Stantec

Memo

To:	Tom Walker 951 Leathorne Street, London, ON	From:	Nelson Oliveira Stantec Consulting Ltd.
Project/File:	165630246	Date:	February 8, 2026

Reference: East Oxford Public School Septic System Review

Introduction

The intent of this memorandum is to provide the Thames Valley District School Board (TVDSB) with information regarding the capacity of the existing septic system servicing East Oxford Public School. This memo also provides information regarding potential servicing options that may be permitted, however further review of those options would be required to ensure that the regulatory agencies are aligned.

This document should be considered as an update to the previous capacity assessments undertaken by Stantec and is based on updated information made available with respect to the existing system parameters.

In general, this memorandum has been structured as follows:

- Information sources and assumptions.
- Maximum estimated capacity of the existing system including restrictions, if any, on introduction of portables.
- Potential expansion options, including limitations for consideration.
- Other relevant findings, comments, and conclusions.

Information Sources and Assumptions

The following information sources and assumptions were used by Stantec in assessing the capacity of the existing system and in identifying potential options for increasing sanitary capacity:

1. *Application Form and Certificate of Approval* (dated July 12, 1994). This form appears to be an application to the Ministry of the Environment (MECP, now the Ministry of the Environment, Conservation and Parks or MECP) for construction of a new Class 4 septic system. This application makes several references to an Engineers Report and Plans, although this information was not made available.
2. *Use Permit for Class 4, 5, 6 Sewage System*. This form, dated September 18, 1995, appears to be confirmation that works were satisfactorily completed. It should be noted that this form provides the following information with respect to the system installed:

   a. 377 m of 100 mm diameter PVC distribution piping.

   b. Distribution piping arranged in 14 runs.

   c. Distribution piping fed by a pump (dosing)

   d. Reuse of existing septic tank.

3. East Oxford Public School Septic System Site Plan (K. Smart Associates Limited, As-Built Drawings, dated August 28, 1995). This as-built drawings indicate:

   a. 14 runs of distribution piping, each run being 27 m in length for a total of 378 m of 100 mm diameter piping).

   b. Reuse of the existing septic tank.

   c. Raised bed configuration.

4. Assessment of current capacity based on Part 8 of the Ontario Building Code for systems less than 10,000 L/day in design capacity.

5. Reference to MECP Design Guidelines for systems greater than 10,000 L/day in design capacity.

Assessment of Existing Capacity

While previous documents dating back before the last system upgrades in 1995 were reviewed, given that the permit and as-built drawings reflect actual conditions and not proposed design, these documents are considered to be more representative of the existing system. As such, the assessment of the existing design capacity is a function of the length of actual distribution piping and/or septic tank, whichever is less.

Based on background information provided, the design T time was assumed to be 10 min/cm. For a Class 4 system, the design capacity (Q) is calculated as:

- Q = Lx200/T

Where Q is the total sewage load per day in litre, L is the length of distribution pipe (378 m based on the as-built drawings) and T is estimated at 10min/cm. Therefore:

- Q = 7,560 L/day

As this value is below 10,000 L/d, then the OBC governs and per capita design flow varies between students and non-teaching staff. For estimation purposes, a uniform per capita flow rate of 30 L/person/day is assumed. On this basis, the sewage system, as currently constructed and approved, is suitable for a population of about 252 people based on per capita design flows. It should be noted that the actual population at East Oxford Public School has exceeded this design-based population estimate at various times since the system upgrades in 1995, with no known issues related to performance.

Potential Expansion Options

Any increase to school population, specifically an increase that would trigger the introduction of portables and/or expansion to the actual building, will be subject to Building Code approval. A condition of approval will be that sufficient sewage treatment is available, subject to the applicable code/agency that would govern that system.

The maximum flow for a septic system under Part 8 of the Ontario Building Code is 10,000 L/d. Based on this maximum flow and using 30 L/person/day under the OBC as an average value (non-teaching staff are to be set to 50 L/person/day), the maximum estimated design population for the school would be approximately 333. This estimated population is based on design per capita flows, as required through the OBC. Given that the maximum permitted population under the OBC would still not meet the needs of the TVDSB, potential expansion options were assessed on the basis that the works would be subject to MECP approvals which governs systems greater than 10,000 L/day in design capacity.

The following provides options for system capacity expansion to meet MECP requirements.

Expansion of Treatment for Design Flows Exceeding 10,000 L/day under MECP

On the basis that the population (staff and students) would exceed approximately 333 people, design flows would then exceed the 10,000 L per day limit and approval of any new system would be subject to MECP approvals and the Environmental Compliance Approval process.

In comparison to the OBC process, the MECP approvals are considerably more complicated and subject to the results of hydrogeological investigations and other field studies to confirm the impact of the proposed system on the subsoil and groundwater regime, include possible off-site impacts.

