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Sewage Systems Guide & Permit Application

A sewage systems building permit is required to install a new septic system, repair, or replace any part of the septic system. The daily design flow needs to be 10,000 litres/day or below for the entire site.

Sewage works is required if the daily design flow exceeds 10,000 litres/day for the entire site. An Environmental Compliance Certificate (ECA) is required from the Ministry of Environment, Conservation and Parks (MECP) for sewage works.

This guide and application is intended to be used for the design and building permit application associated with Class 2 (Greywater System), Class 3 (Cesspool), Class 4 (Leaching Bed System), or Class 5 (Holding Tank) sewage systems.

Class 1: A sewage system used for the disposal of human body wastes (no added water) and includes all forms of privy. A building permit is not required for the construction of a Class 1 sewage system; however, there are Ontario building Code requirements for the construction of a Class 1 sewage system. Refer to the Ontario Building Code section 8.3 for detailed information.

Class 2: A sewage system leaching pit used for the disposal of greywater (sink, tub, shower, and laundry waste with a maximum daily design greywater flow of 1000 litres/day).

Class 3: A sewage system cesspool used for the disposal of human body waste from a Class 1 sewage system with a maximum daily design sanitary sewage flow of 1000 litres/day.

Class 4: A sewage system which consists of a treatment unit of a leach bed system with a maximum daily design sanitary sewage flow of 10,000 litres/day.

Class 5: A sewage system that utilizes a holding tank for the retention of on-site sanitary sewage with a maximum daily sanitary sewage flow of 10,000 litres/day and is transported off-site by a licensed sewage hauler.

This guide is for informational purposes only. Follow the steps that will guide you through the design process for the application and return the entire completed application guide with the required documentation listed below. It is the responsibility of the Applicant/Designer to review the building code to ensure all information is complete, accurate, and up to date.

New Construction and Full System Replacements:

A complete septic system application includes the following:

Completed Forms, required documents, and fees checklist:

- ☐ Application to Construct or Demolish
- ☐ Schedule 1: Designers Information signed by qualified systems designer.
- ☐ Schedule 2: Septic Systems Installers Information signed by qualified installer.
- ☐ Applicant Authorization Form if applicant is not the property owner.
- ☐ Completed detailed Septic System summary, work sheets, site plan, and details.
- ☐ Evaluated Percolation time ("T" time) from a licensed soil testing agency.
- ☐ Building Materials Evaluation Commission (BMEC) or CAN/BNQ "Onsite Residential Wastewater Treatment Technologies" approvals (if applicable).
- ☐ Septic permit fee.

Building additions, renovations, and construction that affect the sewage system:

Modifications (additions, renovations, change of use) made to existing buildings may reduce the performance level of the sewage system in the following situations:

- ☐ The changes to the building result in an increase in occupant load which results in a new daily design sanitary sewage flow that exceeds the capacity of any component of the existing sewage system,
- ☐ The number of bedrooms in a dwelling or dwelling unit is increased,
- ☐ Proposed construction exceeds 15% of the finished (gross) area of the dwelling or dwelling unit,
- ☐ Additional (new) plumbing fixtures are added to the dwelling or dwelling unit,
- ☐ If the existing building's major occupancy is changed to another major occupancy through change of use.

If any of the above apply to your building project, applicants must submit a completed septic application to the Township of Selwyn Building Department for review and approval prior to building.

Please contact the Township of Selwyn Building Department if you have any questions or concerns regarding your new or existing sewage system.

**NO PERSON SHALL CONSTRUCT A SEWAGE SYSTEM UNLESS A PERMIT HAS BEEN
ISSUED BY APPROVAL OF THE CHIEF BUILDING OFFICIAL**

Section one: On-site Analysis

The information gathered through the test pit procedure will be used to complete the worksheets within this package and are to be completed for review and approval.

Test Pit Excavation Date: _____

(Test pit to be a minimum depth of 1.8m (6'-0"))

Applicant Use		
Depth (m)	Soil Type	"T" Time
0 – 0.3		
0.3 – 0.6		
0.6 – 0.9		
0.9 – 1.2		
1.2 – 1.5		
1.5 +		

(Soil Types and associated "T" times can be referenced from the previous chart.)

