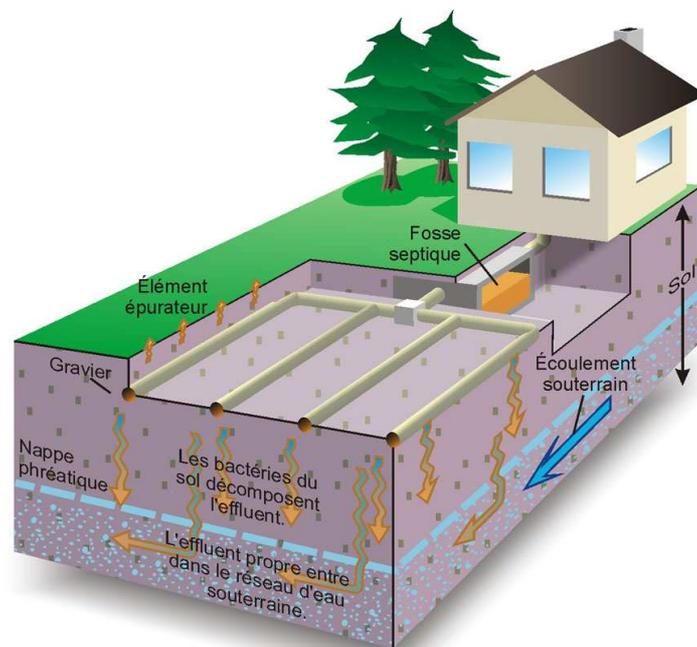


To conserve

Practical guide on the protection and use of your septic system



Municipalité du Canton de
Potton
Municipality of the township of

Practical guide on the protection and use of your septic system

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Responsibilities of the Municipality of the Township of Potton

Municipalities now have the responsibility to enforce the rules on the disposal and the treatment of wastewater from isolated dwellings (Q-2, r.22). The Regulation applies to homes with six bedrooms and under who are not connected to a sewer system and other uses, such as those that generate a daily domestic waste water flow rate of less than 3 240 litres.

The buildings that discharge non-domestic wastewater or in quantities greater than 3240 litres are supported by the Ministry of Sustainable Development of the Environment and the Fight against Climate Change (MDDELCC).

The Municipality of the Township of Potton has the obligation to inform and support its citizens who own a septic system.

How a septic system works

A septic system receives all wastewater from the residence (use of the toilets, showers, sinks, dishwasher and washer) and treats it so the effluent levels are safe before returning it to groundwater. A conventional septic system is comprised of two components; an impervious septic tank which is the primary treatment and a filtering element which is the secondary treatment. This system treats domestic wastewater individually and independently. Occasionally, a pumping station is also part of the system when water cannot be distributed by gravity to the leaching bed.

