On-site Sewage Disposal Systems

A HOMEOWNER'S GUIDE

May 2013

Prince Edward Island CANADA

Environment, Labour and Justice
Inspection Services

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INTRODUCTION

This guide is designed to provide homeowners with basic information regarding on-site sewage disposal (septic) systems. It also offers maintenance tips to help prevent problems or the premature failure of a septic system.

PRIVATE SEWAGE DISPOSAL SYSTEMS

Most rural homes on Prince Edward Island have an on-site sewage disposal system. The system typically consists of an underground tank and a disposal or tile field. Wastewater flows into the septic tank from the house. Most of the solids remain there. Liquid flows from the tank to the tile field, where it seeps into the surrounding soil. Bacteria and other organisms in the soil treat the wastewater and, eventually, it moves back into groundwater reservoirs.

Because solids will build up and eventually fill the tank, periodic pumping is needed to remove this material, known as septage. Regular checks and maintenance are essential to keep the disposal system in proper working order.

BACKGROUND CHECK OF YOUR SYSTEM

Always keep a record of maintenance work done on your septic system, including pumping of the tank. If your home is new, or new to you, speak to the builder or previous owner to confirm the location of the tank and the tile field. If your home is not new, try to obtain the following information from the sales agent or previous owner:

- What parts make up the sewage disposal system?
- How old is the system?
- How long since the septic tank was pumped?
- How often has the tank been pumped?
- Is there a history of system failure or any sign of possible problems with the system?
- Has there been an addition to the size of the original house? (This could mean that a larger system is required.)

MAINTAINING YOUR SYSTEM

Proper maintenance is critical to the operation of an on-site sewage disposal system. While this is the responsibility of the homeowner, too few people realize the importance of regular maintenance. A system is often ignored until there is a problem and irreversible damage has been done. Sometimes, people buy a home and don't even know that there **is** an on-site septic system until they have a problem.

Lack of maintenance can result in poor operation and costly repairs. Being able to show that your septic system has been properly maintained is also helpful should you wish to sell your property.

Most on-site systems require nothing more than regular inspection and pumping of the septic tank. If septic tanks are not pumped regularly, solids can build up and move into the tile field. This can block the necessary seeping of liquids into the soil. Solids can also block the tank inlet or outlet and cause sewage to back up into the house.

As explained earlier, septage is the liquid/solid (or sludge) mix of material that must be regularly pumped from the tank. The *PEI Environmental Protection Act*, Sewage Disposal Systems Regulations, require that individuals who pump septic tanks hold a provincial license to do so.

Until quite recently, untreated septage was routinely spread on agricultural land. This practice is no longer allowed because of human health concerns and the need to ensure proper protection of the environment. Septage must now be disposed of at a provincially approved receiving facility. Wastewater treatment facilities in Charlottetown and Summerside are able to receive and process septage to produce a product known as Class A Biosolids. These biosolids can then be safely spread on the land to provide useful nutrients and organic matter.

The average septic tank should be pumped once every three years, depending on the degree of use (size of the family) and the nature of materials that enter the system. Some tanks can be pumped less frequently; ones that are heavily used may need to be pumped more often. If grease traps are present, they should be inspected and cleaned regularly. When the tank is half full of waste, it should be pumped by a licensed septage hauler.

A sod cover over the tile field will help to prevent erosion. It will also reduce the amount of precipitation or runoff that enters the field. Large trees should be removed from the area of the tile field. Tree roots can block the pipes, and cause drainage problems. If a large tree is uprooted, major damage can be done to the system. If your system is used only seasonally (e.g., a cottage), do not pump the tank prior to winter. An empty tank can be damaged by frost.

What Should Not Go Down the Drain

An on-site sewage disposal system is designed to handle human waste, wash water, and laundry waste. It can even handle moderate amounts of bleach. However, for trouble-free operation there are limits on what materials should go into the system and how much it can handle.

The following table includes examples of materials that can affect the performance of an on-site system because:

- they cannot be treated and will contaminate or block the system, or
- they will affect the performance of the system (meaning extra maintenance, repairs, or even system replacement).

Do's and Don'ts in the Use of an On-site Septic System

Do's	Don'ts	
Do spread automatic washer use over the week rather than washing several loads the same day.	***Don't*** overload the system with high volumes of water.	
Do make a permanent record of where the key parts of your septic system are located. This will help with future maintenance, such as tank pumping or field repairs.	***Don't*** channel water from basement drains/sumps, foundation/footer drains, or roof drains to an on-site sewage disposal system.	
Do keep records of tank pumping and maintenance.	***Don't*** allow fats, plastics, chemicals, or solvents to enter the system.	
Do use water conserving devices (low-flush toilets and shower heads) where possible.	***Don't*** enter a septic tank without proper ventilation. Sewer gases can be fatal.	
Do use an automatic washer that has manually cleaned lint traps.	***Don't*** allow vehicles or heavy equipment (including large lawn rollers) to drive over the tile field. This can compact the soil or crush the piping.	
Do have your septic tank pumped out regularly.		
Do check any pumps, siphons, or other moving parts regularly.	***Don't*** flush into the system:	
Do remove or prevent trees with large root systems from growing near the tile field.	• Coffee grounds • Disposable diapers • Sanitary napkins	• Dental floss • Kitty litter • Tampons
Do maintain a healthy grass cover over the tile field to prevent erosion.	• Cigarette butts • Paints	• Condoms • Varnishes
Do divert surface water from up slope.	• Photographic chemicals	• Pesticides
Do check your interceptor trench regularly to ensure that it is free flowing.	• Other chemical wastes • Household hazardous wastes • Coffee grounds	• Waste oils • Thinners • Cotton swabs

Kitchen garbage disposal systems should not be used unless the size of the septic tank is increased by at least 20 percent over the required size for that particular house. This increase is needed to handle the additional load of solid materials.

