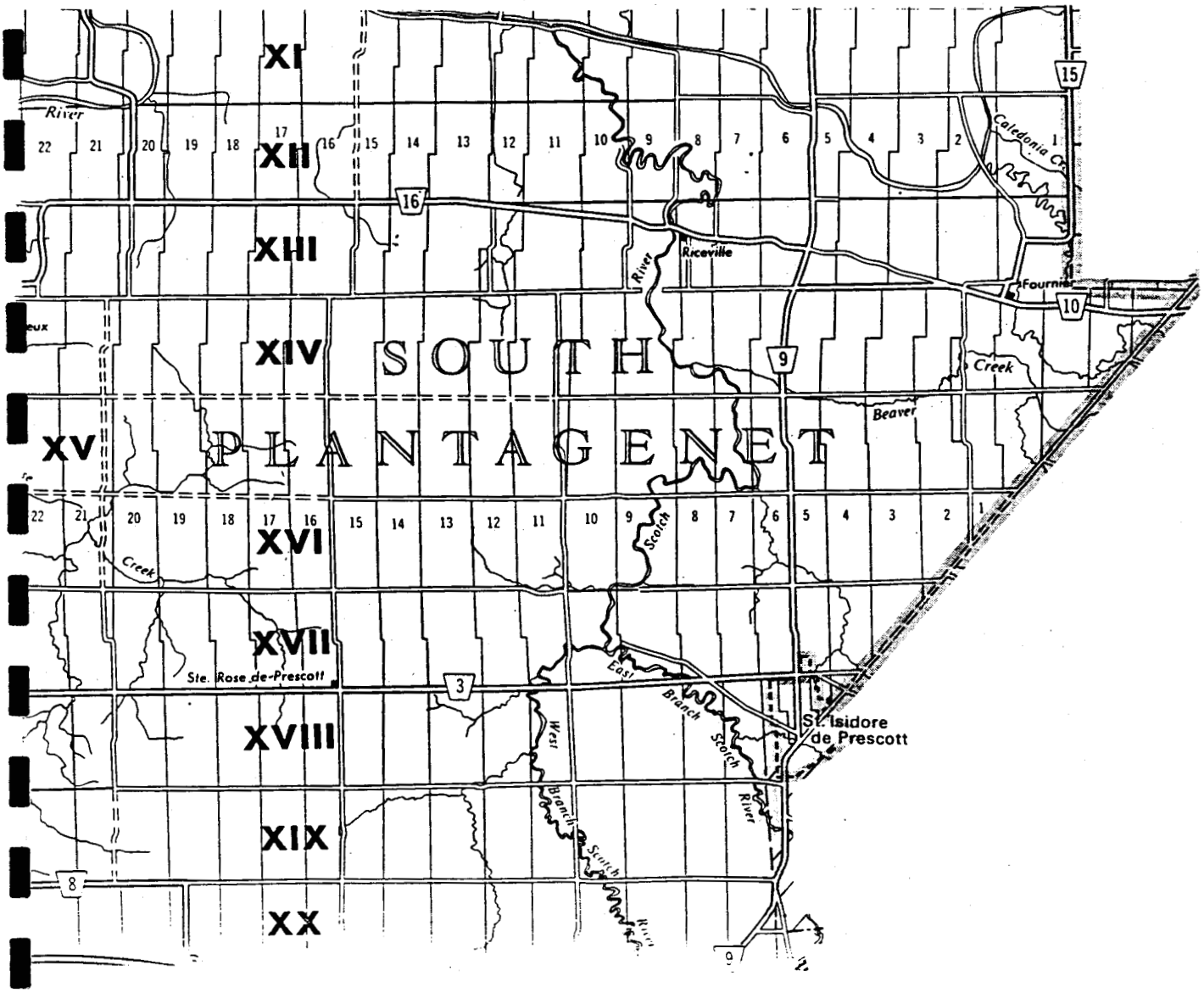
Municipality: ~~MR~~ CASSELMAN & ST. ISIDORE	Report to: L.L. BENOIT	Telephone: 613 933 7402	Inorg. Chem. ✓
Source: RECEIVING STREAMS	Address: 205 AMELIA		Org. Chem.
Program: COMPLIANCE INSPECTIONS	City: CORNWALL	Postal Code:	Heavy Metals
Date Sampled: APRIL 25/95 / Date Analysed: / Date Reported: MAY 05 1995	Copy to:		Bacterial
Sampled by:	Ministry Authorization:		Biological

Lab Number	Sender's Number	Sampling Point Location and Time	Nature of Sample, Dangerous Constituents, Preservatives used, Compositing data, etc.	Chlorine (ppm) Total	Chlorine (ppm) Free
K1765	CS-1	S. NATION - UPSTREAM	(2 JARS) SEWAGE/STREAM	~~10.9~~ 11.5 10.5 °C	D.O.
66	CS-2	FINAL EFFLUENT	" "		
67	CS-3	300 M - DOWNSTREAM	" "	~~14.500~~ 8.4 °C	
68	ST.I-1	UPSTREAM	" "		
69	ST.I-2	FINAL EFFLUENT	" "	~~13.8~~ 13.5	D.O.
70	ST.I-3	DOWNSTREAM	" "	~~8.3~~ 8.3 °C	D.O.

* Please fill out separate submission forms for each location. C.G. N/C

Lab Number	BOD	Suspended Solids	Total Kjeldahl Nitrogen as N	Total Phosphorus as P	AMMONIA as N	NITRITE as N	NITRATE as N
K17-65	2.2	15	1.6	.04	.01	.014	1.31
66	22	32	16.3	.4	10.0	.01	.1
67	1.0	15	.9	.04	.07	.016	1.26
68	3.2	27	1.0	.08	<.01	.026	1.29
69	11	16	3.0	.28	1.1	.18	.12
70	3.2	60	.6	.08	.05	.026	1.43

0951 M3 (06/92)


XI
XII
XIII
XIV
SOUTH
XV
PLANTAGENET
XVI
XVII
XVIII
XIX
XX
Riceville
Fournier
Creek
Beaver
Scotch
River
Ste. Rose de-Prescott
St. Isidore
de Prescott
East
Branch
West
Branch
Scotch
River
Caledonia Cr.
15
16
9
10
3
8

CALEDONIA

APPENDIX "C" - CERTIFICATES OF APPROVAL

Ministry of the Environment / Ministère de l'Environnement

Ontario

CERTIFICATE OF APPROVAL
SEWAGE
NUMBER 3-0939-91-006

WHEREAS

Raymond Gignac
223 Ste-Catherine St.
St-Isidore de Prescott, Ontario
K0C 2B0

SEP 10 199

CORNWALL

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:

sanitary sewers and appurtenances to be constructed in the Village of St-Isidore de Prescott, as follows:

STREET	FROM	TO
Parent St.	Approx. 25m W. of Guy St.	Guy St.

including stub sanitary sewers and sanitary service drains from the main sewer to the street line, all in accordance with the final plans and specifications prepared by Desjardins/Lascelles Eng., Consulting Engineers, at a total estimated cost, including engineering and contingencies, of SEVEN THOUSAND DOLLARS ($7,000.00), and all additional stub sanitary sewers and sanitary service drains from the main sewer to the street line, not included in the above final plans and specifications as may be approved by the operating authority in the future in accordance with Condition No. 1 of this Certificate of Approval.

You are hereby notified that the approval granted by the Director has been issued to you subject to the conditions outlined below:

TERMS AND CONDITIONS

1. The operating authority shall not approve any additional stub sanitary sewers and sanitary service drains from the main sewer not included in the documents referred to above unless it has reviewed the hydraulic capacity of the downstream sanitary sewer collection system and the sanitary sewage treatment works serving them and has concluded that the additional stub sanitary sewers and sanitary service drains together with all existing and previously approved stub sanitary sewers and sanitary service drains will not overload either the downstream sanitary sewer collection system or the sanitary sewage treatment works and has recorded its review and conclusion in writing. This records shall be maintained by the operating authority and shall be summarized in a yearly report to be sent to the District Officer of the Ministry's District Office by February 15th of the following calendar year in which the records were collected.

NOTICE

You are hereby notified that Conditional Certificate of Approval No. 3-0939-91-006 has been issued to you subject to the conditons outlined therein.

The reasons for the imposition of these conditions are as follows:

1. To ensure that all proposed sanitary sewer connections, including future connections, will be serviced adequately by the downstream sanitary sewer collection system and will be within the treatment capacity of the downstream sanitary sewage treatment works, both in terms of any effluent requirements and hydraulically.

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 63 of the Ontario Water Resources Act, R.S.O. 1980, C. 361, as amended, provides that the Notice requiring the hearing shall state:

1. *The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;*
2. *The grounds on which you intend to rely at the hearing in relation to <u>each</u> portion appealed.*

In addition to these statutory requirements, the Notice should 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 should be served upon:

The Secretary,
Environmental Appeal Board
112 St. Clair Avenue West,
5th Floor
Toronto, Ontario,
M4V 1N3

AND

The Director,
Section 24, OWR Act,
Ministry of the Environment,
250 Davisville Avenue,
Toronto, Ontario
M4S 1H2

Ministry of the Environment / Ministère de l'Environnement

Ontario

ERTIFICATE OF APPROVAL
S E W A G E
NUMBER 3-0939-91-006

This is to certify that after due enquiry the proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 19th day of August 1991

W. Gregson, P. Eng.
Director
Section 24, O.W.R. Act

VP/pm
cc : N. Booneville, Clerk, Village of St. Isidore
B. Ward, MOE SE, Reg. Dir.
Desjardins/Lascelles Eng.

THIS IS A TRUE COPY OF THE
ORIGINAL POSTED AND MAILED
ON .....
(SEAL)

Ministry of the Environment / Ministère de l'Environnement

MAY 1 1987

REGIONAL DIRECTOR'S OFFICE
KINGSTON

Certificate of Approval (Sewage)
Certificat d'autorisation (eaux usées)

Number / *Numéro* 3-0107-87-006

Whereas / *Attendu que* ..... SYLVAIN RANGER .....

of / *d* ..... ST. ISIDORE DE PRESCOTT, ONTARIO .....

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:
a fait, conformément à l'article 24 de la loi sur les ressources en eau de l'Ontario, une demande d'autorisation:

Sanitary and storm sewers and appurtenances to be constructed in the Sylvain Ranger Development in the Village of St. Isidore de Prescott as follows:

STREET	FROM	TO
Place Madeleine	Chemin Caledonia	Chaplain Street

Including stub sewer connections and building sewers from the main sewer to the street line, all in accordance with the plans prepared by Desjardins/Lascelles Engineering Limited, Consulting Engineers, at a total estimated cost, including engineering and contingencies, of FORTY EIGHT THOUSAND DOLLARS ($48,000.00).