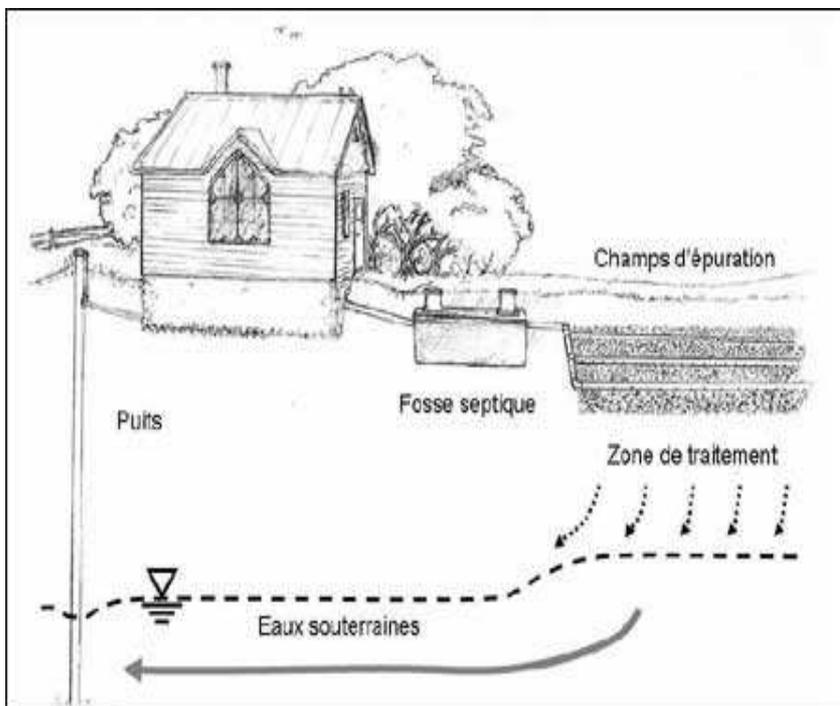


Fig. 1: Individual wastewater system (source : Éric Brunet, Ontario Rural Wastewater Center, Guelph University)

A septic tank

The purpose of a septic tank is to separate liquids and solids from the flow of wastewater by sedimentation to begin the breakdown process before infiltration into the soil. The decomposition of organic matter is also under way.

The tank is buried in the ground, but the covers remain visible on the surface. The capacity of the two compartments is based on the number of bedrooms in the residence and therefore depends on housing needs. There are several types of septic tanks such as concrete, polyethylene and fibreglass. The tanks made of steel and wood are no longer permitted. Certified tanks have the number NQ 3680-905 and since 2009 are also equipped with a pre-filter.

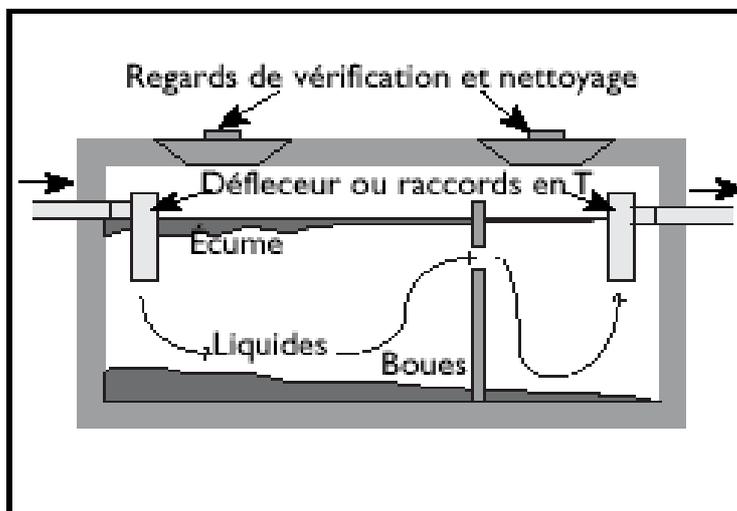


Fig. 2: Diagram of a septic tank (source : SCHL)

How does a septic tank work?

Wastewater from the house enters the first compartment where the velocity slows. The heavier solids settle in the bottom and form a layer of **SLUDGE** and the lighter solids gather on the surface to form a layer of **SCUM** and fats. Between the two layers is the water to be filtered. This water moves into the second compartment through an opening. The water has a low solid content in the second compartment and is discharged into the leach field. The separation barrier between the two compartments of the tank prevents the scum and sludge from flowing into the leach field.

Micro-organisms such as bacteria break down or "digest" the organic solids present in the wastewater. This process reduces the volume of sludge and scum. This is the first stage of purifying wastewater.

The amount of water transferred to the leaching bed varies depending on the wastewater flow which enters the tank. A septic tank is normally always filled with liquid, to avoid the transfer of the sludge and scum to the second compartment. Therefore, whenever liquid is



It is possible to install an effluent filter at the outlet of the septic tank (inside the second compartment), to prevent large solid particles from flowing out of the septic tank and into the leach field. An effluent filter prevents premature clogging of the leach field.

sent to the septic tank the same amount of liquid moves into the leach field.