Sewage System Design Height:

Depth of Ground Water Table or bedrock depth determined through test pit = _____

Proposed minimum height of raised bed (where required): _____

Description of New or Existing Water Supply (check which applies):

- ☐ Drilled well with 6m (19'-8") casing depth minimum.
- ☐ Dug well
- ☐ Other: _____

There are two critical pieces of information that must be known in order to design a sewage system.

1. The amount of sewage entering the system that is generated from the building during a 24-hour period. This value is expressed as 'Q'.
2. The percolation rate. This value is expressed as 'T'.

The percolation rate means the average time in minutes that is required for water to drop one centimetre during a percolation test on-site or determined through soils analysis.

The sewage system daily design flows will be calculated using the charts provided in section two.

Note: A building inspector will not design a sewage system. The owner, authorized and qualified agent of the owner, qualified contractor/installer, qualified design consultant or professional engineer must provide the design of the sewage system.

Section Two: System Design and Worksheets

Sewage System Permit Summary / Overview	
Project Address:	
Applicable Law: (Documents provided with permit – check all applicable) <ul style="list-style-type: none"><input type="checkbox"/> Conservation Authority Approval.<input type="checkbox"/> Source Water Protection.<input type="checkbox"/> Permit Application and Schedule One (Designer) and Two (Installer) forms completed.<input type="checkbox"/> Minor Variance Approval.<input type="checkbox"/> Site Plan Approval.<input type="checkbox"/> Grading Plans (for raised beds).<input type="checkbox"/> Construction in Hazard Lands.	
Building Occupancy Type: <ul style="list-style-type: none"><input type="checkbox"/> Residential (Dwelling)<input type="checkbox"/> Residential (Other) specify: _____<input type="checkbox"/> Other Occupancy specify: _____	
Class of System: <ul style="list-style-type: none"><input type="checkbox"/> Class 2 Sewage System – Greywater System<input type="checkbox"/> Class 3 Sewage System – Cesspool<input type="checkbox"/> Class 4 Sewage System – Leaching Bed System<input type="checkbox"/> Class 5 Sewage System – Holding Tank _____	
Sewage System Components: _____ <ul style="list-style-type: none"><input type="checkbox"/> Septic Tank Capacity (L): _____<input type="checkbox"/> Pump Capacity (L): _____<input type="checkbox"/> Distribution Box<input type="checkbox"/> Other (please specify): _____<input type="checkbox"/> Advanced Treatment Unit Capacity (L): _____Manufacturer and Model: _____	
Method of Distribution Pipe Detection: <ul style="list-style-type: none"><input type="checkbox"/> Magnetic Means<input type="checkbox"/> Tracer Wire (14 gauge TW solid copper light coloured plastic coated).<input type="checkbox"/> Other Means (please specify): _____	

Worksheet A: Residential Dwelling – Daily Design Flow Calculations (Q)

A) Residential Occupancy		(Q) Litres	Total
Number of Bedrooms	1 Bedroom	750	
	2 Bedrooms	1100	
	3 Bedrooms	1600	
	4 Bedrooms	2000	
	5 Bedrooms	2500	
		Subtotal (A)	

B) Plus Additional Flow for:				
Note: Use the largest additional flow calculation to determine Daily Design Flow (Q). If none apply then Subtotal (B) = zero.				
		Quantity	(Q) Litres	Total
Either	Each bedroom over 5		500	
Or	Floor space for each 10m ² over 200m ² up to 400m ²		100	
	Floor space for each 10m ² over 400m ² up to 600m ²		75	
	Floor space for each 10m ² over 600m ²		50	
Or	Each fixture unit over 20 fixture units (Total of Worksheet B – 20 = Quantity)		50	
				Subtotal (B)
				Subtotal A + B = Daily Design Flow (Q)

Worksheet B: Residential Dwelling – Fixture Unit Count

Fixtures	Fixture Units	Quantity	Total
Bath Group (Toilet w/flush tank, sink, tub or shower)	6.0		
Bathtub Only (with or without shower)	1.5		
Shower Unit/Stall	1.5		
Wash Basin / Lavatory (1.5" Dia. Trap)	1.5		
Water Closet (Toilet) Flush Tank	4.0		
Bidet	1.0		
Dishwasher (See notes)	1.0		
Floor Drain (3" Dia. Trap)	3.0		
Sink (single or double, or two singles with one trap)	1.5		
Domestic Washing Machine	1.5		
Combination Sink and Laundry Tray	1.5		
Garburator (See notes)			
Other:			
Total Number of Fixture Units			

