# Applying for a Sewage Treatment System Permit

Please complete the following steps. More details on each step can be found in the attached package:

1. Dig the soil test pits.
2. Design the sewage treatment system.
3. Complete the application form.
4. Submit the completed application form and applicable fee.
5. Request the initial inspection.
6. Receive the ‘Sewage System Permit’.
7. Start the construction of the Sewage Treatment System.
8. Request the Substantial Completion inspection.
9. Submit the Completion Notice to the Health Unit.
10. Receive ‘The Certification of Readiness to Use’.

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TBDHU.COM

Thunder Bay District Health Unit

# Applying for a Sewage Treatment System Permit

## Please read the following information carefully.

This should help you to complete the permit application required by the Ontario Buildig Code (OBC) and the Thunder Bay District Health Unit (TBDHU).

This information package is provided for guidance only.

You should always refer to the current requirements of the Ontario Building Code (OBC) and the Building Code Act (BCA).

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## PART 1 - GENERAL INFORMATION

### Dig Soil Test Pits

At least two soil test pits must be excavated to a minimum depth of 1.67 meters (66 inches) and a minimum width of 1 meter (36 inches) wide in the designated area of the proposed leaching bed or area bed. These pits are needed to determine if the soil can accept and provide treatment of the wastewater.

The test pits should be dug with a backhoe so the Health Unit's land development officer can see the soil profile. Digging should stop if any of the following are seen:

- bedrock or large boulders
- clay or hardpan soil
- the seasonal high groundwater table

If the excavation reveals any of the above at a depth of less than 1.67 meters (66 inches) below original grade, you must record the depth in Section L(2) on the application. Test pits must remain open so the Land Development Officer can confirm your observations during the initial inspection. Clean sand will need to be imported for the construction or installation of a partial or fully raised leaching bed.

### Design the Sewage Treatment System

The Ontario Building Code (OBC) Regulations outline the minimum legal requirements for the design, construction, operation and maintenance of sewage treatment systems. However, there are many factors that may affect the sewage treatment system (i.e. water use, soils, location, topography, etc.).

**Anyone unable to design a sewage treatment system meeting the requirements of the OBC and BCA should hire the services of a licensed sewage treatment system contractor or qualified consultant.**

**TBDHU is not permitted to design sewage treatment systems.** It is the responsibility of the property owner to design a system that meets the requirements of the Ontario Building Code (OBC) and the Building Code Act (BCA).

### Complete the Application Form

Information needed to complete the permit application includes, but is not limited to:

- size of the home/building
- number of bedrooms/rooms/employees
- total number of fixtures (including future rough-ins)
- exact location of proposed sewage treatment system in relation to the building
- exact location of proposed sewage treatment system in relation to the well, either existing or proposed
- exact location of proposed sewage treatment system in relation to the well of any other property if less than 46 meters (150 feet) away
- legal survey (i.e.) Lot #, Plan #, Concession #, Ward and/or Township (mailing address is not acceptable)3

### Submit the Completed Application Form and Applicable Fees

Submit the completed permit application form and applicable fee to the Health Unit.

**The most current fee schedule is available online at TBDHU.com/septicfees.**

Some supporting documentation may be needed if you are submitting a permit application form for a sewage treatment system serving a business or restaurant. If you have any questions, contact a licensed contractor or qualified consultant to help you interpret the requirements as listed in the OBC and BCA.

### Request the Initial Inspection

When the completed permit application and fee have been forward to the Health Unit, an initial inspection will be completed. This inspection will determine if the proposal complies with the minimum requirements of the OBC.

During this first inspection, the Land Development Officer may observe other factors that may affect the ability of the sewage treatment system to perform as required. This may result in an increase to the final size of the sewage treatment system and or in relocation of the system.

The test pits that were excavated previously to help design your sewage system, must remain open until the Land Development Officer has confirmed the soil conditions.

If the home/building is not yet built, the location must be clearly marked. The location of the proposed septic tank and sewage treatment system must also be staked. This will allow the Land Development Officer from the Health Unit to confirm all measurements.

### Receive the Sewage Treatment System Permit

Shortly after the initial inspection has been completed, the Health Unit will approve or refuse the application within 10 business days. The applicant or their certified sewage system installer will be contacted informing the ‘Sewage System Permit’ is ready for pick-up or mail-out.

If someone other than the specified registered owner of the property requests a copy of the permit (i.e. agent or installer,) the Health Unit **must** receive authorization or permission from the owner to release their permit.

The **Sewage System Permit** is the legal authorization approving the construction/ installation of the system.

### Start Work on a Sewage Treatment System

No work can start on a sewage treatment system until a Sewage Treatment System Permit has been issued.

If a sewage treatment system is constructed by anyone other than the owner, that person must be a licensed sewage treatment system contractor or qualified consultant under the OBC. The owner and contractor/consultant share the responsibility for making sure that all work is done as outlined on the application and according to the OBC and BCA.

According to the OBC the work done on a sewage treatment system must be done as outlined on the application form. If changes to the approved permit are needed, then the Health Unit must review the changes. An additional fee may be applied.