A previous investigation was undertaken by WSP to assess the requirements for a new septic system, based on an approximate target capacity of 12,000 L/day (approximately 400 people). Results of the field investigation indicates that a Contaminant Attenuation Zone (CAZ) of approximately 145,000 m^2 would be required downgradient of a new tile bed system to adequately “treat” the effluent to acceptable concentrations to avoid impacts to adjacent properties. The requirement for this larger zone is attributed to the nature of the subsoil conditions at the site. This CAZ would need to be within TVDSB property. For general comparison, the existing East Oxford Public School site is approximately 38,500 m^2 in size. As such, construction of a conventional tile bed is not considered to be a viable solution given the extent of land use required downgradient of a septic bed. Should the TVDSB wish to investigate this further, additional field investigations and discussion with the MECP would be recommended before proceeding with any land purchase and/or easement agreements. The proximity of nearby private wells makes this option considerably more complex.

Additional alternatives were considered but are not necessarily feasible or recommended. These include:

a. Construction of a tertiary treatment system. To reduce effluent concentrations to within acceptable limits, tertiary treatment would be required. The extent of tertiary level treatment will be subject to the available “loadings” between existing groundwater concentrations and the maximum permitted limit at property line. Tertiary treatment comes with a significantly

higher capital and operational cost and would require operation by a licensed operator, which the TVDSB does not have on staff. This service could be contracted out. It should be noted that Ecoflo Biofilters with the additional tertiary filters are unlikely to achieve the treatment levels required at this site. Estimated construction cost: $1.5M to $3M, with annual operating costs of $150k to $250k subject to MECP ECA reporting and testing requirements. It is possible that land acquisition may also be required, but at an extent less than the CAZ noted for a conventional system. This option is complex in nature, and given the infrequent flows experienced at school sites (no weekend flows, no summer flows), the ability for the system to operate effectively and meet regulatory effluent requirements could be a challenge.

b. Construct a pumping station and forcemain to convey flow to a municipal sanitary system. In reviewing the location of the school to the nearest receiver the forcemain would be approximately 5 to 6 km away, providing there is available capacity within that system. This would required approval from Oxford County, however it is anticipated that this solution would likely raise significant concerns in relation to odour and potential for sewage to become septic given the extensive length and relatively low daily turnover rate. Additional issues related to summer conditions would also need to be considered, if this option is even feasible. Estimated construction cost: $1.5M to $2M, with annual operating costs of $25k to $50k subject to County consultation. Additional costs related to “buy-in” of available capacity, if capacity is even deemed to be available, should also be considered and is not currently included in the cost estimate noted above.

Findings, Comments and Conclusions

The following provides a high-level summary related to the sanitary servicing associated with East Oxford Public School:

1. Available information suggests that the existing system has a limited design capacity of approximately 7,560 L/day based on a T time of 10 min/cm.

2. The Township has noted that the evaluation of the existing system, with respect to maximum population, must be based on the per capita design criteria and not actual flow data. As such, the existing system is limited to a design population of about 252 people based on the per capita design flows previously noted. It is understood that the school has had populations in the past exceeding 252 people without impact to the existing septic system. However, future applications to the Township that may include but not be limited to portable additions and/or building expansion would trigger a building permit process which would then require confirmation that the design capacity suits the future population.

3. Design flows exceeding 10,000 L/day are subject to MECP approval. Previous discussion with the MECP suggests that approval of a subsurface system would not be permitted based on the CAZ requirements which extends outside the current school property limits. Based on the calculated CAZ, significant land acquisition would be required downgradient of the septic system which would also need to be expanded. In addition, alternative water sources would be required to be provided

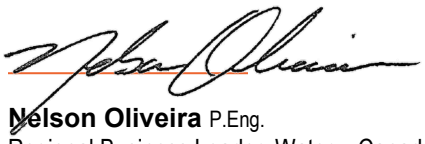
Reference: East Oxford Septic System Review

for any drinking water wells located within the CAZ, which would add further cost, and would increase the difficulty in obtaining MECP approval.

4. Alternative solutions for capacity above 10,000 L/day could include construction of a tertiary treatment system or pump station with long forcemain connection to a municipal sewage collection system. Both options would require additional investigation and consultation with key stakeholders, although at present the feasibility of these options is considered to be low, based on several factors including complexity of operations, capital cost, and ongoing operational costs and regulatory compliance requirements.

Regards,

Stantec Consulting Ltd.



Nelson Oliveira P.Eng.
Regional Business Leader, Water – Canada East
Phone: (519) 675-6620
nelson.oliveira@stantec.com

stantec.com

Attachment: 1. Application Form and Certificate of Approval
2. As-Built Drawings
3. Use Permit for Class 4, 5, 6 Sewage Systems

Ministry of the Environment
Ontario

Do not complete shaded areas.

Application No.	8-7-4
Fee Receipt No.	4-573
Date Received	July 12/94

Application Form And Certificate Of Approval For A Class 2 – 6 Sewage System

Personal information contained on this form is collected under the authority of the Environmental Protection Act, Part VII. It is used to facilitate the issuance of a Certificate of Approval as prescribed in Section 65 of the Act. Questions should be directed to the local Health Unit.