The leach field

The purpose of a leach field is to provide a secondary treatment of wastewater. The purifying method varies depending on several factors including the type of soil, the profile and the surface area of the disposal site and the number of bedrooms in the residence. One can opt for a classic or modified leach field, an aboveground sand filter or an absorbing well. One can also opt for an advanced secondary system when it is not possible to have a conventional treatment system. Systems such as Bionest, Bio-B, Ecoflo, Ecobox, Enviro-septic and Ecophyltre must be certified by the *Bureau de Normalisation du Quebec* (BNQ). The leach field acts as a filter that treats the effluent from the septic tank using natural processes and redistributes water in the soil.

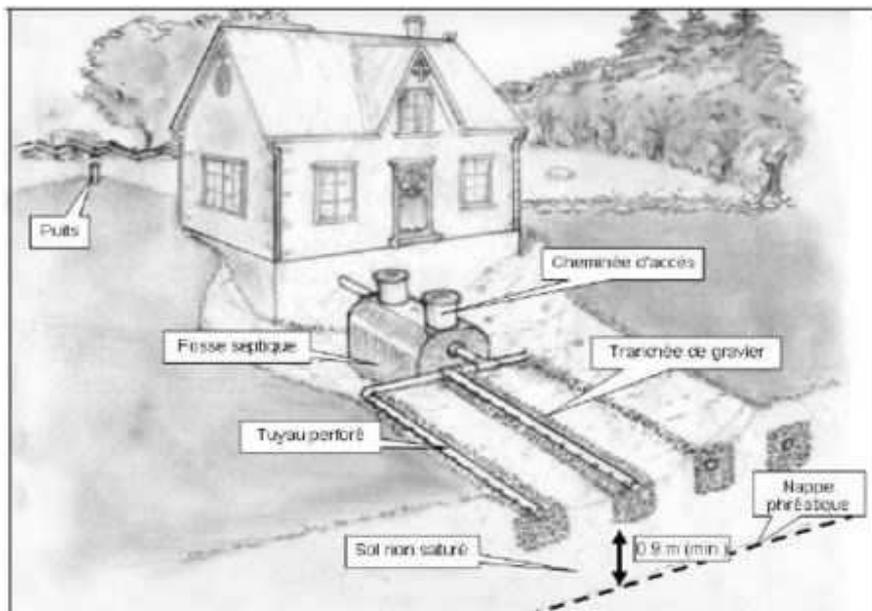


Fig. 3 :
Diagram of
A leach field

How does a leach field work?

The liquids from the second compartment of the septic tank flow to the leach field. The standard type of treatment field consists of perforated pipes buried under a layer of gravel or crushed stone. The effluent slowly infiltrates into the soil, micro-organisms digest and eliminate residual contaminants. A biological layer of bacteria called "biomat" forms at the bottom and on the sidewalls of each distribution trench of the leach field. It is in this layer that much of the treatment occurs.

With an advanced secondary system, an intermediate processing unit is located between the tank and leach field. Thus, filtration and treatment of wastewater treatment is assured before infiltration into the soil.



The purified water is released back into the groundwater that supplies wells used for human consumption or enters into bodies of water such as lakes and rivers. A good filtration system is very important to your health as well as the environment!

The soil bacteria which performs the treatment requires oxygen to function. Therefore, the leach field must be installed in soil that is not saturated by surface water run-off or a high groundwater table. It should not be paved or covered by a patio, shed, pool, etc.