### Request the Final Inspection

Once the sewage treatment system has been constructed/installed, it cannot be backfilled until it is inspected to ensure it was constructed according to the approved design and the requirements of the OBC and BCA.

### Submit the Completion Notice

When the sewage treatment system is approved for backfilling, measurements for the as-built diagram on the Completion Notice must be taken by the homeowner or contractor/consultant. See page X for a sample.

These measurements and diagram of the sewage treatment system are placed on the Completion Notice. Once the as-built diagram and applicable information are filled in on the Completion Notice, it must be forwarded to the Health Unit.

### Receive Authorization to Use the Sewage Treatment System

When the Completion Notice is forwarded to the Health Unit, the Certification of Readiness to Use will be issued by the Health Unit's land development officer. This is the legal authorization for use of the sewage treatment system.

When a sewage treatment system is constructed/installed, this area must remain as green space. No other buildings are allowed in the area. To protect the sewage treatment system, pick an area where there will be no vehicle traffic, storage, buildings, gardening or winter traffic. If you have problems finding a suitable area for your sewage treatment system, contact a licensed contractor or qualified consultant.

## PART II — GUIDELINES FOR COMPLETING THE APPLICATION

### SECTION A: Personal Information

The name of the registered owner(s) of the property is required.

### SECTION B: Agent/Installer

Anyone who is in the business of constructing, installing or repairing sewage treatment systems must hold a valid license issued by the Ontario Ministry of Municipal Affairs and Housing. The installer's name and Building Code Identification Number (BCIN) must be included on the permit application form. If you don't know the name of the installer when you submit your permit application form, you must advise the Health Unit before the system is constructed/installed.

If you are constructing/installing the system yourself, please list yourself as the installer.

### SECTION C: Intended Use and Class of Sewage Treatment System

Describe the intended use of the structure (i.e. single family dwelling). For commercial use (i.e. restaurant, motel or large systems), the services of a consulting engineer is likely required to design the sewage treatment system. Full knowledge of Part 8 of the Ontario Building Code (OBC) is essential for designing and installing sewage treatment systems.

**Identify the class of Sewage Treatment System you are proposing to construct/install.**

- Class 1 System —a chemical toilet, an incinerating toilet, a recirculating toilet, a self-contained *portable toilet* and all forms of privy including a *portable privy*, an *earth privy,* a *pail privy*, a *privy vault* and a *composting toilet system*
- Class 2 System – A leaching pit is used for the treatment and dispersal of greywater only.
- Class 3 System – A cesspool is used for the treatment and dispersal of certain Class 1 systems.
- Class 4 System – A septic tank and leaching bed/tertiary treatment unit; used for the treatment and dispersal of all wastewater.
- Class 5 System – A holding tank is permitted only by exemption under the OBC.

**SECTION D: Property Information**

Provide the legal description of the property the sewage treatment system is to be constructed/installed on. Include the area in meters and or feet. For larger parcels of land, use hectares and/or acres.

**SECTION E: Building**

This section refers to the building that will be served by the proposed sewage treatment system. Include the total proposed finished floor area in square meters and/or in feet for residential dwellings. You do not have to include the basement and/or garage.

**SECTION F: Water Supply**

Indicate water source (i.e. dug/drilled well, municipal water, lake, other). Make sure you note whether the water supply is proposed or existing.

**SECTION G: Specific Measurements Required — See Appendix B**

Identify separation distances between the water supply and proposed location of septic tank and leaching bed/dispersal bed. Include distance to neighbor's well if less than 46 meters (150 feet) away from proposed sewage treatment system. Measurements will be verified during the initial and final inspection. **Failure to provide accurate measurements may result in permit revocation.**

**SECTION H: Directions to Lot**

Include simple directions (i.e. street address or fire number). Where these are not available the Lot Identification Card, included in the Application Information Package, must be visible (i.e. tree, fence post, end of driveway).

**SECTION I: Plumbing**

In this section, record the plumbing fixtures. Include any fixture units in basement including future **"rough-in"** fixtures.

**SECTION J: Residential Occupancy — See Appendix C**

**Daily Sewage Flow "Q":**

1. For residential occupancies, the daily sewage flow (Q) is determined by using the volume (Litres) from page 2 of the application.
2. If there are several items in the additional flow list, (found in Appendix C) which apply, add the one item that adds the greatest flow.

**SECTION K: Other Occupancies — See Appendix D**

1. The daily sewage flow (Q) is determined by the number of rooms, staff, seats, etc. multiplied by the applicable liters/day.
2. Where a building contains more than one establishment, the total daily sewage flow (Q) is the sum of the daily sewage flow (Q) for each establishment.
3. When an occupancy is not listed in OBC Table 8.2.1.3.B – Other Occupancies (see Appendix D), the highest of the metered flow data from at least 3 similar establishments will be acceptable for determining the daily sewage flow (Q). This will likely require the design from a certified installer/contractor. **(must have a BCIN - Building Code Identification Number)**

**SECTION L: Site Evaluation and Percolation Rates (T-Time)**

Please make note of the following:

***1. Describe existing soil type in sewage treatment system area***
Test pits will allow you to see the subsoil profile and groundwater conditions below grade at the proposed location of the leaching bed.