APR 28 1987

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.
Le présent document certifie qu'après vérification en bonne et due forme la construction dudit projet d'ouvrages a été approuvée aux termes de l'article 24 de la loi sur les ressources en eau de l'Ontario.

DATED AT TORONTO this 23 day of April, 1987
DATÉ À TORONTO ce *jour d*

cc:-Mr. N. Bonneville, Clerk, Village of St. Isidore de Prescott
-M. D. Cuscott, MOE SE, Reg. Dir.
-Desjardins/Lascelles Engineering Ltd.

/an

Ontario

Certificate of Approval
(Sewage)

ENVIR
FEB 4 1980

Whereas ..... VILLAGE OF ST. ISIDORE DE PRESCOTT ..... KINGSTO.....

STP

~~XX~~

has applied in accordance with Section 42 of The ~~Ontario Water Resources~~ Act for approval of:-

Sanitary sewer and appurtenances to be constructed in the Village of St. Isidore de Prescott as follows:

STREET	FROM	TO
Proposed Road North of Gareau Crescent	Approx. 300' North and East of Gareau Crescent	Gareau Crescent

including building sewers from the main sewer to the street line, all in accordance with the plans prepared by Andre E. Desjardins, P. Eng., Consulting Engineer, at a total estimated cost, including engineering and contingencies, of TEN THOUSAND DOLLARS ($10,000.00).

THIS IS A TRUE COPY OF THE ORIGINAL SIGNED
ON: 22/1/80
EC

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 42 of The Ontario Water Resources Act.

DATED AT TORONTO this 18th day of January, 19 80

Attn:-Mr. J.R. Seguin, Clerk, St. Isidore de Prescott
cc:-Mr. R. Guindon, Village Engr.
-Mr. R.E. Moore, MOE SE Reg. Dir.
-Andre E. Desjardins, P. Eng.

/gc

Director

MOE 0731 10/78

Ontario

-MHWS

Certificate of Approval

MINISTRY OF THE ENVIRONMENT

(Sewage)

Whereas ..... VILLAGE OF ST. ISIDORE DE PRESCOTT JAN 7 1980 .....

XX CORNWALL

has applied in accordance with Section 42 of The Ontario Water Resources Act for approval of:-

Sanitary sewer and appurtenances to be constructed in the Village of St. Isidore de Prescott as follows:

STREET	FROM	TO
St. Denis Street	Caledonia Boundary Road	Cul-de-Sac

including building sewers from the main sewer to the street line, all in accordance with the plans prepared by Andre E. Desjardins, P. Eng., Consulting Engineer, at a total estimated cost, including engineering and contingencies, of FIVE THOUSAND TWO HUNDRED FIFTY DOLLARS ($5,250.00).

THIS IS A TRUE COPY OF THE ORIGINAL CERTIFICATE MAILED ON Dec 19/79

M

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 42 of The Ontario Water Resources Act.

DATED AT TORONTO this 17th day of December, 1979

Attn:-Mr. J.R. Seguin, Clerk, Village of St. Isidore de Prescott
cc:-Mr. R. Guindon, Village Engr.
-Mr. R.E. Moore, MOE SE Reg. Dir.
-Andre E. Desjardins, Consulting Engr.

/gc

D.P. Caplice

Director

MOE 0731 10/78

Ministry of the Environment

Certificat d'autorisation (eaux usées)

Number / *Numéro* 3-0107-87-006

MINISTRY OF THE ENVIRONMENT

MAY 1 1987

REGIONAL DIRECTOR'S OFFICE
CORNWALL

Whereas / *Attendu que* ..... SYLVAIN RANGER .....

of / *d* ..... ST. ISIDORE DE PRESCOTT, ONTARIO .....

MAY 7 1987

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:
a fait, conformément à l'article 24 de la loi sur les ressources en eau de l'Ontario, une demande d'autorisation:

Sanitary and storm sewers and appurtenances to be constructed in the Sylvain Ranger Development in the Village of St. Isidore de Prescott as follows:

STREET	FROM	TO
Place Madeleine	Chemin Caledonia	Champlain Street

including stub sewer connections and building sewers from the main sewer to the street line, all in accordance with the plans prepared by Desjardins/Lascelles Engineering Limited, Consulting Engineers, at a total estimated cost, including engineering and contingencies, of FORTY EIGHT THOUSAND DOLLARS ($48,000.00).

APR 2 3 1987

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

Le présent document certifie qu'après vérification en bonne et due forme la construction dudit projet d'ouvrages a été approuvée aux termes de l'article 24 de la loi sur les ressources en eau de l'Ontario.

DATED AT TORONTO this 23 day of April, 1987
DATÉ À TORONTO ce *jour d*

cc:-Mr. N. Bonneville, Clerk, Village of St. Isidore de Prescott
-Mr. D. Guscott, MOE SE, Reg. Dir.
-Desjardins/Lascelles Engineering Ltd.

/ak

0731 06/84

Ministry of the Environment

Ontario

Sewage Works Approval

Certificate No. 1-0191-69-763856

Attn: Mr. P. C[illegible]treet, Project Manager
Project Coordination Br., MOE

cc: Mr. D. Barker, Banadia British Engineering Consultants Ltd.
Mr. J. Toth, MOE Manag Tech. Svcs Br.,

Whereas THE PROVINCE OF ONTARIO

of St. Isidore

Air Approval attached

has applied in accordance with Section 42 of The Ontario Water Resources Act for approval of: –

Construction of sanitary sewage facilities to serve the Village of St. Isidore de Prescott as follows:

STREET	FROM	TO
Rue St. Catherine	approx. 510' north of Rue St. Isidore	Caledonia Boundary Rd.
Rue Lamoureux	Rue Guy	Rue St. Isidore
St. Alponse Lane	Rue Lamoureux	Rue St. Catherine
Rue Guy	approx. 110' south of Rue St. Isidore	Rue de la Salle
Rue St. Isidore	approx. 180' east of Rue Lamoureux	Rue Lamoureux
Rue St. Isidore	approx. 280' east of Rue St. Catherine	Rue St. Catherine
Rue Jacques	approx. 200' east of Rue Lamoureux	Rue Lamoureux
Caledonia Boundary Road	approx. 680' north of Rue St. Catherine	Rue St. Catherine
Caledonia Boundary Road	approx. 980' south of Rue St. Catherine	Rue St. Catherine
Rue Parent	approx. 280' west of Gareau Crescent	Rue St. Catherine

COPY OF THIS [illegible] MAILED ..2

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 42 of The Ontario Water Resources Act.

DATED AT TORONTO this 18th day of February 19 76

cc: Mr. C. McIntyre, MOE S.E. Regional

Sewage Works Approval

Village of St. Isidore De Prescot

Whereas

of

has applied in accordance with Section 42 of The Ontario Water Resources Act for approval of: –

Sewage Pumping Station

Construction of a submersible sewage pumping station to be located on the west side of Rue St. Catherine approximately 200 feet north west of Caledonia Boundary Road, to be equipped initially with two (2) submersible pumps each having a capacity of 400 igpm against a Total Dynamic Head of 83 feet; an emergency overflow; provision for by-passing the station; magnetic flow meter; and a standby diesel generating set, including all necessary appurtenances and controls, all in accordance with the final plans and specifications prepared by Canadian British Engineering Consultants Ltd. at a total estimated cost, including land charges, engineering and contingencies of ONE MILLION, NINE HUNDRED AND ELEVEN THOUSAND DOLLARS ($1,911,000.00).

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 42 of The Ontario Water Resources Act.

DATED AT TORONTO this 18th day of February 19 76

Ministry of the Environment / Ministère de l'Environnement
Ontario

MAR 2 7 1991

Certificat f Approval (Sewage)
Certificat a autorisation (eaux usées)

Number / *Numéro* 3-0095-91-006

Whereas / *Attendu que* YVON BESNER

of / *d* ST-ISIDORE DE PRESCOTT, ONTARIO

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:
a fait, conformément à l'article 24 de la loi sur les ressources en eau de l'Ontario, une demande d'autorisation:

sanitary sewers and appurtenances to be constructed in the Village of St-Isidore de Prescott as follows:

STREET	FROM	TO
Guy Street	Parent Street	approx. 105 m Northerly

including stub sanitary sewers and sanitary service drains from the main sewer to the street line, all in accordance with the following documents, namely, final plans and specifications prepared by Desjardins/Lascelles Engineering Limited, Consulting Engineers, at a total estimated cost, including engineering and contingencies, of TWENTY THOUSAND DOLLARS ($20,000.00), and all additional stub sanitary sewers and sanitary service drains from the main sewer to the street line, not included in the above final plans and specification as may be approved by the operating authority in the future in accordance with the condition No. 1 of this Certificate of Approval.

SPECIAL TERMS AND CONDITIONS

1. The operating authority shall not approve any additional stub sanitary sewers and sanitary service drains from the main sewer not included in the documents referred to above unless it has reviewed the hydraulic capacity of the downstream sanitary sewer collection system and the sanitary sewage treatment works serving them and has concluded that the additional stub sanitary sewers and sanitary service drains together with all existing and previously approved stub sanitary sewers and sanitary service drains will not overload either the downstream sanitary sewer collection system or the sanitary sewage treatment works and has recorded its review and conclusion in writing. This record shall be maintained by the operating authority and shall be summarized in a yearly report to be sent to the District Officer of the Ministry's District Office by February 15th of the following calendar year in which the records were collected.

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

***Le présent document** certifie qu'après vérification en bonne et due forme la construction dudit projet d'ouvrages a été approuvée aux termes de l'article 24 de la loi sur les ressources en eau de l'Ontario.*

DATED AT TORONTO this 26th day of March, 1991
DATÉ À TORONTO ce *jour d*

c.c.: N. Bonneville, Clerk, Village of St-Isidore de Prescott
Desjardins/Lascelles Engineering Limited
W.R. Ward, MOE Director, S.E. Region

HS/mb

0731 02/90

Director / *Directeur*

Sewage Works Approval

Whereas Village of St. Isidore De Prescott

of

has applied in accordance with Section 42 of The Ontario Water Resources Act for approval of: –

Including building sewers from the main sewer to the street line:

Sanitary Forcemain:- approx. 9400 feet of 8" ∅ forcemain as follows:

STREET	FROM	TO
Rue St. Catherine	Pumping Station (200 feet N.W. of Caledonia Boundary Road)	Rue Parent
Rue Parent	Rue St. Catherine	County Road #3
Forced Road	County Road #3	1575 feet south of inlet to the Lagoon Site
Lagoon Site	Forced Road	Lagoon Inlet (1575 feet north of Forced Road)

Waste Stabilization Pond

A 36 acre (approximately) waste stabilization pond to be constructed in three cells, with provision for phosphorus removal, and to be located approx. 350 feet north of Forced Road in Lot 9, Concession 17, Township of South Plantagenet discharging annually to the Scotch River via approximately 800 feet of 18 inch diameter outfall sewer.