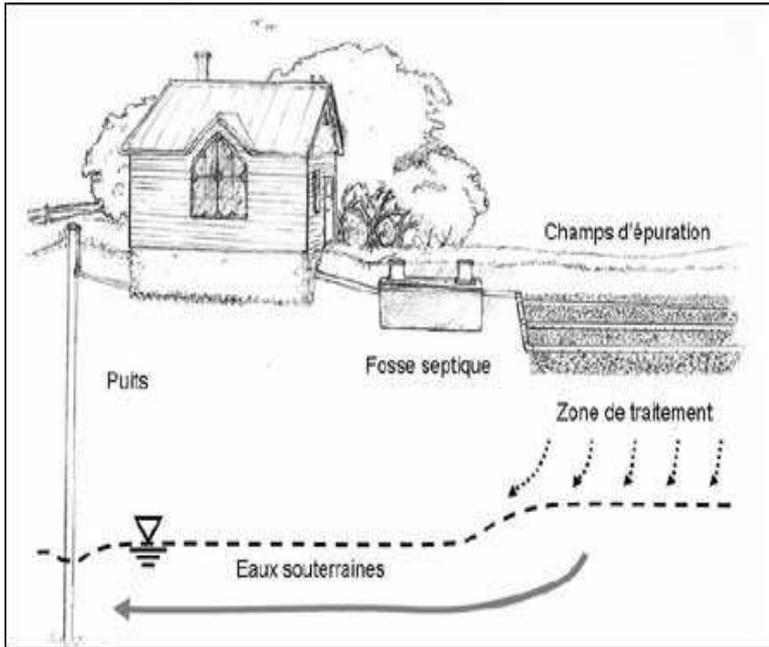


Fig. 4 : When treated water joins groundwater

Emptying of the septic tank

Over time, the sludge will build up in the bottom of the septic tank. If allowed to accumulate, it will eventually flow into the leach field and clog the distribution pipes. Therefore the septic tank should be pumped out when the layer of sludge measures 30 cm in thickness, or when the layer scum measures 12cm in thickness. The two compartments of the tank must be emptied. Therefore, it is important to make sure that both covers are accessible before emptying. The compartments are also examined to ensure that the installation works well and does not have any damage.



After the tank has been pumped, it is recommended to fill the tank with clear water to avoid the early migration of sludge and scum in the second compartment of the tank

Annual measuring of the septic tanks program

The measuring of sludge and scum every year is good for your wallet and for the environment! Rather than systematically emptying the tank, it is best to wait until the annual report and pump your septic tank only when necessary. This method has several advantages:

- It saves on transport (fewer heavy trucks) and the volume of waste to be treated. It is, therefore, a cleaner option by only treating the sludge that must be processed;
- It saves on the cost of emptying as it is done only when necessary;
- The micro-organisms present in the tank are better able to break down the solids and are healthier and more effective when not disturbed.

If you empty your septic tank regularly out of concern for the life of your leach field, you could install a pre-filter outside the septic tank. You must obtain a permit before installing a pre-filter. A contractor can provide certain information. The pre-filter offers a simple, economical and preventive solution that extends the life and proper functioning of the leach field.

Municipal regulations now include seepage pits in the measuring program for sludge and scum. It is important to locate the seepage pit and to make it accessible. If no cover or opening exists, you need to make one. To avoid shovelling every year, it is advisable to arrange a permanent access for the seepage pit.



It is important to realize that this type of installation is not safe. A seepage pit is often cracked, dislocated or rotten. Under these conditions, water and untreated solids seep directly into the soil and can contaminate the land and underground water sources consumed and shared by you and your neighbors. It is highly recommended that you replace a seepage pit for your own benefit and to allow everyone to maintain a healthy and safe environment.

Instructions to follow regarding the measuring

- The two covers of the tank are accessible at least 48 hours prior to the scheduled period;
- Clear eight inches around the edge of the cover and tank so the cover can be removed without difficulty;
- Remove or open all barriers preventing access to the septic installation;
- Dogs must be tied and out of reach of your septic installation when it is accessed ;
- Make sure that the employee can quickly locate your cover.



Your presence is not required when measuring. However, if these instructions are not followed and your septic tank is not accessible, you may be liable to a fine of 300\$ and \$600 for a reoccurring offense.

It is important that both covers be accessible. The second compartment is verified to ensure that there is no malfunction or premature wear of the field. If only one compartment is emptied, it is possible that a significant layer of sludge or scum is accumulated in the second compartment. Access to the latter also allows for verification of any problem when the water level is too high in the septic tank. In addition, the pre-filter is typically located in the second compartment and can be visually checked for blockages. The separation between two compartments is also checked as it can be pierced or broken and this could allow an accumulation of sludge and scum in the second compartment. Premature wear of the leach field could be the consequence.

