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## Planning and Installing an Onsite Wastewater Management System

- All systems must conform to *The Provincial Parks Act*, *The Environment Act* and associated regulations.
- Holding tanks or approved alternative onsite wastewater management systems will be required where the existing system is not functioning according to set standards and regulations.
- Where vacation home upgrading significantly increases overall wastewater generation, the system must be replaced by an approved system as specified in *Manitoba Regulation 83/2003, Onsite Wastewater Management Systems Regulation*.
- All onsite wastewater management systems are subject to random inspections.
- Registration with Manitoba Conservation, Environmental Programs, is required before any work is carried out on an onsite wastewater management system. Registration forms are available at your local Manitoba Conservation district office.

What method of onsite wastewater management can you use? When are holding tanks mandatory? What size of septic tank or disposal field do you need? When and how can you utilize a greywater pit? This section covers these and other questions you may have about planning and installing an onsite wastewater management system or upgrading your existing one. It applies to all cottages throughout the provincial park system.

To check whether your system is subject to special requirements, see Specific Locations.

### Environmental Protection

If your present system is not causing any environmental or public health problems, you don't have to change it. If your system has failed or is defective, you must repair it or replace it with an approved system that meets the requirements of the current regulation.

You may also have to change the system if:

- more wastewater is generated as a result of cottage upgrading;
- you switch from seasonal to permanent residence; or
- your system was inadequate to begin with.

### Special Locations

If your cottage is in one of the locations listed below, special conditions apply to your onsite wastewater management system.

- **Grand Beach Provincial Park and Hecla North Shore** – wastewater disposal fields and greywater pits are not permitted.
- **Hecla/Grindstone Provincial Park** – wastewater disposal fields are not permitted (except for the 5-acre (2.1 ha) lots in and around the Hecla Village area).
- **Falcon Lake Block D and K Plan 8208, Falcon Creek subdivision** – your cottage must be connected to the municipal piped system.
- **Clearwater Lake Park, Paint Lake Park, Bakers Narrows Park and Bower Lake within Turtle Mountain Park** – wastewater disposal fields are not permitted in these locations, which are designated "sensitive areas" under the Regulation, unless approved by the director.

### Definitions

**aerobic treatment unit** – a watertight receptacle in which wastewater is brought into contact with air to cause aerobic digestion of the sewage (note: these units must conform to *NSF Standard 40 for Individual Aerobic Wastewater Treatment Plants* and bear a valid stamp or mark indicating certification)

**composting toilet system** – a self-contained system which employs the process of biological degradation, in which organic material is converted into a compost-like substance through the action of micro-organisms (note: these systems must conform to *NSF Standard 41 for Wastewater Recycling/Reuse and Water Conservation Devices* and bear a valid stamp or mark indicating certification)

**disposal field** – a system of pipes laid in a shallow excavation or trench filled with graded stone or a system of wastewater effluent chambers laid in a shallow excavation or trench where either pipe or chamber system is covered with topsoil for the treatment and disposal of wastewater effluent

**graded stone** – durable, insoluble, decay-resistant and washed rock or stone ranging in diameter from one to 7.6 cm (0.4 to 3")

**greywater** – liquid waste from a dwelling or other building produced by bathing, laundering, or food preparation activities or from drainage associated with these sources and specifically excluding sewage and septage

**greywater pit** – an excavation filled with graded stone and covered with topsoil for the disposal of greywater (note: can only be used for a building not served by a water system under pressure)

**holding tank** - a watertight receptacle designed to retain sewage, wastewater, greywater or wastewater effluent (note: these units must conform to CSA B66-00 for *Prefabricated Septic Tanks and Sewage Holding Tanks* and bear a valid stamp or mark indicating certification)

**low water use closet** – a toilet that uses less than 5 L (1 gal.) of water for each flush

**onsite wastewater management system** – all or part of a treatment system, holding system or management system for sewage, wastewater, greywater, wastewater effluent or septage, including, but not limited to: aerobic treatment unit, composting toilet system, disposal field, greywater pit, holding tank or septic tank

**pail privy** – an outdoor toilet facility in which the sewage receptacle consists of a removable container

**percolation test** – a method of measuring the rate at which liquids pass through the soil, generally determined by digging holes and measuring the rate at which water in these holes is absorbed by the soil

**pit privy** – an outdoor toilet facility in which the sewage receptacle consists of an excavation in the ground

**sensitive area** - any of the areas set out in schedule H of MR 83/2003

**septic tank** – a watertight receptacle for the primary treatment of wastewater and the digestion of sludge (note: these units must conform to CSA B66-00 for *Prefabricated Septic Tanks and Sewage Holding Tanks* and bear a valid stamp or mark indicating certification)

**sewage** – fecal or urinary waste and other human body and toilet waste

**vault privy** – an outdoor toilet facility in which the sewage receptacle consists of a watertight receptacle designed to retain sewage

**wastewater** – either greywater or sewage or both

**wastewater effluent** - wastewater after it has undergone at least one form of physical, chemical or biological treatment

**water course** – a natural or man-made channel or basin which holds water or through which water flows, including a river, stream, creek, run, rivulet, ditch, lake, pond, slough, reservoir or an intermittent water course

## Selecting A System

Whether you are upgrading an old system or starting from scratch, selection of your system depends on site conditions and the type of facilities at your cottage.