..4

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 42 of The Ontario Water Resources Act.

DATED AT TORONTO this 18th day of February 1976

Ontario

Ministry of the Environment

CERTIFICATE OF APPROVAL

(AIR)

Granted under Section 8 of The Environmental Protection Act, 1971

Application number 1-0191-69-763856 *This Certificate dated* February 18, *19* 76

Owner/Operator Province of Ontario

Owner/Operator address 135 St. Clair Avenue West, Toronto, M4V IP5

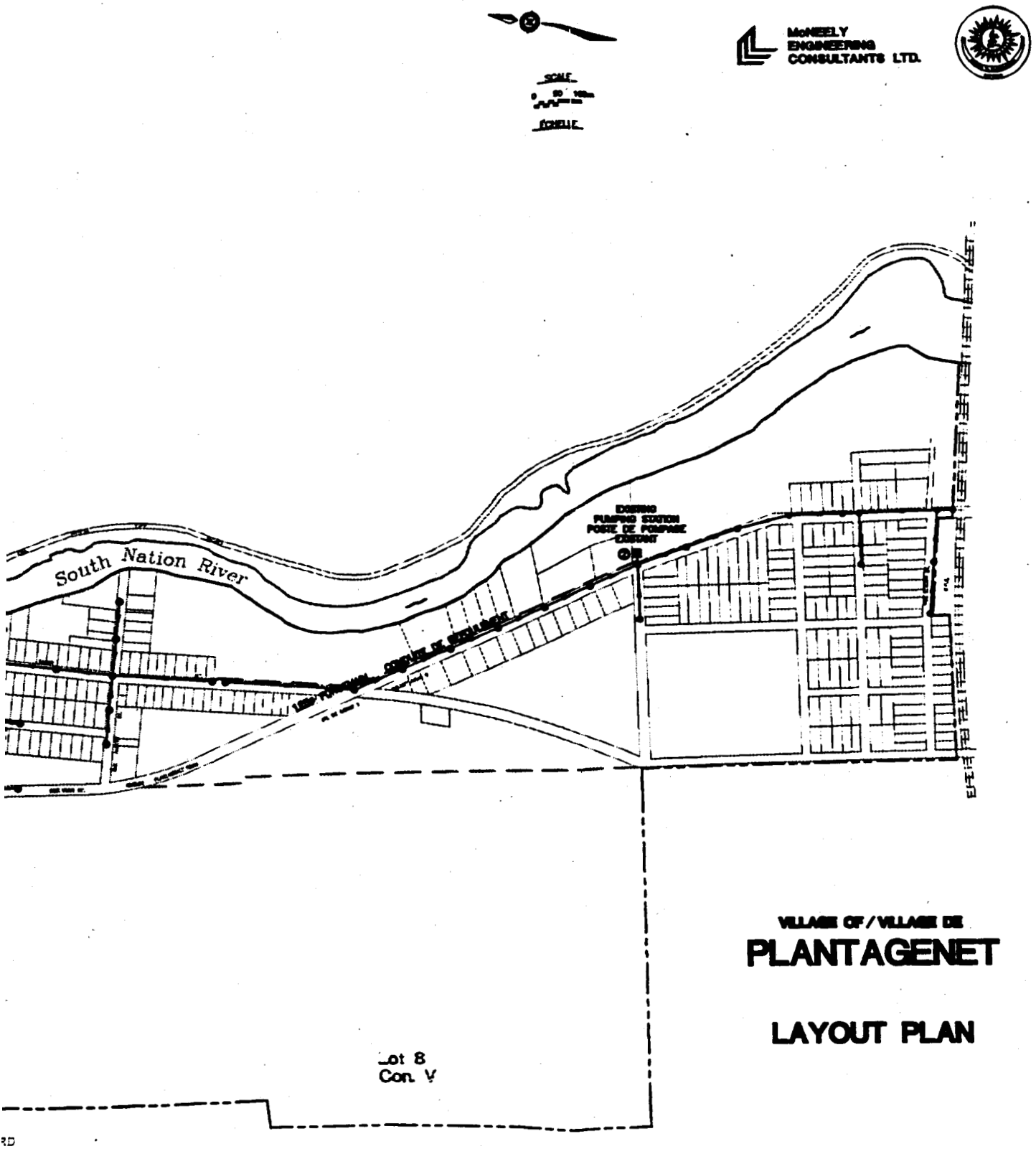
This approval is for three stabilization ponds with a total of approx. 36 acres designed for 360 day retention, with outfall to the Scotch River, to serve Village of St. Isidore De Prescott

located at approx. 350' N. of Forced Rd. in Lot 9, Concession 17, South Plantagenet Twp.

Your application has been reviewed on the basis of the information submitted and is approved, subject to the terms and conditions stated below.

D. P. Caluca

DIRECTOR



VILLAGE OF / VILLAGE DE

PLANTAGENET

LAYOUT PLAN

FIGURE 2

Ministry of the Environment / Ministère de l'Environnement
Ontario

Notice Avis

TO: Yvon Besner
R.R. #2
St-Isidore de Prescott, Ontario
K0C 2B0

You are hereby notified that final Certificate of Approval No. 3-0095-91-006 has been issued to you subject to the conditions outlined therein.

The reasons for the imposition of these conditions are as follows:

1. To ensure that all proposed sanitary sewer connections, including future connections, will be serviced adequately by the downstream sanitary sewer collection system and will be within the treatment capacity of the downstream sanitary sewage treatment works, both in terms of any effluent requirements and hydraulically.

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 63 of the Ontario Water Resources Act, as amended in 1983, provides that the Notice requiring the hearing shall state the portions of each term or condition in the approval in respect of which the hearing is required and the grounds on which you intend to rely at the hearing.

This Notice should be served upon:

The Secretary,
Environmental Appeal Board,
112 St. Clair Ave. West,
5th Floor,
Toronto, Ontario.
M4V 1N3

AND

The Director,
Section 24, O.W.R. Act,
Ministry of the Environment,
250 Davisville Avenue,
Toronto, Ontario.
M4S 1H2

DATED at Toronto this 26th day of March, 1991.

Director,
Section 24, O.W.R. Act,
Ministry of the Environment.

MAR 27 1991

1771 (11/89)

APPENDIX "D" - EXCERPTS of "WASTE WATER ASSIMILATION STUDY OF THE SOUTH NATION RIVER WATERSHED."

WASTE WATER ASSIMILATION STUDY of the South Nation River Watershed

Summary Report

January, 1993

Prepared by Gore and Storrie Limited (Ottawa)
for the South Nation River Conservation Authority
and the Ontario Ministry of the Environment

WASTE WATER ASSIMILATION STUDY

of the South Nation River Watershed

Summary Report

South Nation River Conservation Authority

Ontario Environment Environnement

GSS

RÉSUMÉ

Cette étude a été effectuée pour déterminer le potentiel d'assimilation des eaux usées par la rivière Nation-Sud. Une multitude de source ponctuelles d'eaux usées, tant municipales qu'industrielles, déversent déjà leurs effluents dans la rivière Nation-Sud. Les sources industrielles comptent présentement Ault Foods Ltée et Nestlé Ltée, tandis que la compagnie Fromages St-Albert Ltée viendra s'ajouter à cette liste. La plupart des municipalités qui déchargent présentement cherchent à accroître leur capacité, et d'autres municipalités planifient déverser elles aussi leurs eaux dans un avenir plus ou moins lointain. Toutes les municipalités traitent présentement leurs eaux au moyen de bassins de stabilisation conventionnels, communément appelés lagunes. Les municipalités qui comptent installer dans le futur des systèmes de collection et de traitement des eaux usées songent utiliser ce système elles aussi. La période de planification de cette étude est de 20 ans. Les industries ont fourni elles-mêmes leur projection d'accroissement. Les projections de populations utilisées proviennent de rapports précédents ainsi que de documents fournis par les diverses municipalités.

Le potentiel d'assimilation des eaux usées par une rivière est en quelque sorte la possibilité d'auto-purification inhérente à cette rivière. Ce potentiel peut être défini comme étant la capacité de transformer ou incorporer certaines substances (polluants etc.) par l'écosystème de sorte que la qualité de l'eau demeure à un niveau acceptable prédéterminé. On considère que la capacité d'assimilation est une ressource naturelle. L'exercice d'allouer ou diviser la capacité d'assimilation parmi plusieurs déchargeurs s'appelle l'allocation des décharges d'eaux usées.

Cette étude a examiné les performances passées des lagunes existantes. Certaines municipalités utilisent l'alun pour l'élimination du phosphore. La qualité du traitement des lagunes existantes est semblable à ce que l'on trouve en Ontario. Des données provenant de lagunes typiques ontariennes ont été utilisées pour arriver à un estimé conservateur de la qualité des effluents des lagunes. Les industries traitent leurs eaux au moyen de systèmes conçus pour leurs besoins spécifiques. Par le passé, ces systèmes ont eu des difficultés à se conformer aux normes imposées.

Toutes les données disponibles touchant la qualité de l'eau et aux débits de la rivière Nation-Sud ont été analysées. Suite à ces analyses, il a été déterminé que l'eau de la rivière Nation-Sud est basique, ayant un pH d'environ 7.5. La qualité de la rivière s'est améliorée depuis 12 ans. Cette amélioration est probablement due à la réduction de décharges d'eaux non-traitées dans la rivière, car plusieurs communautés se sont munies de systèmes d'épuration au cours de cette période. Par contre, les concentrations de phosphore sont constamment demeurées au-delà des normes gouvernementales. Les concentrations d'ammoniaque sont également restées élevées. Sur une base annuelle, 98% de l'ammoniaque et 93% du phosphore retrouvé dans la rivière provient de sources non-ponctuelles. Durant les périodes de déversement des eaux usées, par contre, plus de 50% de l'apport d'ammoniaque (la substance la plus problématique) provient de sources ponctuelles. De plus, lorsque le débit de la rivière

est très faible, la proportion d'ammoniaque provenant de sources non ponctuelles augmente sensiblement par rapport à l'apport total.

Les concentrations intrinsèques de certains polluants ont été estimées par des méthodes statistiques acceptées. La concentration intrinsèque de la demande biochimique d'oxygène (D.B.O.) est de 2.3 mg/L, tandis que celle de l'ammoniaque est de 0.18 mg/L.