The test pits should be dug within the proposed location of the leaching bed. The test pits should be 1 meter (36 inches) wide and 1.67 meters (66 inches) deep. The test pits allow the Land Development Officer to verify soil conditions. Ensure the test pit(s) are covered for safety reasons.

***2. Determine depth to bedrock, hardpan and/or groundwater table (if applicable)***
Please indicate the depth at which you observed bedrock, hardpan and/or the high groundwater table if applicable. If you do not observe any of the three items previously listed in the 1.67 meter deep test pits, indicate by completing this section with “1.67 meters (66 inches) PLUS”. This will inform us that you can excavate greater than 1.67 meters (66 inches) before bedrock, hardpan and/or groundwater is encountered.

***3. Describe soils to be used for sewage treatment system***
Indicate whether you are proposing to construct/install the sewage treatment system in the existing/native soil or if the leaching bed/dispersal bed will be constructed/installed in imported sand. While there are exceptions to the rule, generally, your lot either possesses 1.67 meters (66 inches) of native sand or you will be importing 1.67 meters (66 inches) of clean sand.

**4. *Mantle* - contact area beyond the leaching bed/dispersal bed**
The 15 meter (50 feet) mantle is the extended area beyond a sewage treatment system that absorbs excess effluent if there are peak flows on the system, or if there are poor soil conditions on your property. Without it, the water would lay on the surface of the ground, potentially creating a health and/or safety hazard.

If imported sand is needed for the construction of the leaching bed/dispersal bed, you will also need to import clean sand to establish the sand mantle.

The sand mantle must extended a minimum of 15 meters (50 feet) beyond the leaching bed/dispersal bed in the direction in which effluent (e.g. wastewater) will move across the soil. If your lot is level, the mantle must extend a minimum of 15 meters (50 feet) in all directions. If this is the case at your site, speak to a licensed contractor or qualified consultant.

***5. Determine percolation time of proposed soils — Appendix E***
Percolation time (T-time) means the average time in minutes that is required for water to drop one centimeter into the soil as determined by a soil evaluation or analysis. If you are proposing to construct/install the system in the existing/native soil, a “bucket” size sample, taken at two locations from a depth of 0.76-0.9 meters (30-36 inches), must be submitted to an accredited soils agency for testing. See consultants listed in

**Appendix E**: **Soil Types and Estimated T-Times**

If there is a significant range in the percolation time (T-time), the high end of the range will be used in conjunction with the daily sewage flow to calculate the size of leaching bed or area bed.

If you are constructing a “raised leaching bed” with imported clean sands, confirmation of the T-time of the imported fill must be forwarded to the Health Unit.

**The high end of the range of the T-time will be used for design purposes.**

## SECTION M: System Construction Details

### *Class 2 Sewage Treatment System — Leaching Pit — See Appendix F*

Leaching pits are used to treat and disperse grey water sewage only. They are NOT to be used for the disposal of toilet waste. Since leaching pits treat and disperse sewage, they must be inspected and approved under the OBC by the Health Unit.

This type of system can only be used to treat and disperse water wastes which come from plumbing fixtures such as sinks, showers and saunas. The maximum daily sewage flow into a leaching pit must not exceed 1000 liters per day. **See Appendix F** for sizing information.

### *Class 4 Sewage Treatment System — See Appendix G*

The most common class of an on-site sewage treatment system is the Class 4 system. This class is commonly referred to as a “septic” or “leaching bed” system. Tertiary treatment units are growing in popularity; see page 10 for more information.

There are two main components of a Class 4 sewage treatment system: septic tank and leaching bed/dispersal bed.

### *Septic Tank*

The septic tank is a buried, watertight container, which receives wastewater from a home/business. Septic tanks are made from concrete, polyethylene or fiberglass. The current minimum size of septic tank allowed in Ontario is 3600L (800 gallons).

The purpose of the septic tank is to separate liquids from solids and to provide some breakdown of organic matter in the wastewater. Solids settle to the bottom of the tank forming a sludge layer. Fats, oils and grease float to the top forming a scum layer. The tank should be pumped out every three to five years or when one-third (1/3) of the tank volume is filled with solids, as measured by a service provider such as a pumper. Naturally occurring bacteria from body waste, flushed into the septic tank, work to break down the sewage over time.

For residential occupancies, the size of a septic tank is determined in part by the size of the home, including the number of bedrooms and bathrooms. For non-residential occupancies, the number of employees is used in part to determine the tank size.

**Additives such as “starters” which promote “cleanliness” of the septic tank are not recommended.**

### *Leaching Bed*

The effluent (e.g. wastewater) exits from the second chamber of the septic tank and enters a series of distribution pipes below surface level. There, the wastewater is evenly distributed to the chambers, referred to as the leaching bed. Soils beneath the trench and/or chambers provide most of the aerobic treatment of the wastewater. Sand is ideal for treatment while clay soils are not. Poor draining soils may result in groundwater ponding. This has the potential to saturate soils in and around the leaching bed. Treatment will not occur in saturated soils as caused by a high or perched water table.