**Eight methods** – you may use any of eight wastewater disposal methods approved by the *Onsite Wastewater Management Systems Regulation*.

The following eight methods are designed to ensure that wastewater will not pollute park lands and water.

1. pit, pail, or vault privy and greywater pit may be acceptable if no pressurized water system is present
2. low water use closet, septic tank (minimum of 680 L or 150 gal.) and disposal field for toilet wastes only, in conjunction with a greywater disposal field
3. low water use closet and holding tank (minimum of 3,400 L or 750 gal.) for all wastes
4. full size system (regular toilet) septic tank (minimum of or 2590 L or 575 gal.) and disposal field
5. holding tank for all sewage and greywater (minimum size 4,500 L or 1,000 gal.)
6. combination holding tank for all sewage and a disposal field for greywater
7. aerobic treatment unit and disposal field (25% reduction in size of disposal field is allowed)
8. non-water carried toilet system, such as composting or incineration, and greywater pit if no pressurized water system

The septic tank and disposal field method may not be a workable solution for your lot due to setback distances from buildings, wells, watercourses, embankments and property lines. Also poor soil conditions can eliminate the disposal field option.

See Special Locations earlier in this section to determine if you are subject to special restrictions.

**Holding tanks** – in some situations a holding tank may be the best solution for handling wastewater. Holding tanks are mandatory for all sewage and greywater if your lot is accessible by road and if any of the following conditions apply:

- your lot is in an area that has been designated a sensitive area by MR 83/2003; and
- site evaluation determines a disposal field cannot meet the requirements of Schedule A or B in MR 83/2003

## Alternatives to Water Carried Toilet Systems

There are a number of alternatives to standard flush toilets. The use of composting toilets, chemical toilets and privies are permitted in certain areas, however these alternatives have some limitations. Be sure to research your alternative to make sure this type of system will be suitable for your needs.

**Composting Toilets** - allow organic material to decompose in the presence of air. When fully composted, the residue material is an inoffensive, earth-like substance that can be used for fertilizer.

**Chemical Toilets** – often a bucket with a seat. The chemical part is a small amount of solution poured into the bucket before use. Waste from chemical toilets must be emptied into a common or public sewer or an approved facility.

**Outside Toilet Facilities** - outside toilet facilities are permitted, as long as the outside toilet facility is of sound construction, weatherproof, fly proof, vented, sanitary and in good repair. Outdoor toilet facilities include pit, vault, and pail privies.

**Pit Privies** must be at least:

- 6 m (20 ft) from a habitable building;
- 15 m (50 ft) to drilled water well;
- 30 m (100 ft) to a spring or water well other than water well described above;
- 30 m (100 ft) to the normal high water level of a watercourse;
- 3 m (10 ft) to any property boundary; or
- 1 m (3.25 ft) from the bottom of the pit to the bedrock or normal high water table.

**Vault and Pail Privies** must be at least:

- 6 m (20 ft) from a habitable building;
- 3 m (10 ft) to any property boundary;
- 8 m (26 ft) to a well; or
- 15 m (50 ft) to the normal high water level of a watercourse.

## **Getting the most out of your Onsite Wastewater Management System**

A septic tank and disposal field is an efficient system if it is properly installed and maintained regularly.

### **Septic Tank Maintenance**

The septic tank is designed to dispose of all wastewater from the home, however there are some points to keep in mind to reduce potential problems.

- Wise water management is necessary. All septic systems have limitations and water conservation should be practiced.
- Do not discharge water from weeping tiles and water conditioners into the disposal system. The additional water may overtax the system.
- Do not use excessive quantities of bleaching and cleaning compounds. These may reduce the effectiveness of the digestion chamber by destroying bacteria.
- Inspect and have the tank pumped out regularly. Unless absolutely necessary, do not clean the tank during the winter months.
- There should be no need to use starters, bacterial feeds, or cleaners. All the bacteria needed to operate the tank are already contained in the sewage entering the system.