Notes:

1. Bath group: A group of plumbing fixtures serving one room consisting of exactly one shower (single head) or bathtub, one lavatory (sink), and one water closet (toilet with flush tank). This would total seven (7) fixture units if added separately, but the Ontario Building Code provides a reduction for this grouping of plumbing fixtures.
2. Garburator: A domestic type of garbage disposal is permitted with no additional fixture unit load. A commercial type of garburator has a fixture load of 3.
3. Dishwasher: Only include dishwashers that are not connected to a domestic sink.
4. Refer to the Ontario Building Code Division B Table 7.4.9.3. for a complete listing of fixture types and fixture units.
5. Where laundry waste is not more than 20% of the total daily design flow, it may discharge to the sewage system. OBC 8.1.3.1.(2).
6. Sump pumps are not to be connected to the sewage system. Connection to a sewage system may lead to a hydraulic failure of the system.
7. Water softener and/or iron filter discharge may be directed to a sewage system provided the system has been designed to accept such discharge. Such discharge may lead to early failure of the system.

Worksheet C: Camp for the Housing of Workers

Camp for the Housing of Workers	Number of Employees	(Q) Litres	Total
Note: building size, number of bedrooms, and fixture counts are not required for a Camp for the Housing of Workers.		250	
Daily Design Flow (Q)			

Worksheet D: Other Occupancy Daily Design Flow Calculation (Q)

To calculate the daily design flow for other occupancies, refer to the Ontario Building Code Division B, Part 8 Table 8.2.1.3.B.

Establishment	Load Variable Ex. Number of seats, per floor area, number of employees, etc.	Volume Litres	Total
Daily Design Flow (Q)			

Worksheet E: Septic Tank Size

Note: The minimum septic tank size permitted by the Ontario Building Code is 3600 litres.

Occupancy Classification	Total Daily Design Flow (Q)	Multiplied by Factor	Minimum Tank Size (L)
Residential Occupancy House, Apartment, Camp for the Housing of Workers.		X2	
All other Occupancies		X3	

Worksheet F and G: Leaching Bed Calculations for Class 4 Sewage Systems.

Part 1: Complete All Parts	
Type of Leaching Bed (select one) <input type="checkbox"/> Absorption Trench <input type="checkbox"/> Filter Bed <input type="checkbox"/> Shallow Buried Trench <input type="checkbox"/> Advanced Treatment System <input type="checkbox"/> Type A Dispersal Bed <input type="checkbox"/> Type B Dispersal Bed	
Percolation rate of native/underlying soil ("T" min/cm):	
Name of Licensed Soil Testing Agency:	
<input type="checkbox"/> In-ground system <input type="checkbox"/> Raised bed system Height raised above original grade (metres):	
Mantel (where applicable) <input type="checkbox"/> Imported Fill <input type="checkbox"/> Native Soil	
Total expanded area in (metres squared): Q/Loading Rate: (See OBC Div.B Part 8 Table 8.7.4.1.)	
Total expanded area configuration (length x width in metres):	