Étant donné la concentration intrinsèque très élevée de phosphore, la rivière Nation-Sud n'a aucune capacité d'assimilation pour ce polluant. Toute nouvelle source ponctuelle d'eaux usées, qu'elle soit municipale ou industrielle, devra produire un effluent de très faible concentration en phosphore. De plus, les sources ponctuelles existantes devront améliorer leurs procédés de façon à augmenter autant que possible l'élimination du phosphore. Il est à noter que quelques lagunes ont commencé récemment à réduire leurs émissions de phosphore en ajoutant de l'alun à leurs procédés.

Le Ministère de l'environnement exige que les émissions totales de phosphore ne dépassent pas, pour un déchargeur donné, les limites imposées dans le Certificat d'autorisation du déchargeur en question. De plus, la concentration de phosphore de tout effluent ne doit pas dépasser 1 mg/L. Présentement, les communautés de Plantagenet, Winchester et la compagnie Ault Foods Ltée sont à la limite des restrictions imposées par leurs Certificats d'autorisation respectifs. On ne prévoit aucune augmentation d'émissions de phosphore. Une réduction des émissions actuelles est désirable.

Le potentiel d'assimilation des cours d'eau du bassin versant de la rivière Nation-Sud a été analysé sur une base des débits volumétriques 7Q20 et 30Q20. Une analyse statistique des débits de ces cours d'eau a été entreprise, et les débits de toutes les station de jaugeage ont été déterminés pour les saisons de l'automne et du printemps. En utilisant une fenêtre mobile de durée constante (soit 7 ou 30 jours), les hydrographes représentant les débits 7Q20 et 30Q20 ont été développés pour chaque station.

À partir de ces hydrographes, la période de dilution maximale de chaque station a été déterminée. Les débuts et les fins de ces périodes ne coïncidaient évidemment pas, étant donné la nature différente des cours d'eau à chaque station. Trois périodes ou fenêtres ont donc été définies. Les dates des débuts et fins de périodes furent utilisées pour définir ces fenêtres. La date de début la plus tardive et la date de fin la moins tardive bornent la fenêtre minimale (de durée minimale). La première des dates de début et la date de fin la plus tardive bornent la fenêtre maximale (de durée maximale). La moyenne des dates de début et la moyenne des dates de fin bornent la fenêtre moyenne (de durée moyenne). Une meilleure utilisation de l'hydrographe est possible en utilisant le concept des fenêtres multiples. Ceci résulte en une plus grande utilisation du potentiel d'assimilation de la rivière.

Pour chacune des stations, les débits volumétriques 7Q20 et 30Q20 de chacune des fenêtres mentionnées ci-haut ont été examinés. Les débits minimaux ont été retenus.

L'aire de chacun des bassins versants a été évaluée. Une corrélation a ensuite été dérivée entre les aires et les débits. Ces corrélations furent utilisées pour estimer les débits à tous les points d'intérêt. Les débits 7Q20 de l'automne ne furent pas calculés de cette façon, les données pour cette période étant trop éparpillées. Les débits 7Q20 pour l'automne furent calculés en multipliant le débit 7Q20 de l'automne à la station Plantagenet (estimé de façon statistique) par le ratio de l'aire du bassin versant au point d'intérêt à l'aire du bassin versant de la station Plantagenet.

En plus des bassins de stabilisation conventionnels, le système d'aération prolongée avec nitrification et le procédé New Hamburg furent considérés comme alternatives. Les effluents de ces trois types de traitement furent évalués afin de voir s'ils satisfaisaient les nouvelles normes de toxicité et de létalité contemplées par le Ministère de l'environnement. Ces normes s'appliquent sur l'effluent lui-même, avant même qu'il ne sorte de la conduite d'effluent. Afin de se conformer aux normes portant sur l'hydrogène sulfuré, toute lagune (existante ou projetée) devra se munir d'une cellule (petite lagune) d'aération. Il est aussi possible que les lagunes ne puissent produire un effluent conforme au normes portant sur l'ammoniaque, surtout lors de déversements printaniers. Malheureusement, le printemps est la période de déversement la plus importante, grâce à la fonte des neiges qui augmente les débits et du même coup la capacité d'assimilation. Les procédés d'aération prolongée et New Hamburg, quoique plus coûteux, produisent un effluent de meilleure qualité qui ne devrait avoir aucunes difficultés à rencontrer toutes les normes.

Les quantités d'eau de rivière disponible pour la dilution et l'assimilation de l'ammoniaque des eaux usées étaient insuffisantes chez certains déchargeurs. Le pH élevé de la rivière et la forte concentration intrinsèque d'ammoniaque contribuent à rendre l'ammoniaque le polluant limitant. Parmi ces déchargeurs, certains doivent relocaliser leur point de déversement à un endroit en aval où la dilution est plus grande. D'autres doivent améliorer la qualité de leur effluent en utilisant un traitement plus avancé (et plus coûteux).

Un modèle informatisé a été développé. La courbe en sac d'oxygène dissous fut trouvée grâce à une version modifiée de l'équation Streeter-Phelps. Cette équation incorporait, en plus des facteurs classiques, la demande azotée d'oxygène et la demande sédimentaire d'oxygène. La dégradation (ou assimilation) de la D.B.O. et l'ammoniaque fut caractérisée par des équations différentielles du premier ordre. La demande sédimentaire d'oxygène ne fut examinée que pendant l'automne, puisque les débits rapides et forts du printemps devraient en théorie débarrasser le lit riverain des matières biodégradables qui s'y sont déposées durant l'été. Le modèle tenait compte des débits d'eaux usées, des débits de base de la rivière et de ses affluents, des émergences d'eaux phréatiques etc.

En automne, les normes concernant l'oxygène dissous ne pouvaient être obéies même si tous les déchargeurs s'abstenaient de déverser leurs eaux usées. La faiblesse des débits automnaux, la concentration intrinsèque élevée de D.B.O. ainsi que la demande sédimentaire d'oxygène contribuent à cette situation déplorable. Toute possibilité de déversement automnal fut donc éliminée. La totalité des eaux usées devra donc être déversée pendant les fenêtres du printemps.

L'allocation des décharges d'eaux usées a été effectuée grâce au modèle pour les niveaux de population présents et futurs. La méthode consistait à maximiser l'utilisation de la capacité d'assimilation dans les région les plus en amont d'abord, puis de continuer successivement en aval.

Il fut déterminé que l'ammoniaque est le polluant limitant au printemps. Les résultats de l'optimisation sont les suivants:

- Pour les conditions présentes et futures, en utilisant les débits 7Q20 ou 30Q20, Williamsburg devra utiliser un système d'aération prolongée avec nitrification, car les faibles débits du drain McMartin ne peuvent assimiler l'effluent d'une lagune.

- Winchester devra relocaliser son point de décharge à la rivière Nation-Sud. Maxville et Ault Foods Ltée devront relocaliser leurs points de décharge plus en aval sur la rivière Castor.

- Pour les conditions présentes et projetées, en utilisant les débits 30Q20, toutes les autres communautés pourront faire le traitement de leurs eaux usées au moyen de lagunes conventionnelles.

- Pour les conditions présentes, en utilisant les débits 7Q20, toutes les autres communautés pourront faire le traitement de leurs eaux usées au moyen de lagunes conventionnelles.

- Pour les conditions futures, en utilisant les débits 7Q20, les communautés d'Embrun et de Moose Creek (en plus de Williamsburg) devront utiliser des systèmes d'aération prolongée avec nitrification. Toutes les autres communautés pourront faire le traitement de leurs eaux usées au moyen de lagunes conventionnelles.

- Un scénario de déchargement par étapes a été développé. Plus les conditions sont sévères, (en commençant par la condition présente avec les débits 30Q20 et en finissant avec la condition future avec les débits 7Q20) plus l'utilisation par étapes des trois fenêtres de base (maximale, moyenne et minimale) est nécessaire. L'utilisation par étapes des fenêtres permet une meilleure utilisation de l'hydrographe du printemps, donc un meilleure usage de la capacité d'assimilation de la rivière.

Une analyse de la zone de diffusion fut également entreprise. Il fallait voir si, lors de la diffusion des eaux usées traitées dans la rivière réceptrice, la concentration de l'ammoniaque ne violait aucune norme sur au moins 75 pour-cent de la surface de toute section transversale le long de la rivière. Cette analyse se bornait à l'ammoniaque, qui est le polluant limitant. L'objectif d'une zone de passage de 75 pour-cent peut être atteint partout le long de la rivière Nation-Sud pour les conditions présentes et futures aux débits 30Q20, et pour les conditions présentes aux débits 7Q20. Aux débits 7Q20, pour les conditions futures, les tronçons les plus en amont

ne peuvent pas fournir une zone de passage de 75 pour-cent. La plupart des affluents ne pouvaient fournir cette zone de passage sous aucunes conditions.

Une évaluation comparative des coûts des diverses options de traitement a été entreprise. Les traitements par aération prolongée avec nitrification ainsi que le procédé New Hamburg devraient avoir des coûts capitaux très semblables.

Les recommandations majeures découlant de cette étude sont les suivantes: un programme intensif de surveillance de la qualité des eaux des rivières du système Nation-Sud devrait être mis sur pieds; une analyse stochastique ayant pour but de définir la fréquence et durée des conditions nuisibles à la santé de la rivière devrait être entreprise; une étude approfondie des sources non ponctuelles de pollution devrait être entreprise afin d'éventuellement aboutir à la mise en oeuvre de mesures visant à diminuer l'apport non-ponctuel de pollution.

La possibilité de contrôler et faire varier les débits de déversement d'eaux usées au prorata des débits de la rivière offre le potentiel d'augmenter sensiblement le degré d'utilisation de la capacité d'assimilation des cours d'eaux.

Il est impératif d'établir des politiques claires sur les questions d'allocation des décharges d'eaux usées, ainsi que l'allocation des ressources hydriques. En plus des effets que ces politiques peuvent avoir sur la quantité des décharges permises, leurs traitements et coûts résultants, il faut considérer les enjeux socio-démographiques, politiques et socio-économiques de ces politiques.

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SECTION 1

INTRODUCTION

INTRODUCTION

The South Nation River currently receives municipal and industrial wastewater from twelve (12) locations in the watershed. An additional seven (7) point sources are projected and further growth is expected in many of the communities with existing facilities. Most of the existing discharges occur during the spring and fall periods, when river flows are high. The assimilative capacity of the stream during the summer and winter periods is very low was not considered.