1. Name and address (number, street, city, town, etc.) of owner

OXFORD COUNTY BOARD OF EDUCATION
94 GRAHAM ST
WOODSTOCK, ONTARIO
N4S 7Z8

EAST OXFORD PUBLIC SCHOOL

Tel No. ( ) –

2. Name and address (number, street, city, town, etc.) of installer

NO INSTALLER RETAINED

Tel No. ( ) –

3. Propose to CONSTRUCT (Construct/Install/Alter/Extend/Enlarge) a Class 4 sewage system to serve SCHOOL (Facility: e.g. Single Family Dwelling, Motel, etc.)

4. Location – Region, County, District	Ward / Township / Town	Lot No.	Conc. No.	Sub.Lot. No.	Plan No.	Area of Lot (m^2)
NORWICH TWP		7	4			

5. State No. of	Bedrooms or Motel Units	People	Flush Toilets	Urinals	Washbasins	Showers and Bathtubs
SEE ENGINEERS REPORT AND PLANS						

6. Water Supply
- Dug or Bored Well ☐
- Drilled Well ☐ Municipal ☐
- Other .....
- Proposed ☐ or Existing ☐

7. Attach completed sketch on Page 2 – List other attachments:

SEE ENGINEERS REPORT AND PLANS

8. Relationship to Severance if applicable
- ☐ Lot Approval Pending
- ☐ Lot Approved

Under Severance Application No. .....

9. Directions to Lot:– Highway No., Secondary Roads, Signs to Follow, etc.

WEST SIDE COUNTY ROAD 14
2 miles South of HWY 403

10. I certify that the above information is complete and correct and that, if approved, the work will conform with Provincial requirements for sewage systems and local Municipal By-Laws.

Name of Agent	Tel. No.	Signature of Owner or Agent
K. SMART ASSOCIATES LTD	748-1199	

Address (No., Street, 85 McINTYRE DRIVE
City, Town, etc.) KITCHENER, ONTARIO

Date JUNE 29/94

11. INSPECTOR'S REPORT

Inspection Time and Date ..... AM PM ..... 19.....

Weather	Representing Owner	Leaching Bed Design Criteria: Depth to Rock	Leaching Bed Design Criteria: Design H.W.T.
		..... m.	..... m.

REQUIREMENTS	Length of Distribution Pipe (metres)	Working Capacity of Septic/Holding Tank (Litres) .....

Sub-Surface Conditions Encountered

Rock & G.W.T.	Depth (m)	Soil Type
	0	
	0.25	
	0.50	
	0.75	
	1.00	
	1.25	
	1.50	

Conditions of Approval and Reasons (e.g. fill, grading, drainage improvements, design sewage flows) ☐

OR

Reasons where Proposal not Acceptable (add additional pages if required) ☐

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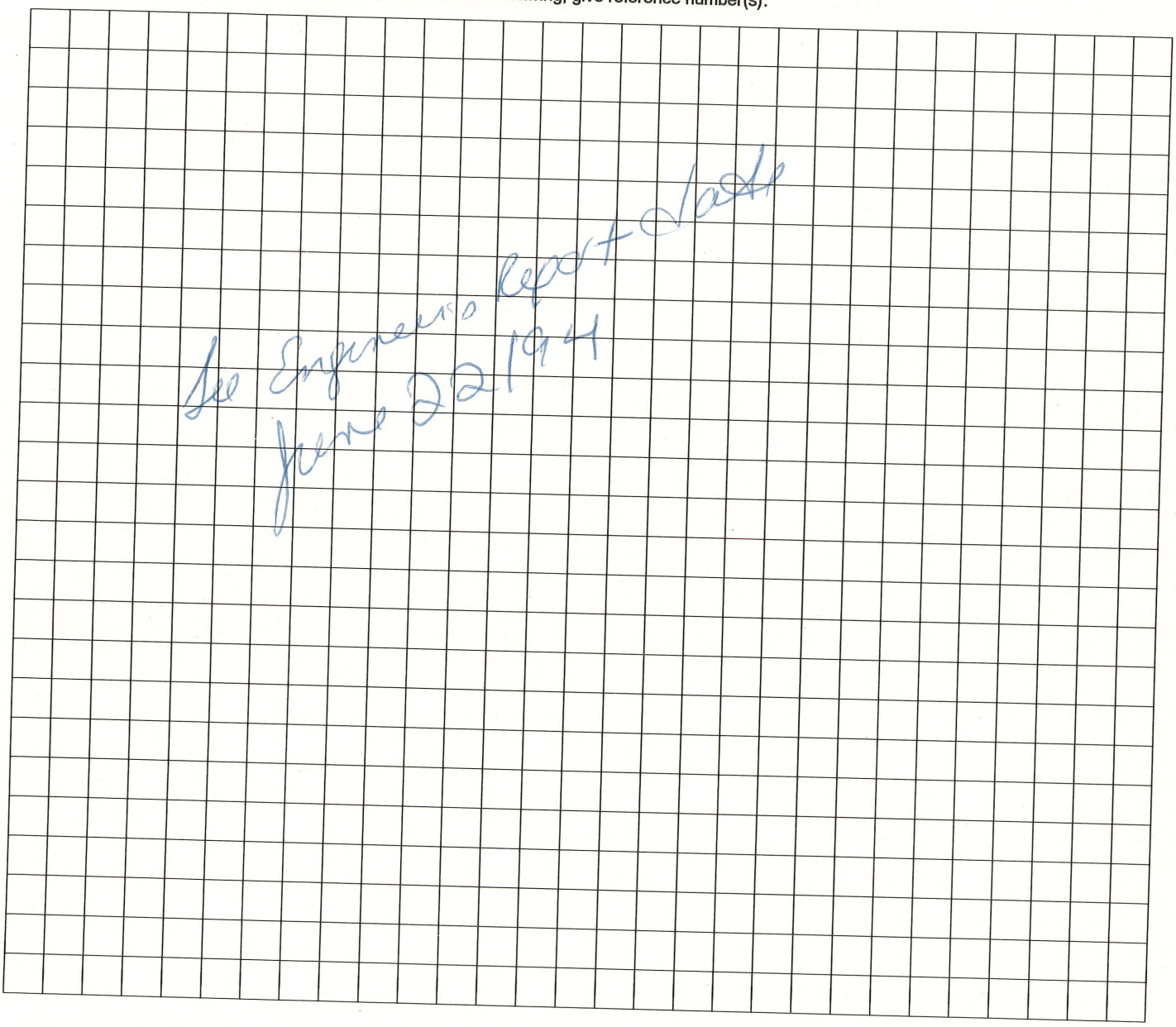
Ministry of Environment and Energy
Ontario