<input type="checkbox"/> A. Absorption Trench Construction		
Total length of the distribution pipe	Conventional $(Q \times T) \div 200 =$ _____ m (Septic tank only – no advanced treatment system) Type 1 Leaching Chambers $(Q \times T) \div 200 =$ _____ m Type 2 Leaching Chambers $(Q \times T) \div 300 =$ _____ m Configured as: _____ runs of _____ m for a Total _____ m	
<input type="checkbox"/> B. Filter Bed Construction		
Effective Area If $Q \leq 3000$ litres per day use $Q \div 75$ If $Q > 3000$ litres per day use $Q \div 50$ Level II-IV treatment units use $Q \div 100$	Effective area: _____ (Q) \div _____ (75, 50, or 100) = _____ m Configured as: _____ m x _____ m Number of beds: _____	
Distribution Pipe	Number of Runs: _____	Spacing of runs: _____ m
Contact Area = $(Q \times T) \div 850$	Contact Area: [_____ (Q) x _____ (T)] \div 850 = _____ m ²	
Expanded Contact Area	ECA: _____ m ²	
<input type="checkbox"/> C. Shallow Buried Trench Construction		
Percolation time (T) of soil in minutes: $1 < T \leq 20$ $20 < T \leq 50$ $50 < T < 125$	Length of distribution pipe (metres): $Q \div 75$ metres $Q \div 50$ metres $Q \div 30$ metres	Total length of distribution pipe: $(L) =$ _____ (Q) \div (75, 50, 30) = _____ m
<input type="checkbox"/> D. Advance Treatment System		
Provide BMEC or CAN/BNQ approval and manufacturer's system design documents.		
<input type="checkbox"/> E. Type A Dispersal Bed		
Stone layer: If $Q \leq 3000$ l/day use $Q \div 75$ If $Q > 3000$ l/day use $Q \div 50$ Sand layer: $1 < T \leq 15$ Use $(Q \times T) \div 850$ $T > 15$ Use $(Q \times T) \div 400$	Stone layer $=$ _____ (Q) \div _____ (75 or 50) = _____ m ² Sand layer $=$ [_____ (Q) \div _____ (T)] \div (850 or 400) = _____ m ²	
<input type="checkbox"/> F. Type B Dispersal Bed		
Area = $(Q \times T) \div 400$ Linear Loading Rate (LLR) $T < 24$ min. use 50 L/min. If $T \geq 24$ min. use 40 L/min. Distribution Pipe	Area = [_____ (Q) x _____ (T)] \div 400 = _____ m ² Pump chamber capacity = _____ L Length $(Q \div \text{LLR}) =$ _____ m Bed configuration = _____ m x _____ m x _____ m Number of beds = _____ Configured as: _____ runs of _____ m Total: _____ m	

For the design of a Class 4 System, complete the following summary chart and the associated worksheets for the chosen type of Class 4 sewage system.

Class 4 System – complete summary selection for proposed system (A,B,C,D,E, or F)		
A: Absorption Trench <ul style="list-style-type: none"> <input type="checkbox"/> In-Ground <input type="checkbox"/> Raised <input type="checkbox"/> Leaching Chambers Type 1 <input type="checkbox"/> Leaching Chambers Type 2 <input type="checkbox"/> Total Pipe Length: _____ <input type="checkbox"/> Mantle Required _____ <input type="checkbox"/> Expanded Contact Area: _____ 	B: Filter Bed <ul style="list-style-type: none"> <input type="checkbox"/> In-Ground <input type="checkbox"/> Raised <input type="checkbox"/> Effective Area: _____ <input type="checkbox"/> Contact Area: _____ <input type="checkbox"/> Leaching Chambers Type 1 <input type="checkbox"/> Leaching Chambers Type 2 <input type="checkbox"/> Total Pipe Length: _____ <input type="checkbox"/> 15 M Mantle Required <input type="checkbox"/> Expanded Contact Area Required _____ 	C: Shallow Buried Trench <ul style="list-style-type: none"> <input type="checkbox"/> Type: _____ <input type="checkbox"/> Length of Chamber: _____
D: Advanced Treatment System (BMEC & CAN/BNQ): <ul style="list-style-type: none"> <input type="checkbox"/> BMEC authorization provided <input type="checkbox"/> CAN/BNQ authorization provided <input type="checkbox"/> Service agreement provided <input type="checkbox"/> Mantle Required/Area: _____ <input type="checkbox"/> Stone Layer Area: _____ <input type="checkbox"/> Sand Layer Area: _____ <input type="checkbox"/> System Specifications Provided. <input type="checkbox"/> Manufacturer's Installation Manual Provided. 	E: Type A Dispersal Bed: <ul style="list-style-type: none"> <input type="checkbox"/> In-Ground <input type="checkbox"/> Raised <input type="checkbox"/> Length of Pipe: _____ <input type="checkbox"/> Mantle Area: _____ <input type="checkbox"/> Stone Layer Area: _____ <input type="checkbox"/> Sand Layer Area: _____ 	F: Type B Dispersal Bed: <ul style="list-style-type: none"> <input type="checkbox"/> In-Ground <input type="checkbox"/> Raised <input type="checkbox"/> Stone Layer Area: _____ <input type="checkbox"/> Linear Loading Rate 40L/m <input type="checkbox"/> Linear Loading Rate 50L/m

Worksheet H: Sewage System Site Plan

Please provide the following information on this worksheet:

- Location of the sewage system and components (tank, leaching bed, pump chamber, etc.)
- Location of all buildings, pools, waterbody, wells on the property and adjacent properties.
- Locate and show minimum clearances for treatment units and distribution piping. Refer to Ontario Building Code, Division B. Table 8.2.1.6.A, 8.2.1.6.B, and 8.2.1.6.C
- Location of property lines, easements, and utility corridors.