Procedure for the measuring of sludge and scum

- The 2 covers of the septic tank will be opened;
- The thickness of sludge and scum will be measured. If the layer of sludge is more than 30 cm thick or the layer of scum is more than 12 cm thick, the tank must be emptied;

- A report is completed indicating the measures taken;
- A card will be left at your door and the report will be mailed to you.

Please note that when emptying of the septic tank is required, proof of emptying must be provided to the municipality within 30 days following the date of the report. Regardless of the year that you emptied your septic tank, the measuring of the sludge and scum will be performed each year. Given the fact that 1,530 septic systems are visited every summer; we cannot make an appointment.

Method for emptying of the septic tank

The method is generally to «completely» empty the tank. This process consists of removing the solids and liquids from the septic tank.

Cleaning of the pre-filter

It is recommended to clean the pre-filter at least twice a year; such as Spring and Fall. This reduces the possibility of obstructions in the leach field. Before you begin, it is very important to wear latex gloves and proper eye protection. You must then open the two covers of the septic tank and remove the filter from the tank. The filter is always above the opening of the tank. It is best to clean the filter above the first opening of the tank to avoid sending the suspended particles to the leach field. With a garden hose, clean the filter of any particles, leaving the water running IN the tank. When the filter is clean, is is

put back in place and the compartments of the septic tank can be closed.

Taking care of a septic system

To prolong the life of a septic system, one must consume water efficiently and take care of the micro-organisms by modifying our behaviour.

Water consumption

Every time that water drains into the septic tank, an equal amount of water moves into the leach field. The more water you introduce into the tank, the faster it moves to the leach field. This may also create turbulence when a large amount of water is supplied to the tank in a short period of time. The solids float and may be sent to the second compartment of the tank.

It takes time for the solids (sludge) to settle and separate from the liquid in the tank. If the water passes too quickly through the septic tank, there is less purification by the micro-organisms before the water reaches the leach field. Therefore, the water discharged into the ground contains the a higher concentrations of pollutants. The longer the retention period (during which the wastewater remains in the septic tank), the more the water is purified.

You need to have a regular evacuation of water in the septic system:

- Laundry can be done over several days rather than doing it all on the weekend;
- Install water saving fixtures throughout the house (shower, faucets, toilet);
- Do not leave the water running when doing dishes, brushing your teeth or while shaving;
- Keep a bottle of water in the refrigerator instead of letting the faucet run;
- Never send surface water from foundation drains, rain gutters, pool or spa « backwash » to the septic tank or leach field;
- Verify that your water softener « backwash » is not connected to the septic system as too much salt may damage the installation.

Micro-organisms, our allies!

The micro-organisms in the septic tank are required for the filtration of wastewater. They break down organic matter and decrease the amount of sludge and scum. We must limit the use of the products listed below as they interfere with the micro-organisms. The use of powdered soap for the washing machine, when not fully dissolved, may clog the inlet of the tank which could result in water back flowing inside the house. In addition, when a large amount of these products (ex. phosphate or nitrogen) are released into the soil and surrounding bodies of water, they can promote the growth of algae and alter the quality of the water and habitat for wildlife.

It is not usually necessary to use commercial septic tank cleansers, starters, or enhancers to aid in the digestion of the waste, as bacteria are naturally present in a septic installation.

Examples of products harmful to micro-organisms: large quantities of disinfectant such as bleach, cleaning products such as borax, back wash from water softeners, motor oil, medication, chemicals for unclogging drains, solvents and paint.



The use of biodegradable cleaning products may prolong the life of your septic system!

Other products which are also more difficult for the micro-organisms to break down and may block a the septic system.

Examples of products that are difficult to break down: ashes, hair, condoms, diapers, cooking oils and fats, animal litter, large quantities of organic matter, plastic, cigarette butts, facial tissues, paper towels, coffee grounds, cleaning products, sanitary napkins and tampons.