### **Disposal Field Maintenance**

Some things to keep in mind for improved operation of your disposal field:

- Keep all traffic off the disposal field.
- Insulate the tank, field and lines with a blanket of straw about 30 cm deep, especially in the first winter of operation.
- Remove large deciduous trees near the field as their roots may block proper drainage.
- Do not plant trees or locate playground equipment, sheds, or other structures on the disposal field.
- Investigate any signs of saturation or leakage and reduce water usage to allow the field to dry out.

Remember: It is an offence to discharge sewage, greywater or wastewater effluent into or onto ground except in compliance with the Regulation. If your disposal field is failing you should take action to remediate the situation or you may face prosecution.

## **GREYWATER DISPOSAL**

Greywater is all domestic wastewater from a dwelling and includes bathing, laundering, or food preparation activities and specifically excludes sewage or septage.

A greywater field can be constructed in conjunction with the use of a holding tank providing that all the soil conditions and setback requirements can be met. (refer to set back distances for disposal fields). The holding tank is used for the collection of the sewage and the greywater field is used to dispose of the greywater. In certain instances when disposing greywater from a permanent home it may be necessary to install a septic tank to intercept solids and provide limited primary treatment to prevent clogging of the field. In some cases a greywater treatment tank (340 L/75 gal) may be of sufficient size to provide adequate pre-treatment. The type of tank or pretreatment required will be dependent upon the volume of wastewater generated and whether the dwelling is used seasonally or permanently.

A greywater field must be constructed to the same design criteria and to at least 75% of the size of a standard disposal field for that location.

### **Greywater Pits**

Greywater pits are only permitted where a building is not serviced by water under pressure.

A greywater pit is nothing more than a covered hole in the ground filled with stone. It is used to collect small amounts of greywater and disperse it into the surrounding soil.

Greywater pits should not be:

- under the building;
- closer than 15 m (50 ft) to a drilled water well equipped with a casing to a depth of not less than 6 m (20 ft) below ground level;
- closer than 30 m (100 ft) to a spring or water well;
- closer than 30 m (100 ft) to the normal high water level of a watercourse;
- unless otherwise approved closer than 3 m (10 ft) to any property boundary; or
- in an area where the soil depth, measured from the bottom of the pit, is less than 1 m (3.25 ft) from the bottom of the pit to bedrock or normal high water table.

### **Working on the System**

Whether you want to renovate, repair, expand your system or install a new one, you will need to get several preliminaries out of the way. This includes completing paperwork, marking boundaries, conducting percolation tests, and arranging inspections before you start any pick and shovel work on the system.

You cannot begin installation until you have completed and submitted the Manitoba Conservation application to register form. If your proposed system is not approved, you are welcome to discuss alternatives with the inspecting officer.

In special circumstances, you may require the services of a professional engineer. Manitoba Conservation will advise you.

Here is a typical sequence of activities:

## **The Form**

Obtain the application to register form from Manitoba Conservation.

You and/or your contractor must complete the following work before the form is submitted.

- Mark the corners of your lot with coloured ribbon or stakes.
- Mark any property boundaries that are close to the proposed onsite wastewater management system. This is critical, as property boundary setback distances must be met.
- Stake out the area you propose to use for your system – holding tank, greywater disposal field or septic field.

You and /or your contractor can now complete the form and return it to Manitoba Conservation. When your form is received, it will be reviewed to determine if the proposed system meets all regulatory requirements. An inspection may be arranged to confirm that the location of your system is consistent with your plot plan. You do not have to be present for the inspection.

## **Holding Tanks**

If you are installing a holding tank, you must send Manitoba Conservation your completed application to register form. Manitoba Conservation will check the location of your holding tank.

If the location and your proposed installation meet the requirements of the regulation, you or your contractor will be given authorization to proceed with the installation of your holding tank.

Contact you're inspecting Officer at least 48 hours in advance of installing the tank to obtain authorization to proceed.

## **Pit, Pail or Vault Privy**

If you are installing any of these facilities you are not required to fill out a registration form. However, you must ensure your privy meets the appropriate setback distances.

## **Septic Tanks and Disposal Fields**

If you are proposing to install a septic tank and disposal field or a greywater disposal field you must determine the following:

- ensure that your property is of sufficient size to accommodate the septic tank and disposal field
- determine the type and absorption properties of soil in the proposed location of the disposal field
- determine the size of field required

If the size of your lot is sufficient and the location proves satisfactory, you may be required to conduct a soils analysis or percolation test. The soils analysis/percolation test will assist in determining the suitability of the soil to absorb the wastewater effluent and will determine the type and size of disposal field to be installed. Soils analysis must be done by an accredited laboratory. The percolation test must be done in accordance with Schedule D of MR 83/2003. It is advisable to have a certified installer or engineer conduct the percolation test, as proper tools are required.

Based on the findings from the soils analysis or percolation test, your contractor can determine the type and size of disposal field required.

