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Planning and Installing an Onsite Wastewater Management System

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.

GENERAL PROVISIONS

- All systems must conform to *The Provincial Parks Act, The Environment Act* and associated regulations.
- Where the existing system is not functioning according to set standards and regulations, it must be replaced by an approved wastewater management systems.
- Where vacation home upgrading significantly increases overall wastewater generation, systems must be replaced in accordance with Manitoba’s *Onsite Wastewater Management System Regulation (MR 83/2003)*.
- 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 local Manitoba Conservation district offices.

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 – The following disposal methods are approved by the *Onsite Wastewater Management Systems Regulation*. Individual lot conditions will determine which methods are suited for your specific use. See also “Special Locations”.

1. pit, pail or vault privy and greywater pit may be acceptable if no pressurized water system is present.
2. low water use closet and holding tank (minimum 3400 L or 750 gal) for all waste water.
3. holding tank (minimum 4500 L or 1,000 gal) for all wastewater.
4. low water use closet, septic tank (minimum 680 L or 150 gal) and disposal field for toilet wastes only, and greywater disposal field.
5. regular toilet, septic tank (minimum 2590 L or 575 gal) and disposal field for all waste water.
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 toilet system such as composting or incineration, and greywater pit (if no pressurized system).

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

SPECIAL LOCATIONS

If your cottage is in one of the locations listed below, special conditions apply:

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

EXISTING SYSTEMS

If your present system is not causing any environmental or public health problems, you don't have to change it. However, 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.

GETTING THE MOST OUT OF YOUR SYSTEM

Outside Toilet Facilities

Outdoor toilet facilities include pit, vault and pail privies. If no pressurized water system is present, an outside toilet facility may be permitted, provided it is of sound construction, waterproof, fly proof, vented, sanitary and in good repair.

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 a 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.

Holding Tanks

In many 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 requires a holding tank (see Special Locations).
- Site evaluation determines a disposal field cannot meet the requirements of Schedule A or B in MR 83/2003.

Septic Tanks and Disposal Fields

The septic tank and disposal field method is an efficient system if properly installed and maintained. It 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.

Septic Tank Maintenance

The septic tank is designed to dispose of all cottage wastewater. Here 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 conditions 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 (1 ft) 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 the ground except in compliance with the Regulation. If your disposal field is failing you should take action to remedy the situation or you may face prosecution.

Greywater Disposal Fields

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 for use with a holding tank, provided that all soil condition and setback requirements can be met. With this type of system, the holding tank collects sewage while the greywater field is used to dispose of greywater.

In certain instances, it may be necessary to install a septic tank to intercept greywater solids to prevent clogging of the field. A greywater treatment tank (340 L or 75 gal) may be sufficient in size to provide adequate pre-treatment. The type of tank or pre-treatment required will depend on the volume of wastewater generated and whether the dwelling is used seasonally or permanently.

Greywater fields 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. They 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;
- Closer than 3 m (10 ft) to an property boundary, unless otherwise approved; 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.

Non-Water Toilet Systems

There are a number of alternatives to standard flush toilets. Systems such as composting toilets and chemical toilets 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. It should not be disposed near water courses.
- **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 approved facility.

APPLICATION PROCESS

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 the typical sequence of activities:

1. The Form

Obtain an “application to register” form from Manitoba Conservation. Before the form is submitted, you and/or your contractor must complete the following:

- Mark the corners of your lot with coloured ribbon or stakes.
- Mark any property boundaries that are close to the proposed 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.

2. Holding Tanks

Once the lot has been marked or staked, you or your contractor can complete and return the “application to register” form to Manitoba Conservation. 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.

3. Septic Tanks and Disposal Fields

If you are proposing to install a septic tank and disposal field or a greywater disposal field, there are several additional steps. You or your contractor must:

- 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 will be required to conduct a soils analysis/percolation test. This 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 finding from the soils analysis/percolation test, your contractor can determine the type and size of field needed.

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

4. Pit, Pail or Vault Privy

If you are installing any of these facilities you are not required to fill out an “application to register” form. However, you must ensure your privy meets the appropriate setback distances.

**STANDARDS FOR
ONSITE WASTEWATER MANAGMEENT 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:
 - 1st compartment 140% of total daily sewage flow or 2250 L (500 gal), whichever is greater
 - 2nd 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