There are three types of treatment that occur in the soil: physical, chemical and biological. Physical treatment is the filtration of bacteria out of the percolating wastewater by the soil. Cation exchange capacity (CEC) is an example of a chemical treatment process that can bind nutrients such as phosphorous in the wastewater to the soil. Bacteria and other soil microorganisms are responsible for the biological treatment of the wastewater. These “bugs” eat any organic solids that make it from the septic tank to the leaching bed.

The Ontario Building Code (OBC) requires a minimum of 0.9 meters (36 inches) of unsaturated permeable soil separating the trench or chamber bottom and the seasonal high groundwater table, bedrock or clay soils. In situations where there is more than 1.67 meters (66 inches) of unsaturated native permeable soil above the groundwater, bedrock and/or clay soils, a *conventional system* may be constructed/installed. In situations where less than 1.67 meters of unsaturated native permeable soil exists above the groundwater, bedrock and/or clay soils, a *partial or fully raised leaching bed* must be constructed/installed. See **Appendix G** for sizing.

### *Tertiary Treatment Units*

A Tertiary Treatment Unit (TTU) is defined as a sewage treatment system that complies with the Effluent Quality Criteria as regulated by the OBC table 8.6.2.2.A. Sewage that has passed through a TTU has been significantly reduced in strength from a normal residential strength waste count of 120-150mg/L BOD5 (organic waste) to roughly 15mg/L.

Wastewater exiting a TTU is reduced to about 1/10 the strength of normal residential strength wastewater. As a result, the leaching bed/dispersal bed is half the size of a conventional leaching bed.

Where additional treatment methods are used to treat the raw sewage, it can be done through aeration (oxygen) processes, filtration or chemical additive. These treatment units are classified by the level of treatment achieved. Manufacturers of approved systems are listed in the Supplementary Guidelines of the Ontario Building Code (OBC).

**A Tertiary Treatment Unit must be designed and installed by the authorized agents or employees of the Manufacturer of the Treatment Unit**

**In addition, an agreement must be contracted for maintenance and service of this alternative method of sewage treatment and dispersal.**

## The use of holding tanks is restricted.

***Class 5 Sewage System — Holding Tanks — See Appendix H***

Holding tanks may be installed ONLY in the following circumstances:

1. When the proposed use of the sewage system is for a temporary operation, excluding seasonal recreation use, not exceeding 12 months in duration.
2. To permit the extension of an existing single-family dwelling provided that the extension will not increase the wastewater load and the building is already served by a holding tank.
3. To remedy an unsafe sewage system where the remediation of the unsafe condition by the installation of a Class 4 sewage system is impractical.
4. To upgrade a sewage system on a existing lot or parcel of land, where upgrading through the use of a Class 4 sewage system is not possible due to lot size or clearance limitations.

If approval is granted to install a holding tank, the following conditions must be completed to ensure compliance with the Ontario Building Code (OBC):

1. A written agreement for the disposal of the sanitary sewage from the sewage system shall be entered into with a hauled sewage system operator. This letter must be enclosed with the application at the time of the submission.
2. All holding tanks must be equipped with a device that produces an audible (e.g. sound) and visual warning alarm located in such a way as to warn that the sewage system is nearing capacity.

The final inspection will not be performed until the Health Unit is notified that the audible and visual alarm mechanisms are installed and operational.

### Is a pump required?

If the total length of distribution pipe is greater than 150 meters, an effluent (wastewater) pump must distribute effluent throughout the leaching bed/dispersal bed.

The pump must be designed to discharge a dose of at least 75% of the internal volume of the distribution pipe and/or chamber within a time period of fifteen minutes.

Indicate the elevation that the effluent (wastewater) must be pumped (head) and the distance between the pump chamber and the leaching bed/dispersal bed (run).

Please include the make, model and horsepower of the pump. Please indicate the volume of the effluent to be dosed to the distribution system in **Section M**.

See **Appendix I** for sizing.

**SECTION N: Lot Diagram and Site Plan — See Appendix J**

This section is located on page 3 of the Application Form. In this section, you will illustrate all proposed development on the property.

Accurately measure and record all distances from the proposed sewage treatment system to:

- Property Lines
- Water courses
- Bare Rock
- Buildings,
- **Y**our well and/or neighbor's well (proposed or existing) if less than 46 meters (150 feet) from sewage treatment system

A detailed site plan showing location of septic tank and pump chamber if required. All dimensions of leaching bed/dispersal bed, including the **SAND MANTLE**, must be clearly marked on page 3 of the application.

Land marks such as property lines, water courses, bare rock and topography of the lot are just a few of the features that could affect the orientation/layout of the system. Any deviation from “normal” construction practices requires a fully detailed proposal in writing accompanied by an accurate diagram in this section.

**SECTION O: Sewage System Cross Section/Side Profile — See Appendix J**

This section is location on page 3 of the Application Form.

The side profile of the house, tank and sewage system must be illustrated showing the proposed construction method.

If there is sufficient slope on the property to allow for a “bench/wedge system”, a fully detailed diagram illustrating maximum excavation (0.9metres/36 inches) relative to original grade and all applicable horizontal measurements must be shown.