APPLICATION NUMBER 8-7-4

12. LOT DIAGRAM AND SEWAGE SYSTEM PLAN: Draw to scale indicating north point and showing:
(a) Location of sewage system components (eg. tanks, leaching bed). Locate and show horizontal distances from system to adjacent existing or proposed buildings, water supplies (including neightbours), existing on-site sewage systems, driveways, property lines, lakes, rivers, water courses, swimming pools.
(b) Lot dimensions, topographic features (e.g. swamps, steep slopes) near system.
(c) If any part of proposal conforms to specific standard drawing, give reference number(s).



A Certificate of Approval for this application is refused for the reasons given in Section 11 Page 1

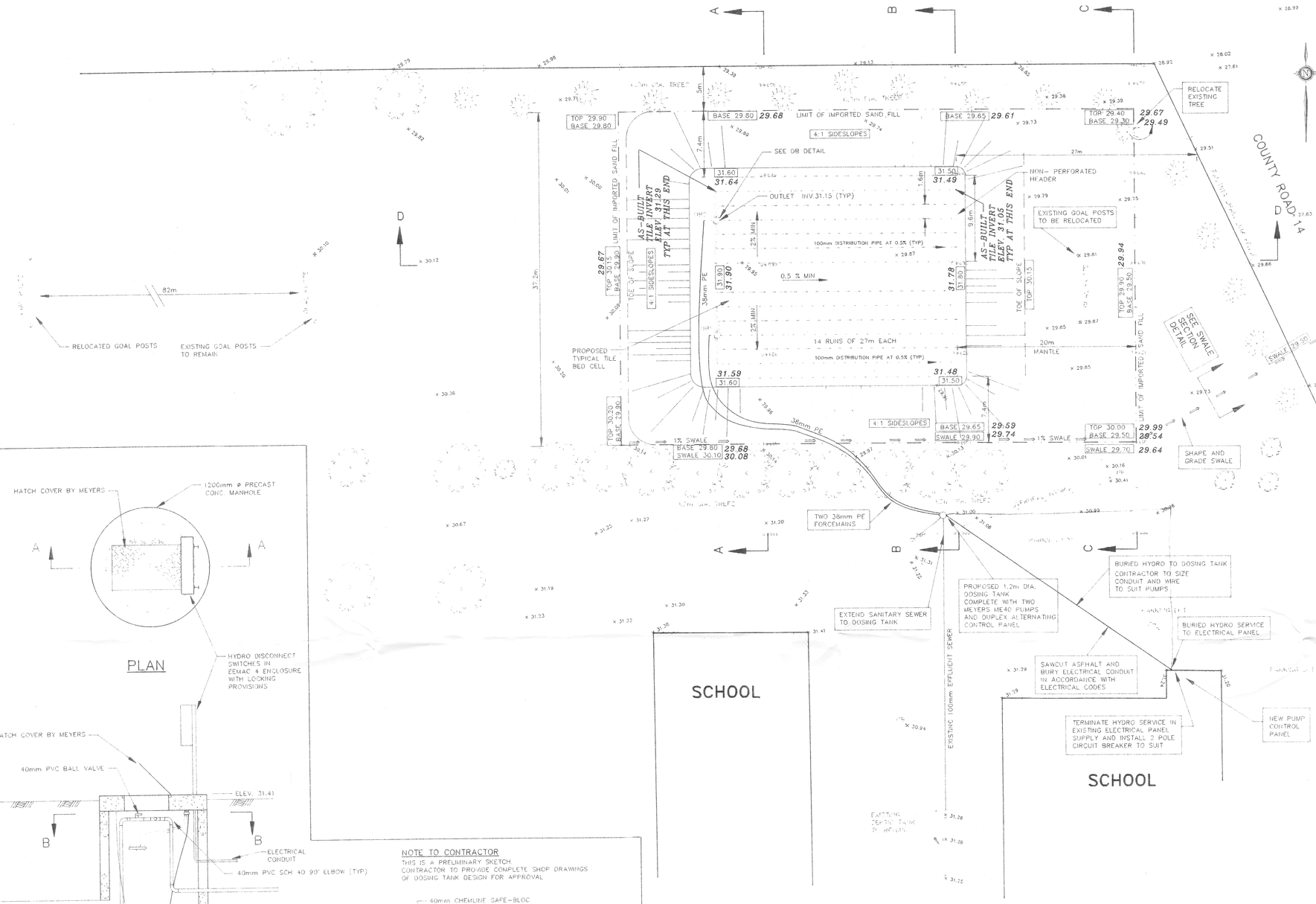
Inspected and Recommended by	Refused Director	Date