The system will work properly without the need for tank 'additives'. In fact, these can damage the septic tank and tile field and even contaminate ground water. Additives that cause solids to wash from a septic tank into the tile field can cause blockages. If this happens, the field bed may need to be cleaned or replaced.

Larger septic systems sometimes have grease chambers placed between the building and the septic tank. Grease must be physically removed. Never use a chemical compound to dissolve grease. The dissolved grease may re-solidify in the tile field and cause a system failure.

Water Use and Conservation

The smallest residential on-site septic system (designed for a three-bedroom home) will handle 1,360 litres (300 gallons) of waste/wastewater per day.

Larger systems (designed for use in homes with hot tubs or in commercial establishments) are designed to accept higher flow volumes.

Problems can occur when too much waste or wastewater enters a system. This can wash solids from the tank and block the tile field. Excessive flows can also exceed the hydraulic capacity (or overload) the field bed. To avoid these problems:

- fix leaking taps or running toilets;
- distribute water use where possible (e.g., limit clothes washing to one load per day);
- reduce normal water use in showers and sinks;
- install water-conserving fixtures, especially ultra-low flush toilets;
- ensure that the septic tank is watertight, and positioned to avoid the entry of surface water, ground water, or roof drainage; and
- install a water metre (the regular recording of water use can detect leaking fixtures and possible overloading of a system).

If the soil over or near the tile field has a tendency to become saturated, it may be necessary to reduce water use during times of heavy rainfall or snow melt. You can do this by adopting one or more of the measures listed in the Do's and Don'ts Table.

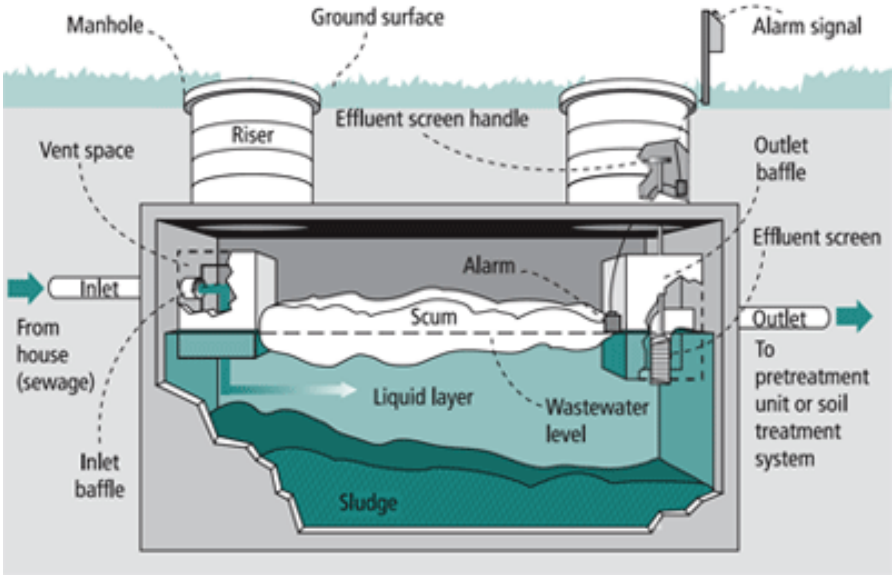
Location and Protection of the System

It's important to know where your septic tank and tile field are located.

PEI's *Environmental Protection Act*, Sewage Disposal Systems Regulations, require that watertight access be provided for the inspection, maintenance, and pumping of a septic tank. This can require a watertight riser and cover to bring the existing access opening close to the ground surface. If your tank is not easily accessible, you should consider installing these.

Vehicles (including commercial lawn rollers) should not be allowed to travel over a septic tank or tile field. Their weight can crush pipes or compact the soils and thus damage the system.

When installing a septic system, consider features that can improve overall performance and make on-site inspections easier.



- **Tank effluent filters** are designed to keep solids from leaving the septic tank and potentially blocking the tile field. The filters should be cleaned when the septic tank is pumped. If they require more frequent cleaning, the material blocking the filter may be reaching the disposal field.
- **Inspection ports** allow for periodic inspection of waste levels in the system.
- A **water metre** will allow you to compare actual water use with the capacity of the septic system. This will help when making decisions about water conservation.

The above devices are not currently required by law. However, depending on the size and type of system they may be required by the authority having jurisdiction for approving it. All are inexpensive compared with the cost of repairing or replacing a system.