## THE HEALTH UNIT DOES NOT DESIGN SEWAGE TREATMENT SYSTEMS.

**The Health Unit will return all applications that are incomplete or unsigned. Please be advised the permit is valid from one year from date of issue.**

**A permit renewal fee will be applied to expired permits for up to two years from the date of issue.**

**Permits that exceed the two year limit are deemed void. A new application and fee is required.**

# Appendix A: Measurement Requirements

The tables below list the required clearance distances for components of sewage systems. The clearance distances are listed in meters (m).

*If the leaching bed is raised, add 2 meters for every 1 meter rise.*

## Class 2 Leaching Pit - Minimum Separation Distances From:

| Wells with 6 m casing | Wells without 6 m casing | Potable springs | Non-potable springs | Surface water (lakes, rivers, etc.) | Property lines | Structures |
|---|---|---|---|---|---|---|
| 10m | 30m | 30m | 15m | 15m | 3m | 1.5m |

## Class 4 Distribution Pipe - Minimum Separation Distances From:

LEGEND: C= Conventional leaching bed; R=Raised leaching bed

| Wells with 6 m casing | Wells without 6 m casing | Potable springs | Non-potable springs | Surface water (lakes, rivers, etc.) | Property lines | Structures |
|---|---|---|---|---|---|---|
| C = 15m<br>R = 18m | C = 30m<br>R = 33m | C = 15m<br>R = 18m | C = 15m<br>R = 18m | C = 15m<br>R = 18m | C = 3m<br>R = 6m | C = 5m<br>R = 8m |

## Class 4 Septic Tank - Minimum Separation Distances From:

| Wells with 6 m casing | Wells without 6 m casing | Potable springs | Non-potable springs | Surface water (lakes, rivers, etc.) | Property lines | Structures |
|---|---|---|---|---|---|---|
| 15m | 15m | 15m | 15m | 15m | 3m | 1.5m |

## Class 5 Holding Tank - Minimum Separation Distances From:

| Wells with 6 m casing | Wells without 6 m casing | Potable springs | Non-potable springs | Surface water (lakes, rivers, etc.) | Property lines | Structures |
|---|---|---|---|---|---|---|
| 15m | 15m | 15m | 15m | 15m | 3m | 1.5m |

## Appendix B: OBC Section 8.2.1.2.A – Residential Occupancy

| **Dwelling** | **Daily Sewage Flow: Volume (liters)** |
|---|---|
| 1 bedroom dwelling<br>2 bedroom dwelling<br>3 bedroom dwelling<br>4 bedroom dwelling<br>5 bedroom dwelling<br><br>Additional flow for:<br>each bedroom over 5 bedrooms<br>each $10m^2$ (or part thereof) over 200 $m^2$ **<br>each fixture unit over 20 fixture units<br>**for buildings over $200m^2$, refer to Building Code | 750<br>1100<br>1600<br>2000<br>2500<br><br><br>add 500<br>add 100<br>add 50 |
| Apartments (per person) | 275 |
| Condominiums (per person) | 275 |
| Other multi-family dwellings | 275 |

## Appendix C: Class 2 — Leaching Pit Requirements

To determine the construction requirements for the **leaching pit**, follow these steps:

1. To begin, determine the estimated time (T-Time) value of the soil to be used from Appendix E of the application package to determine how fast the greywater will drain into the surrounding soil.

2. Next you will use the T-time to determine the soil's acceptance of the greywater; this is called the loading rate. To calculate the loading rate (LR), divide the T-time into 400.

   $$LR = \frac{400}{\text{T-time}}$$

3. Next, you will need to determine the number of fixture units by referring to Section I (Plumbing).

4. Next, determine the volume of greywater that will drain into the system

   When there is **pressurized water, the volume is 200 liters per fixture unit**
   When there is **no pressurized water, the volume is 125 liters per fixture unit**

5. Next, take the number of fixture units and multiply it by the how much greywater will drain into the system to determine the total quantity of greywater.

6. For example, a 'camp' has a kitchen sink, bathroom sink and shower with a pressurized water system. The flow rate is determined by multiplying 3 X 1.5 = 4.5 fixture units of plumbing. Then multiply 4.5 X 200 (pressurized water) Total volume of greywater = 900 litres.

7. Next, to size the system, divide the total quantity of greywater by the loading rate to determine the value in meters squared.

8. Finally, determine the size of the side walls by dividing the size of the system by 4 as there are four side walls.

**See the next page for an example.**

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**Example:**

The percolation time (T-time) is 5 minutes/cm (clean sand)

The loading rate is $LR = \frac{400}{\text{T-time}} \longrightarrow LR = \frac{400}{5} \longrightarrow LR = 80L/m2$

The number of fixture units is 4.5.

There is pressurized water so volume of greywater per fixture unit is 200 liters.

The total quantity of greywater is determined by multiplying the number of fixture units X volume per fixture; in this example, 4.5 x 200 = 900 liters.

To size this system, divide the total quantity of greywater by the loading rate (LR); in this example, 900/80 = 11 meters square

To determine the size of each side wall, divide the size of the system by 4; in this example, 11./4 = 2.75 meters squared

So, each side wall must be 2.75 meters squared (30 square feet). The pit could be dug 1.5 meters (5 feet) deep and 1.8 meters (6 feet) wide.