CERTIFICATE OF APPROVAL

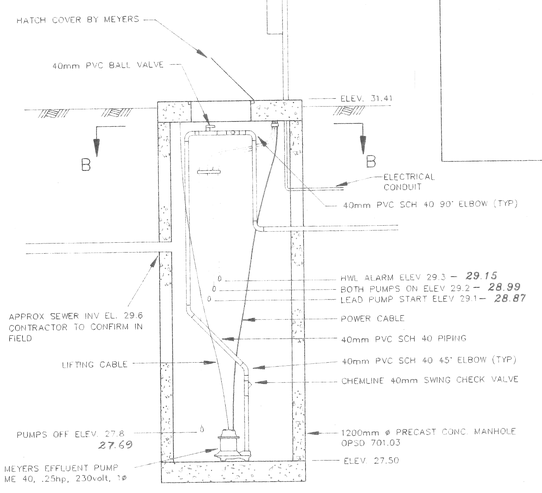
Application approved and this Certificate of Approval under Section 77 of the Environmental Proctection Act is hereby issued for the proposal outlined on Pages 1 and 2 of the application and its attachments as amended by the requirements and conditions of Section 11 provided that the sewage system shall be completed and a Use Permit issued within 12 months of the issue hereof or such extended period as the Director on application allows. DO NOT OPERATE THE SYSTEM UNTIL A USE PERMIT IS ISSUED.

Inspected and Recommended by	Issued Director	Date
D Maguire	D Maguire	Aug 1/95

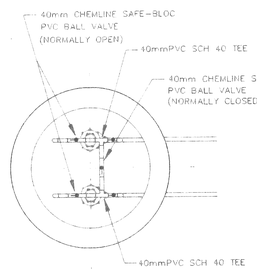
Under Section 139 of the Environmental Protection Act, an applicant may appeal a decision by writing to the Director and to the Environmental Appeal Board, 112 St. Clair Avenue West, Suite 502, Toronto, Ontario, M4V 1N3 within 15 days of receipt of the decision.



PLAN



SECTION A–A



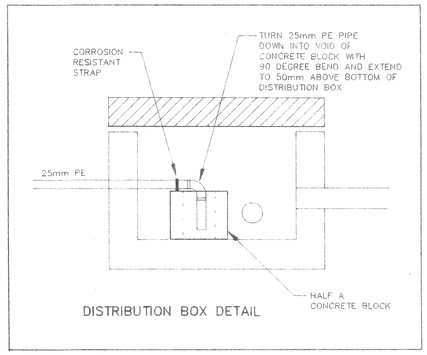
SECTION B–B

NOTE TO CONTRACTOR
THIS IS A PRELIMINARY SKETCH. CONTRACTOR TO PROVIDE COMPLETE SHOP DRAWINGS OF DOSING TANK DESIGN FOR APPROVAL

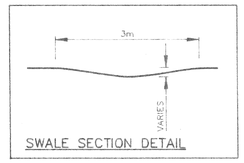
DOSING TANK SCHEMATIC

Notes:

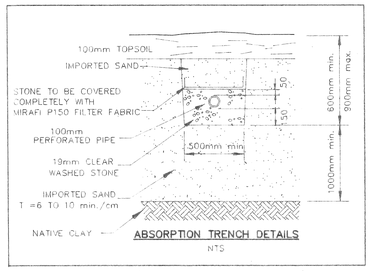
1. Dosing tank to be constructed using 1,200 mm ø precast concrete manhole components in accordance with OPSD 701.01. Dosing pumps shall be Meyers ME40 effluent pump or Engineer approved equal. Drawing shows a preliminary design sketch. Contractor to complete design and submit detailed shop drawing.
2. Septic Tank effluent sewer to be extended using 100 mm ø DR 28 PVC pipe.
3. Effluent forcemain to be constructed using 40 mm PE Series 100 pipe installed 1.2 metres below grade. Lead to each distribution box to be 25 mm PE Series 100 pipe. 40 mm PE line to be 1.2 metres below grade and each 25 mm PE shall rise up to and enter distribution box.
4. Distribution boxes to be 5 outlet precast concrete.
5. Distribution pipe to be 100 mm perforated PVC pipe conforming to CSA B182.1. Header pipes to be non-perforated.
6. Construction of septic system to conform to Ontario Reigulation 374 latest revision. Septic system must be constructed by a licensed installer.
7. Imported sand shall have a T time of 6 to 10 min/cm. The same sand imported for tile bed to be used for sand mantles.
8. Septic system base shall be scarified to 300 mm depth below distribution tile area and mantel areas.
9. Call Engineer for inspection at the following milestones in construction.
   a) Septic system based graded and scarified. Engineer will check for proper septic system grade grading and preperation.
   b) At start of placing imported sand fill.
   c) When finished placing imported sand fill and prior to starting installation of tile. Engineer will check for degree of compaction and in-situ infiltration capacity.
   d) During installation of tile. Engineer will check invert elevations of distribution pipe. Do not bury distribution tile until all have been checked by Engineer.
   e) When dosing tank installation is complete and ready for operation. Engineer will check installation and check pump performance. Do not bury distribution boxes until authorized by Engineer to do so. Engineer will want to check distribution of flow to distribution boxes.
   f) Upon completion of final grading and prior to application of hydraulic seed and mulch, have Engineer verify final grading.



DISTRIBUTION BOX DETAIL



SWALE SECTION DETAIL



ABSORPTION TRENCH DETAILS
NTS

BENCHMARK

NAIL IN WESTSIDE OF LIGHT STANDARD LOCATED NEAR SOUTH EAST CORNER OF SCHOOL PROPERTY
ELEV 29.98m

LEGEND

- EXISTING TREES
- PROPOSED SWALE
- 31.36 EXISTING GROUND ELEVATION
- DB DENOTES DISTRIBUTION BOX
- SECTION LINE LOCATION REFER TO DWGS 2 & 3 FOR CROSS SECTIONS
- LIMIT OF IMPORTED SAND FILL AND SEPTIC SYSTEM BASE
- 30.15 PROPOSED FINISHED GROUND ELEVATION
- SWALE 29.70 FINISHED SWALE ELEVATION
- TOP 30.00 / BASE 29.70 PROPOSED TOP AND BOTTOM ELEVATIONS OF FILL MATERIAL IMPORTED FOR SEPTIC SYSTEM
- 30.22 AS-BUILT ELEVATION

OFFICE COPY
AS BUILT

ISSUED
SEP 5 1995
K. SMART ASSOCIATES LTD.