Depending of the above mentioned product, some can be placed in the compost bin, with residual matter or brought to the ecocenter. You can visit the municipal website in order to obtain further

information on the products accepted in the bins, bags for residual material or brought to the ecocenter.



Avoid having an in-sink garbage disposal unit as they increase the amount of organic matter to be broken down by 20% to 40%.

Maintenance of a septic system

To maximize the effectiveness of a septic system, it is important not to install anything on the leach field. Playground equipment for children, gardens, and concrete or asphalt installations should be avoided. You must also avoid driving heavy vehicles or parking a car on the field. It is important not to compact the soil of the leaching field to optimize its filtration role. Do not plant trees and shrubs on the leach field as the roots can damage the field. They must be at least two meters from the septic installation. Grass and other herbaceous plants are acceptable as they prevent erosion and absorb excess water.

It is important to adopt behaviour that will improve the performance of the septic system. When the installation is defective, or sends too much water or non-recommended products, the wastewater treatment is less effective. This causes higher levels of contaminants in the water. The phosphate and nitrogen contained in waste water that joins bodies of water create a proliferation of algae like cyan

bacteria and aquatic plants. This considerably diminishes the quality of water and interferes with water activity and recreation. Cyan bacteria can be toxic to humans once ingested. A faulty septic system can release fecal matter above acceptable standards and pose risks to health.

Signs there may be a problem with a septic system:

- The grass that covers the septic field is unusually green or spongy to walk on;
- The water takes longer than usual to drain (toilet, sink,);
- A sewer odour is noticeable;
- A gray or black liquid appears on the surface of the field;
- Traces of overflow are noticeable around the lids of the septic tank;
- Analysis of your well water or that of your neighbour reveals contamination.

Modification or disaffection of the septic system

Before any work is done to a septic system, you should contact the municipality to obtain all the necessary information. A new septic system requires a permit. When a septic tank has been abandoned, it is mandatory to either remove the septic tank from the soil and dispose properly OR fill the tank with gravel, sand, earth or inert material. The leaching field can be left in place or levelled by disposing of the pipes.

Owner of a well

It is essential to analyze your well water to detect contaminants that could be present. You must analyze:

BACTERIA*: Analyze twice a year

- Risk of nausea, vomiting, diarrhea, stomach pain.
- Presence caused by human and animal activity.

* The analysis includes total and faecal coliforms, E. coli, enterococci and atypical colonies.

NITRATES : Analyze annually

- Decreases oxygen in the blood. Infants and pregnant women are more vulnerable.
- Presence from agricultural activities and septic systems.

ARSENIC: Analyse at least once

- Carcinogenic substance.
- Naturally in the soil, particularly in the Eastern Townships.

WHEN? In spring and autumn (during the spring thaw or heavy rain) or if your water has changed in appearance, taste or smell.

WHERE? Get your water tested by an accredited laboratory by the Ministry of Sustainable Development, Environment and the Fight against Climate Change (MDDELCC). Both accredited laboratories serving the Eastern Townships are:

- Analytical laboratories M.S. in Sherbrooke - 819 566-8855
- Biolab in Thetford Mines - 1 800 250-1516

For more information on the analysis to be performed, accredited laboratories, the significance of the results, health effects and possible solutions if there is contamination, please visit:

« *The quality of the water in my sink* » on the MDDELCC website:
www.mddelcc.gouv.qc.ca

« **Drinking water** » of the **Agency of Health and Social of the Eastern Townships**: www.santeestrie.qc.ca

If you suspect health problems related to the quality of your water, contact Info-Santé 8-1-1

Contact the Municipality for further information

Office hours:

Monday to Friday: 9:00 a.m. to 12:30 p.m. and 1:30 p.m. to 4:00 p.m.

Address :

2, rue Vale Perkins, P.O. Box 330

Mansonville, Québec

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Telephone : 450 292-3313

Fax : 450 292-5555

Email: info@potton.ca

We thank the City of Magog and the City of Sherbrooke which allowed us to learn from their "Guide to Septic Systems" and "Guide on septic systems for the benefit of the citizens" to achieve this document.