OR

Using the Infiltrator chambers:

Trench length proposed is 0.3 metres high and 0.5 metres wide =

11/(0.3 + 0.3 0.5) = 10 metres of trench

This can be constructed by establishing 3 trenches 3.3 metres long.
The trenches need to be 1.7 metres apart on center of infiltrator chamber.
The trenches are hooked up to header to distribute effluent evenly

**Keep in mind the appropriate separation distances as indicated in Appendix B. Specify the bottom of the pit shall be at least 900 millimeters (3 feet) above the high ground water table, clay or bedrock.**

# Appendix D: Class 4 Requirements

### Class 4 – Septic Tank Size Requirements

For a Class 4 septic tank, 3600 liters is the minimum tank size allowed under the OBC.

For residential occupancies, the septic tank must be twice the daily design sanitary sewage flow or Q X 2. Q is calculated on page 2 of your application.

For non-residential occupancies, the septic tank must be three times the daily design sanitary sewage flow or Q X 3.

If you are planning to install a garbage disposal unit, it is highly recommended to increase the septic tank capacity by 50%.

### Class 4 – Leaching Bed Requirements

Once you have the daily sewage flow (Q) and the percolation rate (T-time), you can calculate the field-size (L) by using the following formula:

$$L = \frac{Q \times T\text{-time}}{200} = \text{minimum length of required distribution pipe}$$

***Example:***

If Q is 1600 for a 3 bedroom home and the T-time is 10/cm for clean sand:

$$L = \frac{1600 \times 10 \text{ minutes/cm}}{200} = 80 \text{ meters}$$

The field-size (L) is 80 meters OR 262 feet. For design purposes, 262 feet is rounded up to 275 feet as 275 can be divided evenly into 5 runs (or lengths) of distribution pipes, each 55 feet long.

Leaching beds comprised of 4 inch pipe and stone have generally been replaced by **infiltrator chambers** there are two types of infiltrator chamber available. They are referred to as **Type 1** and **Type 2.**

The **Type 1** chamber is known as the Q4EQ24 chamber. The formula to determine the total length of leaching bed required is Q X T divided by 200. There is **no reduction** in the total length of leaching bed.

The **Type 2** chamber is known as the Q4E36 chamber. The formula to determine the total length of leaching bed required is QT divided by 300.

The use of this technology allows for up to a **30% reduction in total length of leaching bed.** However, the full 30% reduction is generally only proposed for seasonal dwellings. While it is legal to propose the fill reduction, the norm is not to propose the full reduction.

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The 'norm' is to propose a leaching bed somewhere in between the old school 4 inch pipe and stone (dividing by 200) and the infiltrator chamber (dividing by 300)

**Example**
If Q is 1600L for a 3 bedroom home and the T-time 10min/cm for clean sand:

$$L = \frac{1600L \times 10min/cm}{250} = 64 \text{ metres}$$

**It is unlikely that you will be constructing your new dwelling to the bare bones minimum. If you apply the full 30% reduction to the size of your leaching bed, you will be constructing a bare bones minimum size leaching bed. This is not recommended.**

**Ontario Building Code — Reference 8.7.3.2 — Leaching Bed Requirements**

The Ontario Building Code also stipulates that leaching bed trenches must be installed:

- At approximately the same length, and not more than 30 m (100 feet) lengths.
- At least 500 mm (20 inches) and not more than 1000 mm (40 inches) in width
- At least 900 mm (36 inches) at all points on the bottom of trench, above high groundwater table, rock or soil with percolation rate greater than 50 minutes/cm
- Centered at least 1.6 m (5 feet) apart

.

Backfill, after the installation of the distribution pipe with leaching bed fill, in such a way as to ensure that after the leaching bed fill settles, the surface of the leaching bed will not form any depression.

The surface of the leaching pit shall be shaped to shed water and together with the side slopes of any raised portion, must be protected against erosion in such a manner as to not inhibit the evaporation and transpiration of waters from the soil or leaching bed fill, and to not cause plugging of the distribution pipe.

No part of the leaching bed can be sloped steeper than 25%, one units vertical to 4 units horizontal.

The leaching bed shall be designed and protected from compaction or stress or pressure that may;
a) result in the impairment or destruction of any pipe in the leaching bed, OR
b) may result in the smearing of soil or leaching bed fill.

# Appendix E: Class 5 Requirements

### Holding Tank Sizing Requirements

The size of a holding tank is based on a holding capacity of 7 times the total daily sewage flow (Q), but not less than 9000 liters.

Q (from page 2 on application) _____ X 7 = _____ liters

### Holding Tank Construction Requirements

Where a holding tank is approved, a written agreement for the disposal of the sanitary sewage from the sewage system must be entered into with a hauled sewage system operator.

All class 5 sewage systems shall be equipped with a devise that shall produce an audible and visual warning alarm that will notify when the holding tank is nearing capacity and requires pumping.

This alarm should provide sufficient warning to allow for the unpredictable response time of the hauled sewage system contractor.

Holding tanks must also be vented either by installing a vent pipe on the tank or connecting into the venting system of the building.

## Appendix F: Pump Dosing

If there is not sufficient drop between the septic tank and the leaching to allow for a ‘gravity fed system’, a pump dosing system is required.