No.	REVISION	DATE
1	REVISED FOR NEW DAILY FLOW	JUNE 19/95
2	REVISED TO ADD AS-BUILT ELEVATIONS	AUG. 28/95

DESIGNED BY: D.A.H.
CHECKED BY: D.A.H.
DRAWN BY: R.A.M.
CHECKED BY: D.A.H.
FIELD BOOK: 94011

SCALE
0 5 10
ORIGINAL SCALE PLAN 1:250

REGISTERED PROFESSIONAL ENGINEER
DAVID A. HARSCH
JUNE 20
PROVINCE OF ONTARIO

EAST OXFORD PUBLIC SCHOOL

OXFORD COUNTY BOARD OF EDUCATION
LOT 7, CONCESSION 4 TOWNSHIP OF NORWICH

SEPTIC SYSTEM SITE PLAN

K. SMART ASSOCIATES LIMITED
CONSULTING ENGINEERS AND PLANNERS
85 McINTYRE DRIVE
KITCHENER, ONTARIO N2R 1G2

JOB NUMBER 94011
DATE JUNE 22, 1994
DRAWING NUMBER 1 OF 2

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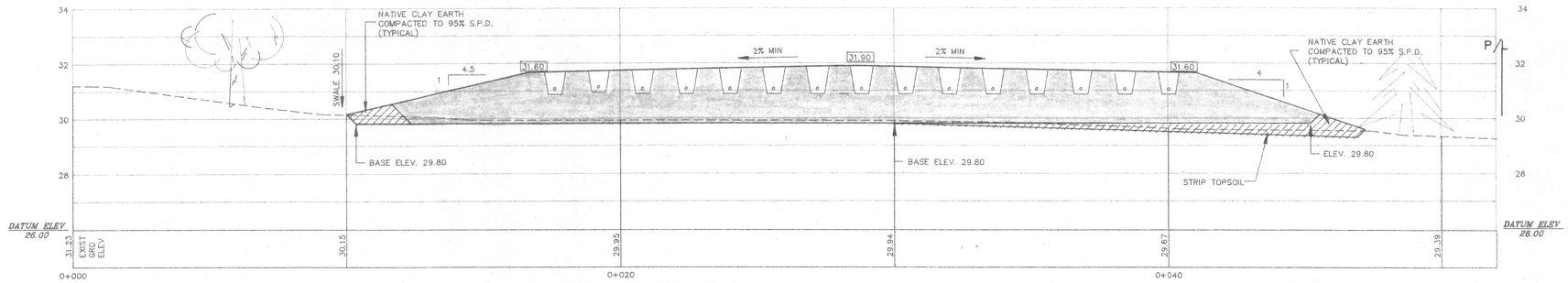
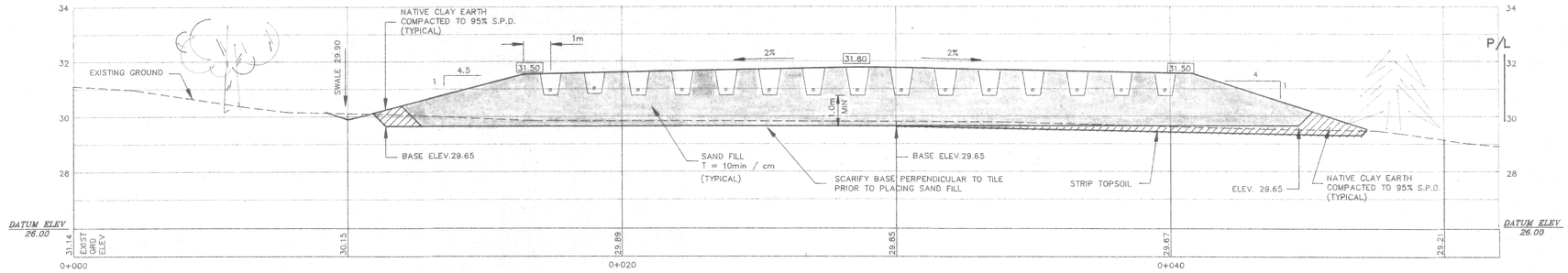
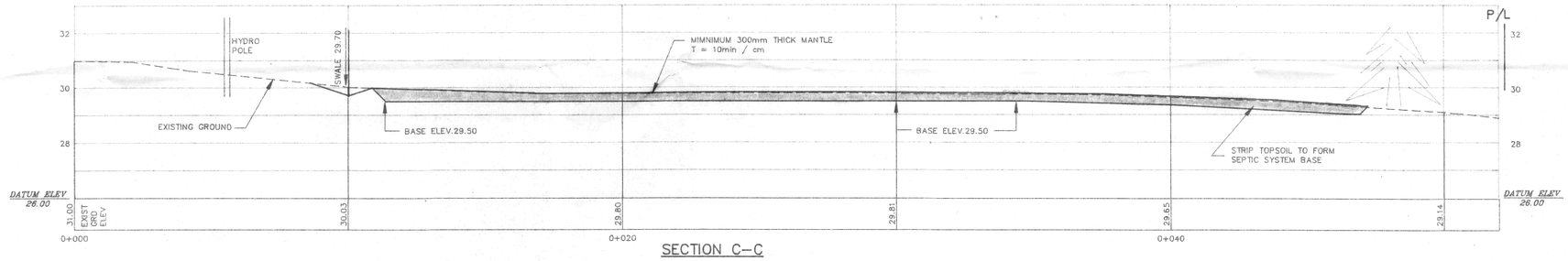


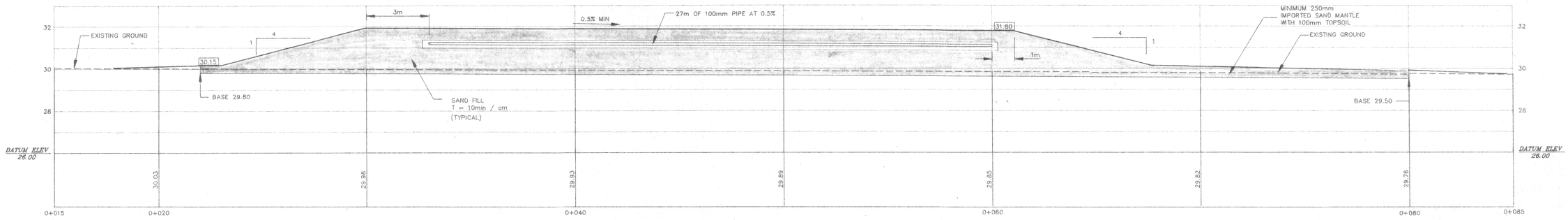
SECTION A–A



SECTION B–B



SECTION C–C



SECTION D–D

No.	REVISION	DATE
1	REVISED FOR NEW DAILY FLOW	JUNE 19/95

DESIGNED BY: D.A.H.
CHECKED BY: D.A.H.
DRAWN BY: R.A.M.
CHECKED BY: D.A.H.
FIELD BOOK: 94011

SCALE
0 2 4
HOR 1:100
VERT 1:100

REGISTERED PROFESSIONAL ENGINEER
DAVID A. HARSCH
JUNE 20/94
PROVINCE OF ONTARIO

EAST OXFORD PUBLIC SCHOOL

OXFORD COUNTY BOARD OF EDUCATION
LOT 7, CONCESSION 4 TOWNSHIP OF NORWICH

SEPTIC SYSTEM – CROSS SECTIONS

K. SMART ASSOCIATES LIMITED
CONSULTING ENGINEERS AND PLANNERS
85 McINTYRE DRIVE
KITCHENER, ONTARIO N2R 1G2

JOB NUMBER 94011
DATE JUNE 22, 1994
DRAWING NUMBER 2 OF 2

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Ministry of the Environment
Ontario