The assimilative capacity of a stream is the ability of the stream to self-purify. It is defined as "the ability of a water body to transform and/or incorporate substances (e.g. nutrients) by the ecosystem such that the water quality does not degrade below a predetermined level". Assimilative capacity can be considered to be a natural resource. The process of dividing stream assimilative capacity among various dischargers is referred to as wastewater allocation.

In the past, if a sewage treatment plant required upgrading or expansion, an assessment of the receiving water would be carried out based on the local assimilative capacity. The effluent standards were based on the dilution or assimilative capacity of the receiving stream considering the individual plant only.

In the South Nation River system, many treatment facilities discharge into a relatively short river of modest flow. Because all facilities generally discharge during the spring runoff period, there is potential for overlapping wastewater plumes, resulting in a degradation of instream water quality below that expected for a single discharger. The Ministry of the Environment and the South Nation River Conservation Authority required that an assimilative capacity study of the wastewater loadings be undertaken considering the entire river system prior to making a decision on whether individual loadings can be increased.

In conjunction with this effort, an evaluation of the plume mixing zone (considering pollutant lethality) and the impact of non-point source pollutants (primarily agricultural) had to be considered.

Thus, the overall purpose of the study was to determine the assimilative capacity of the South Nation River and to develop an appropriate wastewater allocation scheme for the dischargers. In developing this scheme, the fact that all discharges are inter-related could not be overlooked. An optimization of wastewater load allocation was performed. This optimization minimized the amount of treatment and discharge point relocations for the watershed as a whole.

SECTION 2

STUDY SUMMARY

STUDY SUMMARY

The South Nation River watershed has been studied for its potential to assimilate wastewater effluents from point sources at existing and anticipated future growth conditions. In the future, in addition to population increases in existing communities, other communities will be discharging waste from water pollution control facilities. There are two industries, Nestlé and Ault Foods Ltd., currently discharging waste and one additional industry (St. Albert Cheese Ltd.) will discharge in the future. Except for the two industries, all of the communities that have water pollution control plants are using conventional facultative lagoons that discharge on an annual or semi-annual basis. Lagoons are being contemplated for communities that will release their wastewater to the South Nation River in the future. The future planning period for this study was 20 years. Industries were consulted for their expected growth during this period. The populations of the communities 20 years from now were estimated from population studies for the region and planning documents prepared by the municipalities.

Allocation of assimilative capacity for future conditions was dependent on estimates of future populations, specifically, regional population for the year 2011. For the purpose of this study, future population estimates were generated from growth projections of individual municipalities. Sources for the municipal growth projections included reports from independent consultants and various Official Plans. The resultant regional future population estimate, for the year 2001, was approximately 37,000, which is almost twice the present regional population. This population estimate provided the bases for the waste allocation analysis for future conditions. Detailed assessment of this regional population estimate, and the implied spatial distribution of growth, were beyond the scope of this study. Since the assimilative capacity of the South Nation River is, in effect, a shared resource, the regional population growth, rather than the growth aspirations of individual municipalities, should be assessed.

The study was divided into seven distinct steps. The first three steps involved data and information collection and analysis. The subsequent four steps used this information and data to determine the river system assimilative capacity and to develop the allocation scheme.

The first step was to look at the sewage treatment plants currently operating in the system. The existing lagoons were characterized for their design features and performance based on historical data. Phosphorus removal through alum addition is being practised at a number of facilities. Additional performance data from lagoons in Ontario were used to determine conservative lagoon effluent quality estimates. The industries have custom designed wastewater treatment facilities which have experienced some difficulty in recent years in meeting Certificate of Approval effluent specifications.

The second step was to collect and analyze river water quality data. Data from seven Ministry of Environment stations as well as the Plantagenet and Casselman water treatment plants were obtained. All available water quality and flow data for the streams of the watershed were analyzed. Water in the streams in the watershed is alkaline with a pH typically higher than 7.5. Water quality in the South Nation River system has been improving during the past 12 years as additional wastewater treatment capability has been installed. However, the background quality in the streams consistently remains above the Provincial Water Quality Objective for phosphorus. Ammonia levels are also high. On an annual basis the major source of ammonia and phosphorus is nonpoint sources. Annual nitrogen and phosphorus loads contributed by nonpoint sources to the South Nation River are greater than 98 and 93%, respectively. During the spring discharge period, however, point source contributions have reached high values of over 50% of the ammonia load in the river. Furthermore at low flow conditions the load contribution from point sources will significantly increase as a percentage of the total load in the river.

Background concentrations of pollutants in the stream were estimated from the 75 percentile stream concentrations yielding a five day biochemical oxygen demand (BOD_5) of 2.3 mg/L and total ammonia concentration of 0.18 mg/L.

With present background concentrations of phosphorus in the South Nation River system there is no assimilative capacity for phosphorus. New point sources will have to achieve low effluent total phosphorus (TP) concentrations along with concurrent reductions in non-point sources to return the rivers to a desirable state with respect to this pollutant. In existing lagoons, phosphorus reduction (usually with alum addition) has only been initiated recently.

The MOE policy currently requires that present and future TP loads remain at or below current loads and that TP concentrations of treated wastewater be below 1 mg/L. At present, Plantagenet, Winchester and the Ault Foods industry are at the limit of loads defined by their Certificates of Approval. Phosphorus loadings at future flow conditions are not expected to increase, and a reduction in current loadings is desirable.

The third step was to establish the hydrologic regime of the South Nation River system. The river flows are the critical parameter in determining the assimilative capacity of the system. This assimilative capacity was analyzed at 7Q20 and 30Q20 flow conditions. A low frequency flow analysis was carried out to determine these flows at each of the water gauging stations during the spring and fall periods. A moving window approach was used to characterize the 7Q20 or 30Q20 hydrographs at each station. From these hydrographs the "guaranteed" minimum volume available for dilution over any time span was determined. The period during which the maximum volume was available for dilution at each station was also determined. By comparing the starting and ending dates for the period of maximum dilution at each station, maximum, average and minimum windows were defined. Using the windows concept allowed greater utilization of the available river flow for wastewater assimilation and dilution.

The dilution volumes and stream flow rates available in each of the windows were determined for each gauging station and a correlation between contributing drainage area and flow was determined. These correlations were used to estimate flows at all existing and potential wastewater source locations and at other points in the watershed where stream confluence occurred. Fall 7Q20 flows were indirectly estimated based on the drainage area at a location relative to the drainage area at Plantagenet. The 7Q20 flows at Plantagenet were estimated with statistical techniques; however, scatter in the data at other stations was too large to allow the full implementation of the procedure used for the other flows.

The fourth step was to combine the information collected and calculated in the initial three steps to determine the relative toxicity of the lagoon effluent and the ability of each discharge to meet Provincial Water Quality Objectives under the calculated stream flow constraints.

In addition to lagoons, extended aeration with nitrification and New Hamburg processes were considered as possible upgrades to existing treatment. Of course, other options are available, but the three options considered in this study adequately cover the range of possible effluent quality. Effluents from all processes were examined for new toxicity standards being contemplated by MOE. The lethality standards for effluent are un-ionized ammonia less than 0.1 mg/L and undissociated hydrogen sulphide less than 0.02 mg/L. These standards apply to the effluent before it is discharged to the receiving water. It is also likely that lagoon effluent will violate the ammonia standard, particularly for spring discharges which is the prime discharge period for lagoons. Effluents for extended aeration or New Hamburg treatment are likely to be compliant with effluent lethality standards at all times.

Spring lagoon effluents were assumed to range between 1 and 3 mg/L for undissociated hydrogen sulphide. There is insufficient dilution capacity available at any location in the spring under either present or future conditions to reduce lagoon effluent undissociated hydrogen sulphide to Provincial Water Quality Objective stream values. Aeration will therefore be required in all lagoon treatment plants to strip hydrogen sulphide from the effluent.

In this first comprehensive study of assimilation in the watershed, the conservative and practical constraint of approximately constant discharge rates for the effluents was imposed. Maximum dilution factors available in the spring and fall were insufficient at some locations to meet Provincial Water Quality Objectives for ammonia. Because of the alkaline nature of the waters and the high background concentrations of ammonia, ammonia was the limiting pollutant. Relocation of some effluent discharge points to locations where sufficient dilution capacity is available was necessary.

A spreadsheet model was developed to characterize the watershed. A modified Streeter-Phelps equation incorporating nitrogenous oxygen demand and sediment oxygen demand was used to characterize dissolved oxygen variation. BOD and ammonia were decayed according to first order relations. Sediment oxygen demand was assumed to be present only in the fall due to accumulation of deposited organics over the low flow summer period. During the spring it was assumed that the higher

stream flows would scour deposited organics from the streams. The model incorporated waste flows, river and tributaries base flows as well as groundwater inflows at appropriate nodes. The spreadsheet model evaluated all streams to which point sources discharged and linked discharge windows for a more convenient automated solution.

Low flows in the fall as well as background dissolved concentrations and sediment oxygen demand resulted in Provincial Water Quality Objectives dissolved oxygen violations without any waste sources discharging. Therefore the fall period was eliminated from consideration for waste discharge. The current and future conditions were optimized to meet the Provincial Water Quality Objectives using the model. The solution approach was to maximize use of the assimilative capacity starting at the upstream end of the streams and working downstream.

During spring ammonia was found to be the pollutant limiting discharges. The results of the wastewater allocation optimizations are as follows.

- Small flows in McMartin Drain will require Williamsburg to install extended aeration treatment.
- Winchester, Maxville and Ault Foods Limited should relocate their effluent discharge points for all conditions. Winchester must move its discharge point to the South Nation River while Maxville and Ault Foods Limited must discharge further downstream in local receiving waters.
- At present and future growth conditions under 30Q20 stream flows, all other communities are able to use lagoon treatment.
- At present conditions under 7Q20 stream flows, all other communities are able to use lagoon treatment.
- At future growth conditions, under 7Q20 stream flows, Williamsburg, Embrun and Moose Creek should upgrade to extended aeration treatment or better. All other communities are able to use lagoon treatment.
- Staged discharge schemes were developed for the discharge of effluents under all windows. As conditions changed from present to future growth conditions or from 30Q20 to (the lower) 7Q20 flows greater use of all discharge windows had to be made.

The sixth step was to perform a mixing zone analysis. The criterion was that any waste source had to maintain a 75% zone of passage outside of the effluent plume where the concentrations of pollutants were within the Provincial Water Quality Objectives. The analysis was limited to ammonia and only conducted for spring discharge conditions because of uncertainty in fall travel time and flow estimations. The 75% zone of passage objective could be achieved everywhere on the South Nation River for both present and future 30Q20 conditions, and for the present 7Q20 conditions. It could not be achieved in the upper reaches of the South Nation River

for future 7Q20 conditions. Most tributary streams could not achieve the 75% zone of passage under any flow condition.