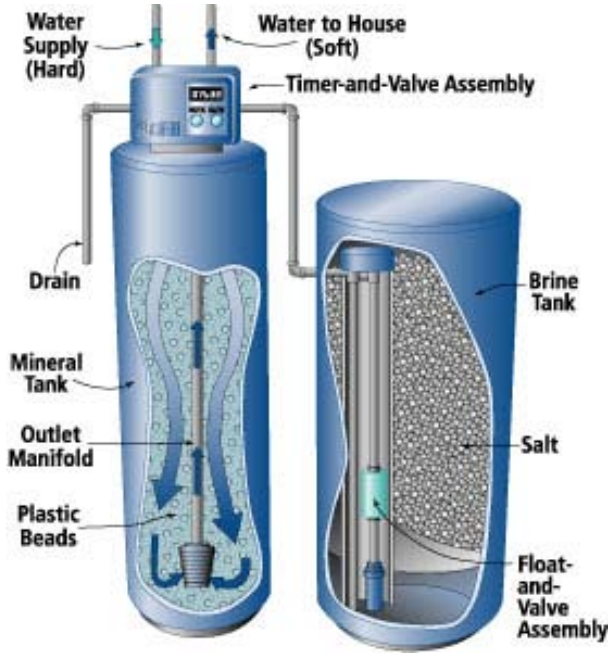
SYSTEM FAILURES

A septic system can fail for a number of reasons. The more common ones are overloading, poor design or construction, physical damage, and lack of maintenance. Each of these is explained below.

System Overloading

Overloading happens when a household disposes of more waste/wastewater than the septic system can handle. There are various causes for overloading. These include:

- the addition of new, high-water-use fixtures, such as hot tubs;
- concentration of water use (e.g., multiple laundry loads the same day);
- more people (increase in family size or parties);
- drinking water treatment devices (water softeners, nitrate-removal systems, etc.) that discharge 'backwash' into the system (backwash is the wastewater produced during the water treatment process);
- leaking water fixtures;
- surface water entering the system from roof, driveway, or foundation drainage; and
- overland water flow into the tank or tile field.



Poor Design or Construction

Some on-site septic systems are doomed 'from the beginning' to a short lifetime of operation. This is because:

- the system was not properly sized for the waste flow or soil conditions;
- the system was installed in a poor location (e.g., in an area of high groundwater or where restrictive surfaces do not allow for the escape of rain and melting snow);
- the system was installed in a area where the natural permeability of the soil (its ability to absorb moisture) has been destroyed due to compaction, grading, cutting, or filling;
- improper or poor quality materials were used;
- the system was installed during wet conditions (this will reduce the soil's ability to absorb and naturally treat the wastewater); and
- improper grading produces an uneven distribution of effluent, and portions of the tile field become overloaded.

Physical Damage

Physical damage to an on-site septic system can result from:

- compaction of the soil in the area of the field bed;
- paving, building, or storing objects on top of the tile field; and
- tree roots growing into the tile field.

Lack of Maintenance

One of the most common reasons for system failure is a lack of maintenance. For example:

- Failure to pump the tank regularly can result in the formation of scum and the movement of solids into the tile field. This can lead to a permanent reduction of the soils infiltrative capacity (i.e., its capacity to absorb water).
- Baffles may degrade and break. This can also result in scum formation and the movement of solids into the tile field.
- Frost heaving or irregular soil settling can result in an uneven distribution of the piping within the field bed. This can cause overloading and damage to a portion of the field bed.

TROUBLESHOOTING PROBLEMS

It is not necessary to uncover or open your septic tank to spot potential problems what might be developing with your disposal system. The following are easily identified signs of a possible septic tank failure:

- sewage backing up into toilets, tubs, or sinks in the house;
- slowly draining fixtures, especially after a rainfall;
- a smell of raw sewage near, or over, the tile field;
- extremely soggy soil conditions over the tile field;
- visible sewage discharge over the tile field or in nearby areas (e.g., ditches, woodland) and;
- bacterial contamination or organic chemical contamination in groundwater under the system.

Should you identify a possible problem with your septic system, you must obtain the services of a licensed septic contractor to carry out the replacement or the repairs.

"We have come a long way with how we dispose of our sewage, and how we protect the environment and our groundwater."

For Additional Information on Sewage Disposal Systems

Contact the:

Department of Environment, Labour and Justice
Building and Development Division
Inspection Services
31 Gordon Drive
Charlottetown, PE, C1A 6B8
1-800-368-5280

Visit our website:

http://www.gov.pe.ca/environment/index.php3?number=1041134&lang=E

Information is also available at the following Access PEI offices:

Summerside

120 Harbour Drive
PO Box 2063, Summerside, PE C1N 5L2
(902) 888-8000

Montague

41 Wood Islands Hill
PO Box 1500 Montague, PE C0A 1R0
(902) 838-0600

O'Leary

45 East Drive,
PO Box 8 O'Leary, PE C0B 1V0
(902) 859-8800

Souris

15 Green Street
PO Box 550 Souris, PE C0A 2B0
(902) 687-7000