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- This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are no margins, text, or other markings on the page.

Worksheet I: Cross Sectional Drawings

Cross sectional drawings are required for all sewage system designs.

- ☐ Location of existing grade
- ☐ Measurements to each component, distances to water table and/or bedrock
- ☐ Label each septic system component

[illegible]

Acknowledgement of Above Ground Electrical Conductors

Sentence 3.1.19.1. of the Ontario Building Code indicates that a building shall not be located beneath existing above ground electrical conductors and dictates the minimum horizontal clearances measured from the maximum conductor swing to a building as such:

- Be not less than 1m for electrical conductors carrying voltages 750V or less, except where necessary to connect the electrical wiring of the building;
- Be not less than 3m for electrical conductors carrying voltages greater than 750V but not exceeding 46kV;
- Be not less than 3.7m for electrical conductors carrying voltages greater than 46kV but not exceeding 69kV, or
- Conform to the requirements of CAN/CSA-C22.3 No.1, “Overhead Systems” for electrical conductors carrying voltages greater than 69kV.

The Ontario Building Code and Building Code Act defines a sewage system as a “Building”. The following acknowledgement is to ensure that the location of the sewage system will meet OBC requirements for clearances from above ground electrical conductors.

Signature of Applicant: _____

Date: _____

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information				
Building number, street name			Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design activities				
Name		Firm		
Street address			Unit no.	Lot/con.
Municipality	Postal code	Province	E-mail	
Telephone number	Fax number		Cell number	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]				
<input type="checkbox"/>	House	<input type="checkbox"/>	HVAC – House	<input type="checkbox"/>
<input type="checkbox"/>	Small Buildings	<input type="checkbox"/>	Building Services	<input type="checkbox"/>
<input type="checkbox"/>	Large Buildings	<input type="checkbox"/>	Detection, Lighting and Power	<input type="checkbox"/>
<input type="checkbox"/>	Complex Buildings	<input type="checkbox"/>	Fire Protection	<input type="checkbox"/>
Description of designer's work				
D. Declaration of Designer				
<p>I _____ declare that (choose one as appropriate):</p> <p style="text-align: center;">(print name)</p> <p>I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.</p> <p>Individual BCIN: _____</p> <p>Firm BCIN: _____</p> <p>I review and take responsibility for the design and am qualified in the appropriate category as an “other designer” under subsection 3.2.5. of Division C, of the Building Code.</p> <p>Individual BCIN: _____</p> <p>Basis for exemption from registration: _____</p> <p>The design work is exempt from the registration and qualification requirements of the Building Code.</p> <p>Basis for exemption from registration and qualification: _____</p> <p>I certify that:</p> <ol style="list-style-type: none"> The information contained in this schedule is true to the best of my knowledge. I have submitted this application with the knowledge and consent of the firm. <p>_____</p> <p style="text-align: center;">Date</p> <p>_____</p> <p style="text-align: center;">Signature of Designer</p>				

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) (c) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 2: Sewage System Installer Information

A. Project Information			
Building number, street name		Unit number	Lot/con.
Municipality	Postal code	Plan number/ other description	
B. Sewage system installer			
Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?			
<input type="checkbox"/> Yes (Continue to Section C)		<input type="checkbox"/> No (Continue to Section E)	
		<input type="checkbox"/> Installer unknown at time of application (Continue to Section E)	
C. Registered installer information (where answer to B is "Yes")			
Name		BCIN	
Street address		Unit number	Lot/con.
Municipality	Postal code	Province	E-mail
Telephone number	Fax	Cell number	
D. Qualified supervisor information (where answer to section B is "Yes")			
Name of qualified supervisor(s)		Building Code Identification Number (BCIN)	
E. Declaration of Applicant:			
<p>I _____ declare that:</p> <p style="text-align: center;">(print name)</p> <p>I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;</p> <p><u>OR</u></p> <p>I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.</p> <p>I certify that:</p> <ol style="list-style-type: none"> 1. The information contained in this schedule is true to the best of my knowledge. 2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership. <p>_____</p> <p style="display: flex; justify-content: space-between;"> Date Signature of applicant </p>			