The final step was a cost analysis. A cursory evaluation of capital and operating costs was conducted to compare the various treatment options. The New Hamburg and extended aeration processes were found to have similar costs.

Major recommendations from this study include a more extensive monitoring of water quality in the watershed and a stochastic analysis to better define frequency and duration of deleterious stream conditions. Nonpoint pollution sources must be evaluated and corrective measures assessed for their potential to reduce background concentrations of nutrients and other contaminants.

Real time control of effluent discharges with variable rate discharges linked to streamflows offers the potential to reduce the treatment upgrade requirements or discharge point relocations.

Wastewater assimilative capacity is one of the factors which can affect or limit growth. Water allocation is another which should be considered. There is a requirement to develop a clear guideline on wastewater and water allocation for a watershed. Besides water and wastewater quantities and costs, the secondary effects of policies such as population demographics and other socioeconomic considerations must be addressed.

SECTION 3

SUMMARY OF DISCHARGERS

SUMMARY OF DISCHARGERS

3.1 *EXPLANATORY NOTES*

This section reviews all individual dischargers. Background information such as location, receiving stream, current and projected population, description of in-place treatment system etc. is listed for each discharger. The ability of each discharger to meet Provincial Water Quality Objectives is then discussed for the four cases examined in this study:

- Present conditions with 7Q20 flows
- Present conditions with 30Q20 flows
- Future conditions with 7Q20 flows
- Future conditions with 30Q20 flows

The flowrates and windows of discharge are given, as well as the type of treatment needed to comply with Provincial Water Quality Objectives. It should be noted once more that all discharges are inter-connected, and that the allocation scheme presented herein was developed to minimize the amount of treatment and discharge point relocations for the watershed as a whole. Recommendations for each discharger are also listed.

Table 3-1 list the starting and ending dates of the 7Q20 and 30Q20 windows. The window concept was briefly explained in Section 2. More explanations on this concept can be found in the Wastewater Allocation Study Report. Tables 3-2 to 3-5 summarise the allocation scheme for all four conditions. The watershed schematics are presented in Figure 3-1.

Table 3-1: Window Start Dates and End Dates and Duration

Flow Condition	Window	Start Date	End Date	Duration
7Q20	Maximum	March 22	May 13	53 days
	Average	March 25	April 26	33 days
	Minimum	March 30	April 13	15 days
30Q20	Maximum	March 16	April 24	40 days
	Average	March 20	April 20	32 days
	Minimum	March 28	April 15	19 days

Table 3-2 Optimum Wastewater Allocation and Treatment for Present 30Q20 Flows

Discharge Window	Point Source	Treatment[2]	Discharge Location[3]	Volume Discharged (m^3)	BOD_5 Loading (kg)	NH_{3T} Loading (kg)	Discharge Rate (m^3/s)
Max March 16 to April 24	Ault	I[1]	AB	193800	970	1180	0.0561
	Casselman	L	G	365000	10950	5110	0.1056
	Chesterville	L	M	296015	8880	4140	0.0857
	Embrun	L	Z	474500	14200	6640	0.1373
	Maxville	L	T	59860	1800	840	0.0173
	Nestle	I[1]	M	225862	3390	1380	0.0654
	Plantagenet	L	B	225202	6760	3150	0.0652
	Russell	L	AA	193085	5790	2710	0.0559
	Spencerville	L	Q	51100	1530	715	0.0148
	St. Isidore	L	S	127000	3810	1780	0.0368
	Williamsburg	EA	AG	64100	960	320	0.0185
	Winchester	L	N	629600	18900	8810	0.1822

1. Industrial treatments processes are custom designed
2. EA - extended aeration; L - lagoon
3. Discharge locations are nodes on Fig. 3-1.

Table 3-3 Optimum Wastewater Allocation and Treatment for Future 30Q20 Flows

Discharge Window	Point Source	Treatment[2]	Discharge Location[3]	Volume Discharged (m^3)	BOD_5 Loading (kg)	NH_{3T} Loading (kg)	Discharge Rate (m^3/s)
Max March 16 to April 24	Ault	I[1]	AB	455000	2280	2780	0.1317
	Bourget	L	V	230200	6910	3220	0.0666
	Casselman	L	G	944300	28300	13200	0.2732
	Chesterville	L	M	318800	9560	4470	0.0922
	Crysler	L	L	219000	6570	3070	0.0634
	Fournier	L	R	50900	1530	710	0.0147
	Maxville	L	T	61300	1840	860	0.0177
	Nestle	I[1]	M	225900	3390	1380	0.0654
	Plantagenet	L	B	254100	7620	3560	0.0735
	Russell	L	AA	865300	26000	12100	0.2504
	Spencerville	L	Q	69400	2080	970	0.0201
	St-Albert	L	J	138400	4150	1940	0.0400
	St-Albert Cheese	I[1]	J	22600	340	140	0.0065
	St-Isidore	L	S	176700	5300	2480	0.0511
	Williamsburg	EA	AG	70800	1060	350	0.0205
	Winchester	L	N	717200	21500	10000	0.2075
Ave March 20 to April 20	Embrun	L	Z	1551100	46500	21700	0.5610
	Moose Creek	L	X	101600	3050	1420	0.0368

1. Industrial treatments are custom designed
2. L - lagoon; EA - extended aeration
3. Discharge location nodes are indicated on Fig. 3-1.

Table 3-4 Optimum Wastewater Allocation and Treatment for Present 7Q20 Flows

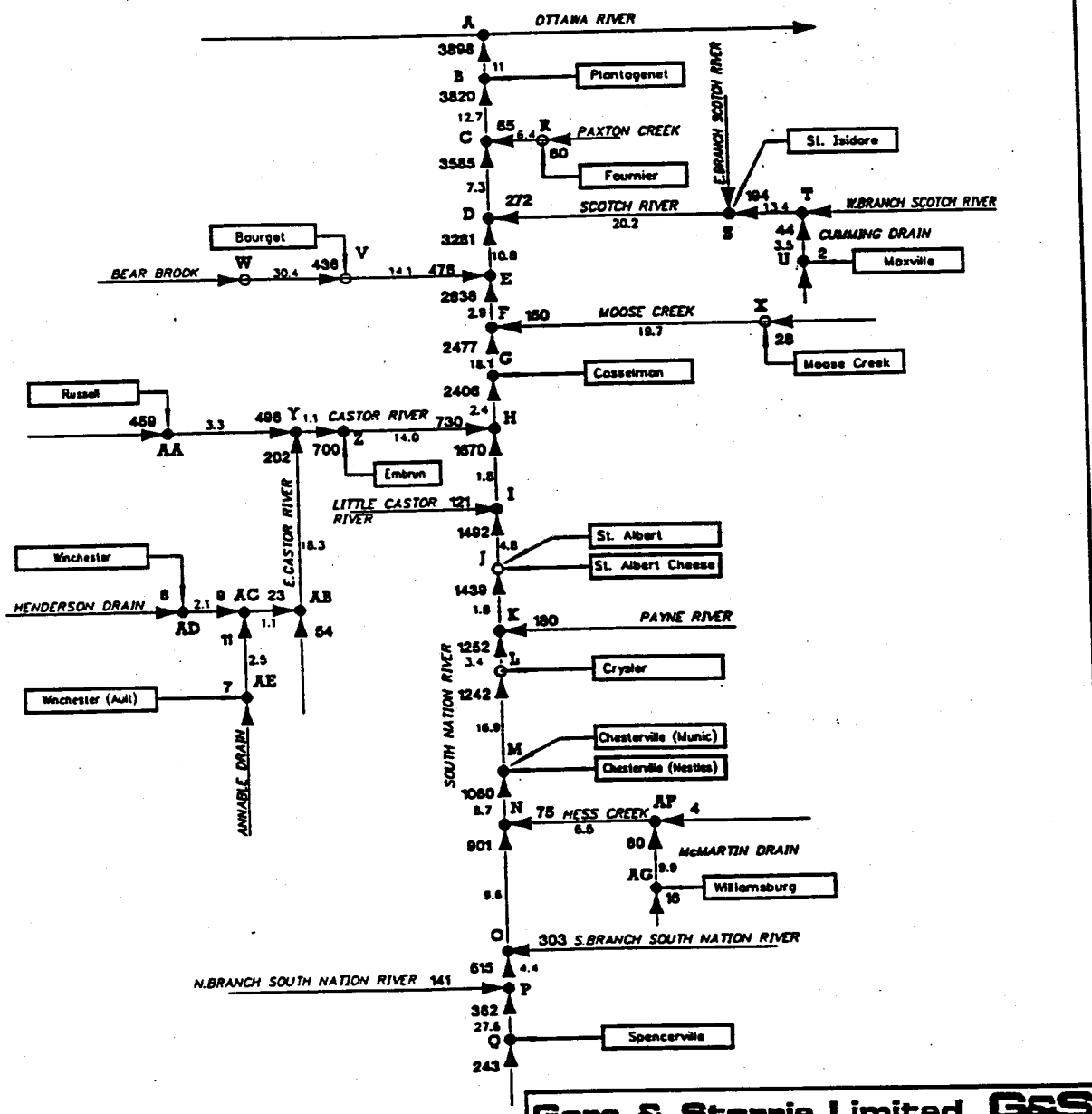
Discharge Window	Point Source	Treatment[2]	Discharge Location[3]	Volume Discharged (m^3)	BOD_5 Loading (kg)	NH_{3T} Loading (kg)	Discharge Rate (m^3/s)
Max March 22 to May 13	Casselman	L	G	365000	10950	5110	0.0797
	Chesterville	L	M	296015	8880	4150	0.0646
	Nestle	I[1]	M	225862	3390	1380	0.0493
	Plantagenet	L	B	225205	6760	3160	0.0492
	Russell	L	AA	193085	5790	2710	0.0422
	Spencerville	L	Q	51100	1530	720	0.0112
Ave March 25 to April 26	Ault	I[1]	AB	193800	970	1180	0.0680
	Embrun	L	Z	474500	14200	6650	0.1664
	St-Isidore	L	S	127000	3810	1780	0.0445
	Winchester	L	N	629600	18900	8820	0.2208
Min March 30 to April 13	Maxville	L	T	59860	1800	840	0.0462
	Williamsburg	EA	AG	64100	960	320	0.0495

1. Industrial treatments are custom designed
2. EA - extended aeration; L - lagoon
3. Discharge locations are nodes on Fig. 3-1.