A pump dosing system is also required for all leaching beds that are 150 metres or greater in total length.

A volume of effluent within the range of 3.5 - 8 Litres per minute must be pumped into the Infiltrator chamber leaching bed within a time period not exceeding 15 minutes to meet the requirements of sentence 8.6.1.3. (4). of the Ontario Building Code.

When the length of the infiltrator is reduced, a 4 inch distribution pipe shall be installed in the chamber, according to the manufacturer’s recommendations and extend the total length of the trench.

# Appendix G: Completing Sections N & O of the Application

**APPLICATION FOR SEWAGE SYSTEM PERMIT- PAGE 3**

**APPLICATION NO.** 126-2013

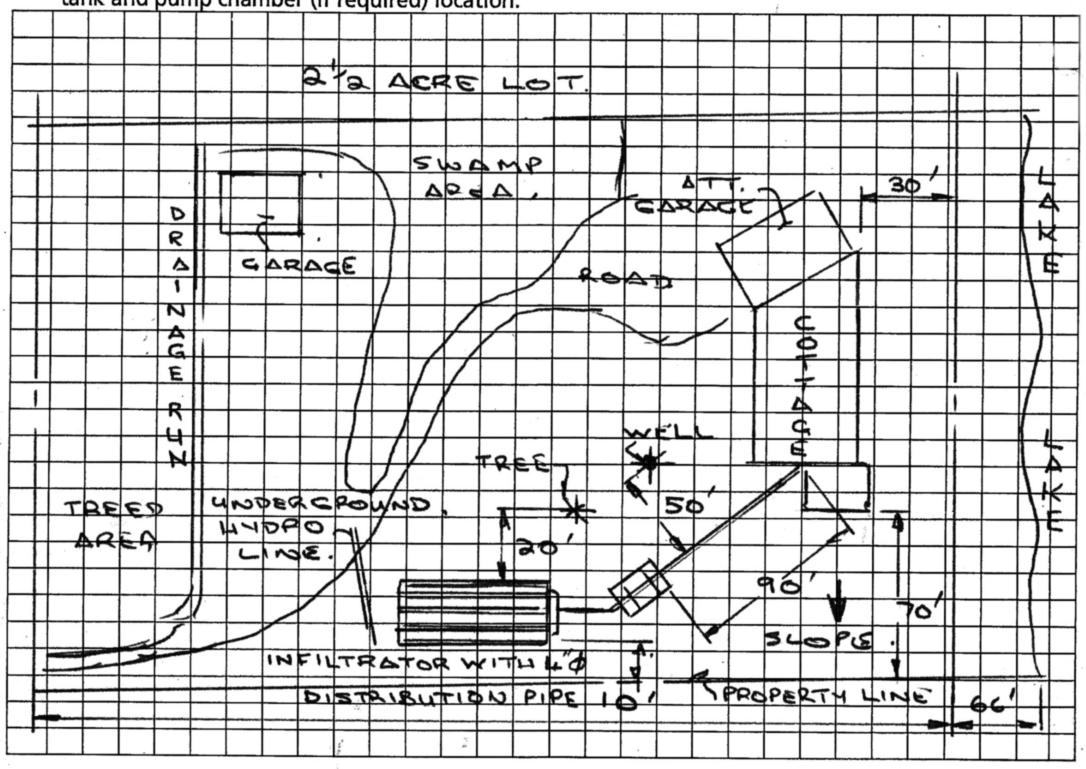
**SECTION N** **LOT DIAGRAM AND SITE PLAN**

Include the following on the site plan:

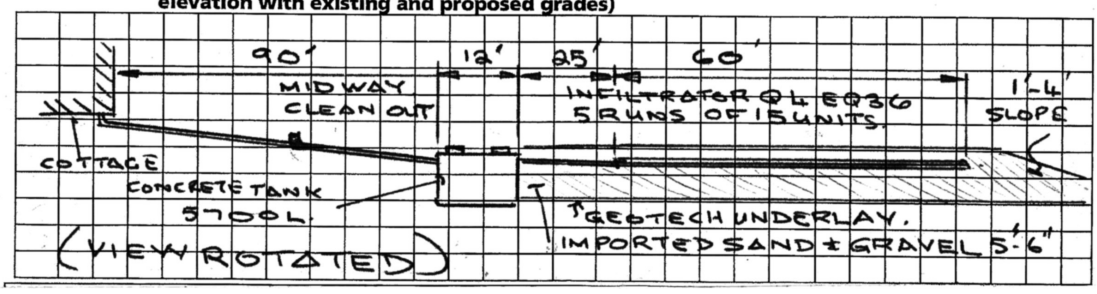
a) All buildings-proposed and/or existing, **wells [include neighbours' if less than 46 m (150 ft.)] away,** driveways, utility easements, etc.

b) Property lines, water courses, swamps, cliffs, bare rock, slope, etc.

c) Provide detailed sewage system diagram, including dimensions of leaching bed, sand mantle, septic tank and pump chamber (if required) location.