USE PERMIT
FOR CLASS 4, 5, 6 SEWAGE SYSTEMS

APPLICATION NO. 8-74

INSPECTION DETAILS	TIME 2pm	DATE August 15	WEATHER Sunny
REPRESENTING:	THE OWNER —		THE INSTALLER Darlington

1. Work authorized by the Certificate of Approval has been satisfactorily completed and includes:

a) Septic tank/holding tank of working capacity of _____ Imp. Gals. constructed of steel ☐ concrete ☐ fibreglass ☑ on site ☐ or prefabricated ☐ to serve _____ (no. of bedrooms or units).

MAKE AND MODEL, IF PREFABRICATED TANK: existing

b) Leaching bed of total 378 m lineal feet of 100mm inch diameter distribution pipe of PVC (type and product description e.g. manufacturer(s) and material of which pipe is made) laid in 14 runs and fed by pump (gravity, siphon, pump).

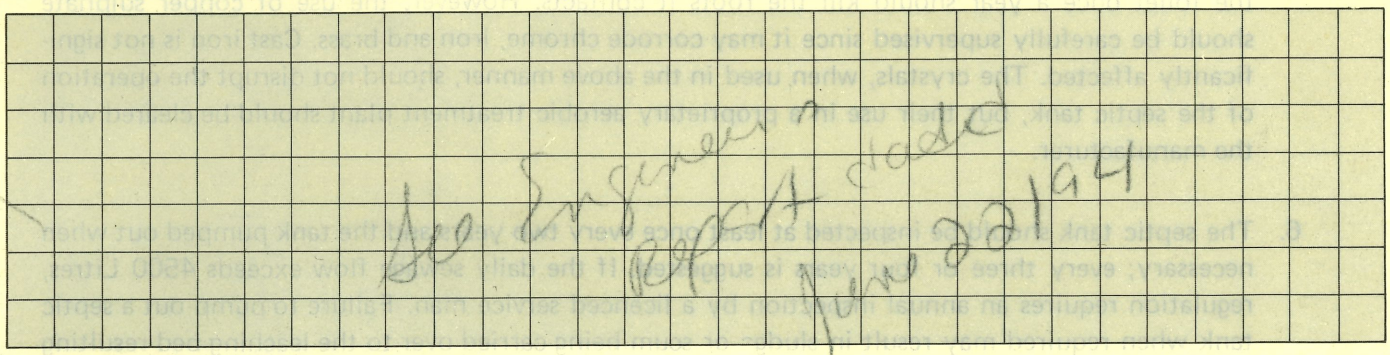
c) Proprietary Aerobic System: (Manufacturer) _____ (Model) _____

d) Other details _____

2. Location

a) System components installed as shown on application supporting Certificate of Approval ☑

b) If located other than in (a) use space below for sketch and dimensions from permanent points of reference sufficient to facilitate future location of tank and leaching bed including orientation of pipe runs.



3. The following work remains to be completed:—

☐ Backfill System and Complete

☐ Finish Grading to Shed Run-off and Divert Water Around Leaching Bed

☐ Stabilize All Sloped Surfaces

☐ Other . . . . . EAST OXFORD PUBLIC SCHOOL

USE PERMIT

Under Section 67 of the Environmental Protection Act, and subject to the provisions of the Act and Regulations a Permit is hereby issued to (Owner) Oxford County Bd of Ed for the use and operation of the Class 4 sewage system constructed/installed/enlarged/extended/altered persuant to the Certificate of Approval issued under the above application number in accordance with the application and Certificate of Approval with any changes indicated above and located on Lot 7 Concession 4 Ward/Township/Municipality Norwich Region/District/County Oxford Plan No. _____ Sub-Lot No. _____

INSPECTED AND RECOMMENDED BY	PERMIT ISSUED BY	DATE ISSUED
[signature]	[signature] DIRECTOR	Sept 18/64

Note: Section 64(a) of the Act provides that no change can be made to any building(s) or structure(s) in connection with which this sewage system is used, if the operation or effectiveness of the sewage system will or is likely to be affected by the change, unless a new Certificate of Approval is obtained.

Section 121 of the Act provides that an applicant for a permit may appeal a decision to refuse to issue a permit. Written notice of appeal must be forwarded to the Director (who refused to issue the permit) and to the Environmental Appeal Board, 1 St. Clair Avenue West, Toronto, Ontario, M4V 1K7 within 15 days of receipt of a permit.

WARNING: UNDER NO CIRCUMSTANCES SHOULD A HOMEOWNER ENTER A SEPTIC TANK. NOXIOUS GASES WHICH ARE HEAVIER THAN AIR REMAIN IN THE TANK AFTER THE TOP IS REMOVED, AND HAVE CAUSED DEATH BOTH TO THE