Table 3-5 Optimum Wastewater Allocation and Treatment for Future 7Q20 Flows

Discharge Window	Point Source	Treatment[2]	Discharge Location[3]	Volume Discharged (m^3)	BOD_5 Loading (kg)	NH_{3T} Loading (kg)	Discharge Rate (m^3/s)
Max March 22 to May 13	Bourget	L	V	230200	6910	3230	0.0503
	Chesterville	L	M	318800	9560	4470	0.0696
	Crysler	L	L	219000	6570	3070	0.0478
	Fournier	L	R	50900	1530	710	0.111
	Nestle	I[1]	M	225900	3390	1380	0.493
	Plantagenet	L	B	254100	7620	3560	0.0555
	Spencerville	L	Q	69400	2080	970	0.0152
	St-Albert	L	J	138400	4150	1940	0.0302
	St-Albert Cheese	I[1]	J	22600	340	140	0.0049
Ave March 25 to April 26	Casselman	L	G	944300	28300	13200	0.3312
	Embrun	EA	Z	1551100	23300	7760	0.5440
	St-Isidore	L	S	176700	5300	2480	0.0620
	Winchester	L	N	717200	21500	10000	0.2515
Min March 30 to April 13	Ault	I[1]	AB	455000	2280	2780	0.3511
	Maxville	L	T	61300	1840	860	0.0473
	Moose Creek	EA	X	101600	1520	510	0.0784
	Russell	L	AA	865300	26000	12100	0.6677
	Williamsburg	EA	AG	70800	1060	350	0.0546

1. Industrial treatments are custom designed
2. L - lagoon; EA - extended aeration
3. Discharge location nodes are indicated on Fig. 3-1.


A
OTTAWA RIVER
3898
B
11
Plantagenet
3820
12.7
65
6.4
R
PAXTON CREEK
C
60
Fournier
3585
7.3
272
SCOTCH RIVER
20.2
D
E.BRANCH SCOTCH RIVER
194
13.4
S
St. Isidore
T
W.BRANCH SCOTCH RIVER
44
3.5
CUMMING DRAIN
U
2
Maxville
3281
10.8
Bourget
V
W
30.4
438
14.1
476
BEAR BROOK
E
2838
2.9
F
160
MOOSE CREEK
18.7
X
28
Moose Creek
2477
18.1
G
Casselman
2406
2.4
H
Russell
459
3.3
498
Y
1.1
CASTOR RIVER
730
AA
202
700
Z
14.0
Embrun
1670
1.8
I
LITTLE CASTOR RIVER
121
1492
4.8
St. Albert
St. Albert Cheese
J
Winchester
E.CASTOR RIVER
18.3
HENDERSON DRAIN
8
2.1
9
AC
23
AB
AD
1.1
54
11
2.5
AE
7
Winchester (Ault)
ANNABLE DRAIN
1439
1.8
K
190
PAYNE RIVER
1252
3.4
L
Crysler
1242
16.9
SOUTH NATION RIVER
M
Chesterville (Munic)
Chesterville (Nestles)
1080
8.7
N
75
HESS CREEK
6.5
AF
4
60
McMARTIN DRAIN
AG
9.9
Williamsburg
16
901
9.6
O
303
S.BRANCH SOUTH NATION RIVER
615
4.4
N.BRANCH SOUTH NATION RIVER
141
P
382
27.6
Q
Spencerville
243
LEGEND
EXISTING
PROPOSED
CONFLUENCE NODE
901 DRAINAGE AREA (km²)
8.7 DISTANCE (km)
Gore & Storrie Limited G&S
Consulting Engineers
South Nation River Basin
Wastewater Allocation Study
WATERSHED SCHEMATIC
SCALE
N.T.S.
DATE
DECEMBER 1991
FIGURE No.
3-1

3.14 ST. ISIDORE

3.14.1 Background

The three cell lagoon system in this community receives domestic sanitary wastewater from roughly 800 inhabitants, plus intermittent input of slaughterhouse wastewater. The operation of the slaughterhouse was terminated in 1991. The population of this municipality is expected to reach 1040 inhabitants by the year 2011.

The wastewater treatment facility is operated by MOE staff stationed at Casselman. The lagoons have a total surface area of 14.6 hectares. Using an assumed depth of 1.5 metres, the storage volume in the three lagoons is roughly 220,000 cubic metres. At an average daily flow of 300 cubic metres per day the available storage capacity is about 730 days. This is sufficient for annual discharge at present population levels. The loading rate to the facility is low at 4.6 kilograms of BOD per hectare per day.

Discharge from this lagoon system is allowed annually in the spring to the East Branch of the Scotch River. The contents of the lagoons are batch treated with alum and allowed to settle prior to discharge. The apparent alum demand was very high i.e. the dosage during 1990 was above 200 mg/L. At least two factors contributed to this high dosage:

(a) relatively high organic loading due to slaughterhouse waste, leading to significant algal growth.

(b) high phosphorus input from the same source.

The lagoon system, which is approximately ten years old, has performed well throughout this time span. No sludge removal has been found necessary during that time frame. The facilities are well kept and maintained. It is evident in this facility that it is becoming progressively more difficult to control weed growth in lagoon systems. There is copious weed growth on the lagoon banks and the beginning of weed growth on the lagoon bottoms.

Fairly high quality effluent is expected from this lagoon facility and is achieved with batch alum treatment. Records for 1986 to 1990 indicate that effluent quality of approximately 6.5/35/1.9 mg/L (BOD/SS/TP) was achieved.

3.14.2 Ability to Meet Provincial Water Quality Objectives

3.14.2.1 Present Conditions

In order to meet Provincial Water Quality Objectives under both 7Q20 and 30Q20 allocation schemes, St. Isidore may continue to treat its wastewater with conventional lagoon treatment and release it on an annual basis to the South Nation River. To meet the objective for hydrogen sulphide, addition of post aeration will be required. Under 7Q20 flows, the constant discharge period is the average window. Under

30Q20 flows, the constant discharge period is the maximum window. For window periods and discharge flowrates, refer to Tables 3-1 - 3-5.

The storage capacity of St. Isidore's lagoon is adequate for present conditions. No discharge point relocation is required.

3.14.2.2 Future Conditions

In order to meet Provincial Water Quality Objectives under both 7Q20 and 30Q20 allocation schemes, St. Isidore may continue to treat its wastewater with conventional lagoon treatment and release it on an annual basis to the South Nation River. To meet the objective for hydrogen sulphide, addition of post aeration will be required. Under 7Q20 flows, the constant discharge period is the average window. Under 30Q20 flows, the constant discharge period is the maximum window. For window periods and discharge flowrates, refer to Tables 3-1 - 3-5.

The storage capacity of St. Isidore's lagoon is adequate for future conditions. No discharge point relocation is required.

3.14.3 Recommendations

- Remediate weed growth problem
- Addition of post aeration for hydrogen sulphide removal

Under conditions of 30Q20 streamflow, with constant effluent discharge rates, and minimum stream dilution volumes defined by the windows approach developed in this report the conclusions below are reached. The windows were based on a moving average of 30Q20 flows during the spring and fall seasons.

At Present Conditions

- The communities of Winchester and Maxville and the industry of Ault on tributaries to the South Nation River must relocate their effluent discharge points. Winchester must route its effluent to the South Nation River. Maxville and Ault must move their discharge location further downstream in the streams into which they discharge. Williamsburg must upgrade treatment to extended aeration or better.

- All other communities are able to use lagoon treatment.

- All point sources are able to discharge during the maximum window.

At Future Conditions

- The communities of Winchester and Maxville and the industry of Ault on tributaries to the South Nation River must relocate their effluent discharge points. Winchester must route its effluent to the South Nation River. Maxville and Ault must move their discharge location further downstream in the streams into which they discharge. Williamsburg must upgrade treatment to extended aeration or better.

- All other communities are able to use lagoon treatment.

- A staged discharge scheme has been developed for the maximum and average windows and is required to meet Provincial Water Quality Objectives standards.

Under conditions of 7Q20 streamflow, with constant effluent discharge rates, and minimum stream dilution volumes defined by the windows approach developed in this report, the conclusions below are reached. The windows were based on a moving average of 7Q20 flows during the spring and fall seasons.

At Present Conditions

- The communities of Winchester and Maxville and the industry of Ault on tributaries to the South Nation River must relocate their effluent discharge points. Winchester must route its effluent to the South Nation River. Maxville and Ault must move their discharge location further downstream in the streams into which they discharge. Williamsburg must upgrade its treatment to extended aeration or better.

- All other communities are able to use lagoon treatment.

CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

The following conclusions can be drawn from this study.

- Water quality in the South Nation River System has been improving during the past 12 years. Installation of sewage and wastewater treatment capacity has probably been a factor.

- Phosphorus loads into the receiving water have not changed during the past 12 years and instream phosphorus concentrations consistently exceed the Provincial Water Quality Objectives, even though most point sources are now removing phosphorus.

- Non-point source contributions of phosphorus and nitrogen constitute more than 93 and 98% respectively of the loads of these nutrients in the streams on an annual basis. However, during periods when point sources are discharging, point sources have been observed to comprise more than 50% of the total ammonia load in the streams.

- Lagoon effluent must be treated with post aeration to insure that instream hydrogen sulphide standards are not violated. Lagoon effluent must also be treated with a post aeration cell to insure that the in-pipe non-lethality standard for hydrogen sulphide is not violated.

- Lagoon effluents are likely to violate the in-pipe lethality ammonia standard (MISA) during spring discharge without extraordinary measures.

- Extended aeration and New Hamburg processes produce effluent that is not likely to violate the effluent lethality criteria. However, storage of effluent from these processes in a lagoon for seasonal or annual discharge will likely result in algal blooms that will periodically raise effluent pH. Even though the process effluent is of high quality, high pH in the storage lagoons may cause from time to time a lethality violation for un-ionized ammonia.

The optimizations for wastewater discharge and treatment measures were carried out on the basis of minimizing both the amount of treatment and the distance of relocation of effluent discharge points. This does not ensure a uniform distribution of costs to all point sources, but minimizes the costs for the watershed as a whole.

- Ammonia was the limiting parameter for effluent discharge.

- Dissolved oxygen falls below Provincial Water Quality Objectives in the fall even if no wastewater is released.

- Real time control of effluent discharges with variable discharge rates contingent on streamflow offers the opportunity to reduce the treatment upgrades and distances required for effluent point relocation. A study of variable rate discharge should be commissioned to evaluate costs and advantages of this approach.

- Opportunities for increasing the assimilative capacity of the river through flow augmentation could be explored.

- More extensive data collection, particularly for water quality parameters, in the South Nation River system is required to improve analysis and forecasts of system behaviour.