**SECTION O - SEWAGE SYSTEM CROSS SECTION/SIDE PROFILE (of house, tank and sewage system elevation with existing and proposed grades)**



# EXAMPLE

Thunder Bay District Health Unit

## COMPLETION NOTICE

**The following form must be completed and returned to the office prior to use of the sewage system (OBC 2.4.3.1. (2)(q))**

| OWNER'S NAME | MAILING ADDRESS | PERMIT # |
|---|---|---|
| | | |
| **CONTRACTOR** | **CONTRACTOR LICENCE #** | **PHONE #** |
| | | |

**LEGAL DESCRIPTION OF PROPERTY – DISTRICT OF THUNDER BAY**

| TWP. WARD | LOT # | CONC. # | REFERENCE PLAN # | PLAN # |
|---|---|---|---|---|
| | | | | |
| OTHER: | | | | |

**TYPE OF SEWAGE SYSTEM**

☐ Class 2 ☐ Class 4 (Conventional) ☑ Class 4 (Raised) ☐ Class 4 (Sec./Tertiary) ☐ Class 5 (Holding Tank)

Tank Size: 4500 L ☑ Concrete ☐ PVC Effluent Filter: ☑ Yes ☐ No

Total Length of Pipe 100 m constructed in: ☐ Native soil ☑ Imported fill

Type of Pipe: ☐ Conventional ☑ Chamber Type of Treatment Unit & Model _____

Dimensions of Stone Layer _____ Dimensions of Sand Layer (contact area) _____

**CHECK WHERE APPLICABLE:**

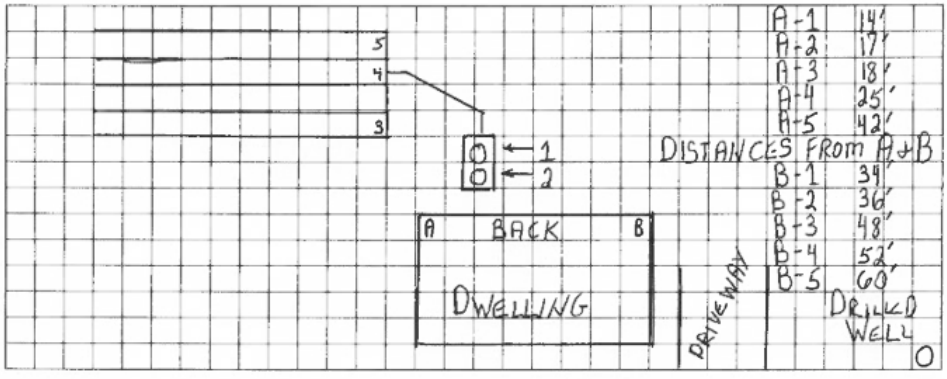
| | |
|---|---|
| ☑ Backfilled with suitable material | Date Completed: JUNE 21 2022 |
| ☑ Sand mantle established, if applicable | Date Completed: JUNE 21, 2022 |
| ☑ Sewage System mounded to shed & divert water around leaching bed | Date Completed: JUNE 21, 2022 |
| ☑ Stabilize all sloped surfaces (4:1), (Raised leaching bed) | Date Completed: JUNE 21, 2022 |
| ☐ Pump installed, operational and float set appropriately, if applicable | Date Completed: |
| ☑ Seed or sod (to prevent erosion) | Expected Date Completed: Summer 2022 |
| ☐ Audio and Visual Warning Alarms | Date Completed: |
| ☐ Installed and Operational (Class 5 only) | Date Completed: |

**"AS BUILT" DIAGRAM**

Please draw all components of sewage system (pump tank, septic tank and distribution area) in relations to building, well etc. for future reference and maintenance purposes. Determine two fixed points of reference and measure distances to each component.

*I certify that the above information is correct ensuring full compliance of the Ontario Building Code:*

INSTALLER'S SIGNATURE _____ DATE _____




**CERTIFICATION OF READINESS TO USE**

*(To Be Completed By Inspector)*

I, _____ pursuant to the above notice under section 11 of the Building Code Act, AUTHORIZE FOR USE, the above-noted sewage system.

SIGNATURE OF INSPECTOR _____ DATE _____

TBDHU12(rev03/11) **DISTRIBUTION: WHITE** – Office **BUFF** – Owner's Copy

## Maintaining Your Sewage Treatment System

- The septic tank should be pumped every 3 to 5 years depending on use.
- Keep a maintenance record of your septic system.
- Common household habits that can create problems so please do not put these items down your septic system:
    - grease
    - coffee grounds
    - bones
    - cooking fats
    - cigarette butts
    - disposable diapers
    - paper towels
    - tissues
    - condoms
    - feminine hygiene products

## Additional Information

Thunder Bay District Health Unit
- 625-7990 or toll-free at 1-888-294-6630, ext. 7990

Ministry of Municipal Affairs & Housing—Ontario Building Code
- www.ontario.ca/buildingcode

Ontario Onsite Wastewater Association
- www.oowa.org

Ontario Rural Wastewater Centre
- www.uoguelph.ca/orwc/

Ontario Ministry of the Environment and Climate Change
- www.ontario.ca/ministry-environment-and-climate-change

Federation of Ontario Cottagers Associations
- www.foca.ca/septic systems