Complete and forward the application to register form to Manitoba Conservation.

If the location and your proposed installation meet the requirements of the regulation, you or your contractor will be given authorization to proceed with the installation of your septic tank and disposal field.

Contact your inspecting Officer at least 48 hours in advance of installing the system to arrange for an inspection and authorization to cover.

## **STANDARDS FOR ONSITE WASTEWATER MANAGEMENT SYSTEMS**

### **SEPTIC TANKS must:**

1. Bear a valid stamp or mark indicating CSA certification
2. Be constructed of concrete, fiberglass, polyethylene or other approved material
3. Have at least two compartments, each with a minimum capacity, as follows:
  - 1<sup>st</sup> compartment 140% of total daily sewage flow or 2250 L (500 gal), whichever is greater
  - 2<sup>nd</sup> compartment 20% of total daily sewage flow or 340 L (75 gal), whichever is greater
4. Be a **minimum** of:
  - 1 m (3.25 ft) from building
  - 3 m (10 ft) from property boundary
  - 8 m (26 ft) from well
  - 15 m (50 ft) from water course, excluding a ditch
  - 8 m (26 ft) from cut or embankment
  - 3 m (10 ft) from swimming pool
  - 3 m (10 ft) from water cistern

Where low water use closets are used, septic tanks must:

1. Have a minimum working capacity of 680 litres (150 gallons)
2. Be increased in capacity by 30% for each low water use closet in excess of one
3. Only receive sewage from low water use closets.

### **TRENCH-TYPE FIELDS - PERFORATED PIPE:**

1. Depth of soil between the field base and the bedrock or normal high water table must be 1 m (3.25 ft) or greater
2. Soil percolation rate must be between 47.2 min/cm (120 min/inch) and 24 sec/cm (1 min/inch)
3. Must be a minimum of:
  - 6 m (20 ft) from building without basement or cellar
  - 11 m (36 ft) from building with basement or cellar
  - 30 m (100 ft) from water course, excluding a ditch
  - 15 m (50 ft) from cut or embankment
  - 8 m (26 ft) from swimming pool
  - 8 m (26 ft) from water service pipe
  - 15 m (50 ft) from drilled well
  - 30 m (100 ft) from other well or spring
  - 8 m (26 ft) from property boundary
  - 3 m (10 ft) from property boundary where low water use closets are used.

### **TRENCH-TYPE FIELDS - EFFLUENT CHAMBERS:**

1. Depth of soil between the field base and the bedrock or normal high water table must be 1 m (3.25 ft) or greater
2. Soil percolation rate must be between 47.2 min/cm (120 min/inch) and 24 sec/cm (1 min/inch)

3. Must be a **minimum** of:
 

6 m (20 ft)	from	building without basement or cellar
11 m (36ft)	from	building with basement or cellar
30 m (100 ft)	from	water course, excluding a ditch
15 m (50 ft)	from	cut or embankment
8 m (26 ft)	from	swimming pool
8 m (26 ft)	from	water service pipe
15 m (50 ft)	from	drilled well
30 m (100 ft)	from	other well or spring
8 m (26 ft)	from	property boundary
3 m (10 ft)	from	property boundary where low water use closets are used.

**TOTAL AREA FIELDS:**

1. Depth of soil between the field base and the bedrock or normal high water table must be 1 m (3.25 ft) or greater
2. Soil percolation rate must be between 23.6 min/cm (60 min/inch) and 24 sec/cm (1 min/inch)
3. Perforated distribution pipe must be equally distributed over the total area of the field
4. Must be a minimum of:
 

6 m (20 ft)	from	building without basement or cellar
11 m (36 ft)	from	building with basement or cellar
30 m (100 ft)	from	water course, excluding a ditch
15 m (50 ft)	from	cut or embankment
8 m (26 ft)	from	swimming pool
8 m (26 ft)	from	water service pipe
15 m (50 ft)	from	drilled well
30 m (100 ft)	from	other well or spring
8 m (26 ft)	from	property boundary
3 m (10 ft)	from	property boundary where low water use closets are used.

**HOLDING TANKS** must:

1. Bear a valid stamp or mark indicating CSA certification
2. Be constructed of concrete, fiberglass, polyethylene or other approved material
3. Have a minimum total capacity of 4545 litres (1000 gallons) or 3400 litres (750 gallons) if all the water closets in a building are low water use closets.
4. Be a minimum of:
 

1 m (3.25 ft)	from	building
3 m (10 ft)	from	property boundary
8 m (26 ft)	from	well
15 m (50 ft)	from	watercourse, excluding a ditch
8 m (26 ft)	from	cut or embankment
3 m (10 ft)	from	swimming pool
3 m (10 ft)	from	water cistern