- A study of non-point sources of pollution, particularly with regard to nutrients is required to determine the extent to which stream quality could be improved with corrective measures. Non-point sources often contribute more than 50% of the ammonia load that the streams are able to assimilate during critical months when point sources are discharging.

- Wastewater allocation can be accomplished according to many different paradigms. Unused stream capacity is a function of background conditions and upstream inputs. Various allocation rules should be examined to prioritize them on a physical basis. Social, economic, environmental and aesthetic values and goals should be examined in parallel to formulate a consistent policy on wastewater allocation.

- Specifically different population allocation schemes should be examined (geometric growth, arithmetic growth, etc.) along with the economic impacts of the various growth schemes.

- The impacts of various stream standards on wastewater treatment and allocation should be examined.

- A staged discharge scheme over the three windows has been developed to meet Provincial Water Quality Objectives.

At Future Conditions

- The communities of Winchester and Maxville and the industry of Ault on tributaries to the South Nation River must relocate their effluent discharge points. Winchester must route its effluent to the South Nation River. Maxville and Ault must move their discharge location further downstream in the streams into which they discharge. In addition to Williamsburg, the communities of Embrun and Moose Creek must upgrade treatment to extended aeration or better.

- All other communities are able to use lagoon treatment.

- A staged discharge scheme has been developed utilizing all three windows and is required to meet Provincial Water Quality Objectives standards.

The 75% zone of passage objective can be achieved everywhere on the South Nation River for both present and future 30Q20 conditions, and for the present 7Q20 conditions. It cannot be achieved on the upper reaches of the South Nation River for future 7Q20 conditions. Most tributary streams and drains cannot achieve the 75% zone of passage objective under any flow conditions.

4.2 *RECOMMENDATIONS*

- Discrepancies in discharge criteria in the MOE Sewage Compliance Status Report and Certificates of Approval should be resolved.

- Extended aeration activated sludge is the most suitable mechanical wastewater treatment option for small communities. This treatment process will not generally produce hydrogen sulphide, but as a high energy demand and high operating costs.

- Communities with sewage flowrates in excess of 500 L/cap/d should examine their sewer systems and if required undertake remedial measures to reduce flowrates.

- This study should be extended to examine effluent discharge during other months of the year, particularly where extended aeration and New Hamburg processes are indicated, to more fully utilize the assimilative capacity of the streams.

- A stochastic analysis of the system would provide a valuable addition to understanding the frequency of Provincial Water Quality Objectives violations.

APPENDIX "E" - REGULATION 435/93 INFORMATION FORM

Section A (Cont.):

Operator Name	Facility Serviced (Name, Type and Level)	Licences Held (Type, Level, Cert. No. and Expiry Date mm/dd/yy)	OIC Standing For Each Facility Serviced (YES/NO)
Claude Levesque	St-Isidore WWT Class I St-Isidore WWC Class I	Class IV Exp.Apr.96 #1810 WD-Class II Exp.Apr. 96 #1813 WW-Class I Exp. Apr. 96 # 1811 WWC-Class I Exp. Apr. 96 # 1812	YES

Operator Name	Facility Serviced (Name, Type and Level)	Licences Held (Type, Level, Cert. No. and Expiry Date mm/dd/yy)	OIC Standing For Each Facility Serviced (YES/NO)
Frank Benson	Same as Above	WT- ClassII Exp. Aug. 96 # 2252 WD-Class II Exp. Aug.96 #2253 WWT-Class I Exp. Aug.96 #2255 WWC-Class I Exp. Aug. 96 #2254	NO

Operator Name	Facility Serviced (Name, Type and Level)	Licences Held (Type, Level, Cert. No. and Expiry Date mm/dd/yy)	OIC Standing For Each Facility Serviced (YES/NO)
Daniel Lafleche	Same As Above	WT-Class II Exp. Sept.96 # 6886 WD-Class II Exp. Sept. 96 # 6887 WWT-Class I Exp. Sept. 96 #6888 WWC-Class II Exp. Sept. 96 #6889	NO

Section A (Cont.):

Operator Name	Facility Serviced (Name, Type and Level)	Licences Held (Type, Level, Cert. No. and Expiry Date mm/dd/yy)	OIC Standing For Each Facility Serviced (YES/NO)
J. P. Gelinas	Same as Above	WT, WD, WWT, WWC. Class II for all of the above Expl Jan. 97 Cert. # 3934,3935 # 3936, 3937	NO

Operator Name	Facility Serviced (Name, Type and Level)	Licences Held (Type, Level, Cert. No. and Expiry Date mm/dd/yy)	OIC Standing For Each Facility Serviced (YES/NO)

Operator Name	Facility Serviced (Name, Type and Level)	Licences Held (Type, Level, Cert. No. and Expiry Date mm/dd/yy)	OIC Standing For Each Facility Serviced (YES/NO)

SECTION B: RECORD KEEPING AND ADMINISTRATIVE MECHANISMS

i) Do comprehensive operations and maintenance manuals exist as required by Section 16(1) of Ontario Regulation 435/93?

YES: < ✓ > NO: < >

ii) Do records exist which identify the amount of time which each Operator serves as the Operator-In-Charge for each facility? These records are required by Section 18 of Ontario Regulation 435/93.

YES: < ✓ > NO: < >

iii) Does the owner ensure that, at all times, Operators and Operator-In-Charge personnel carry an appropriate level of Certification as required under Sections 13 and 14 of Ontario Regulation 435/93?

YES: < > NO: < >

iv) Are record keeping mechanisms provided to record information regarding the operation of the facility (names of operators on duty, identification of the shift Operator-In-Charge, departures from normal operating procedures, unusual or abnormal conditions, equipment taken out of service, etc.)? These records are defined by Section 20(1) of Ontario Regulation 435/93.

YES: < ✓ > NO: < >

v) Have plant expansions or process changes been undertaken since the plant's certification level was assigned or last evaluated?

YES: < > NO: < ✓ >

vi) If the answer to Section B(v) is yes; has an application to have the facility classification reassessed been submitted to the MOEE?

YES: < > NO: < >

Section B (Cont.):

vii) Are records kept which document that a minimum of 40 hours of training for each operator is being provided each year by the facility owner? Section 17 of the Regulation dictates requirements in this regard.

YES: < ✓ > NO: < >

SECTION C: **DISPLAY OF CERTIFICATES/LICENSES**

Identify the location and manner in which the facility and operator certificates/licenses are displayed.

Wall Mounted in Frame + posted on wall at Head Office in Coaldale.

SECTION D: The information recorded on this information form is complete and accurate.

Name and Position Title of Individual Representing the Facility Owner (Please Print):

Superintendent

Signature of Individual Representing the Facility Owner:

[signature] Date: May 30/95

APPENDIX "F" - PREVIOUS DEFICIENCIES AND STATUS COMMENTS FROM OPERATING AUTHORITIES

13.0 DEFICIENCIES

NON-CONFORMANCE WITH MINISTRY POLICIES AND GUIDELINES

1) Currently, the operating staff collects samples of raw sewage as "composites" and plant effluent as "grabs". The results of the analyses performed on the grab samples are reported as "average day" values when submitted in monthly plant performance data supplied to the Ministry.

The reporting of grab sample constituents in terms of "average day" values places the operating authority in non-conformance with the Ministry's M.I.S.A. sampling protocols. Effluent samples should be collected as composites.

2) The operating authority's raw sewage composite sampling apparatus does not incorporate the use of a refrigerated/ ice pack chilled sample deposition reservoir and therefore does not conform with M.I.S.A. sampling protocols.

3) The effluent sampling frequency being practised at the St.Isidore de Prescott sewage treatment works is approximately ½ of that required under the S.W.I.P. protocols (i.e. weekly samples are being submitted as opposed to twice weekly). It must be concluded therefore that the operating authority does not conform with the minimum sampling frequencies stipulated in the S.W.I.P. minimum sampling protocols.

4) In 1988, 1989, 1990, 1991, and 1992, the average suspended solids effluent quality was reported to be 15.5 mg/l, 296.7 mg/l, 21.5 mg/l, 18.5 mg/l, and 33.7 mg/l, respectively. The project's suspended solids effluent quality did not conform with the 25 mg/l guideline required by Ministry Policy No. 08-01 during 1989 and 1992 and narrowly achieved conformance in 1990.

Analytical data filed at the Ministry's Kingston laboratory indicates that the average suspended solids concentration associated with the 1993 discharge was 33.7 mg/l. This value exceeds the Policy No. 08-01 suspended solids guideline of 25 mg/l.

Deficiencies (Cont.):

5) The average concentration of total phosphorous in the treatment works' effluent in 1988, 1989, 1991, and 1992 was 1.9 mg/l, 1.62 mg/l, 1.27 mg/l, and 0.65 mg/l, respectively. No data pertaining to effluent total phosphorous concentrations was reported by the operating authority for 1990.

   In the period from 1988 through 1992, the lagoon's conformance with the total phosphorous effluent quality guideline of 1.0 mg/l (provided in Policy No. 08-04) was achieved only in 1992. Analyses associated with the 1993 discharge indicate that conformance with Policy No. 08-04 was again attained (average total pnos. concentration of 0.43 mg/l).

NON-COMPLIANCE WITH CERTIFICATES OF APPROVAL

Currently, no Certificate of Approval issued to the operating authority contains "conditions" which dictate a minimum acceptable effluent quality, a minimum sampling program, the use of a maintenance reporting schedule, etcetera. There can be no Certificate of Approval violations when there are no "conditions" or "requirements" specified in the Certificates of Approval.

14.0 RECOMMENDATIONS

In addition to addressing the five deficiencies listed in section 13.0 of this report, the operating authority should consider implementing the following recommendations:

1) Vegetation on the lagoon berms was observed to be moderately dense, often exceeding ½ metre in height. It is important to keep vegetation growth under control in order to protect the integrity of the berms, to avoid "hiding" potential safety hazards which could be encountered when the vegetation is eventually cut, and to discourage habitation by animals which could damage the berms or degrade the quality of the lagoon contents.

Okay
To-day

2) Rooted vegetation within the interior of lagoon cell #3 may be an indication of excessive sludge accumulation. The operating authority should consider surveying sludge

Recommendations (Cont.):

deposition within the #3 cell and formulate a removal and disposal plan should it be discovered that the depth of sludge within the cell is excessive.

3) "Containment" for the pumping station diesel fuel tank is restricted to the provision of an approximately 75 mm high curb placed around the tank. The fuel tank should be positioned within a spill containment area having a volume capable of holding the entire contents of the tank.

Provincial Officer/Inspector: J.D. Mahoney

Signature: James Mahoney

Report Date: August 16, 1993