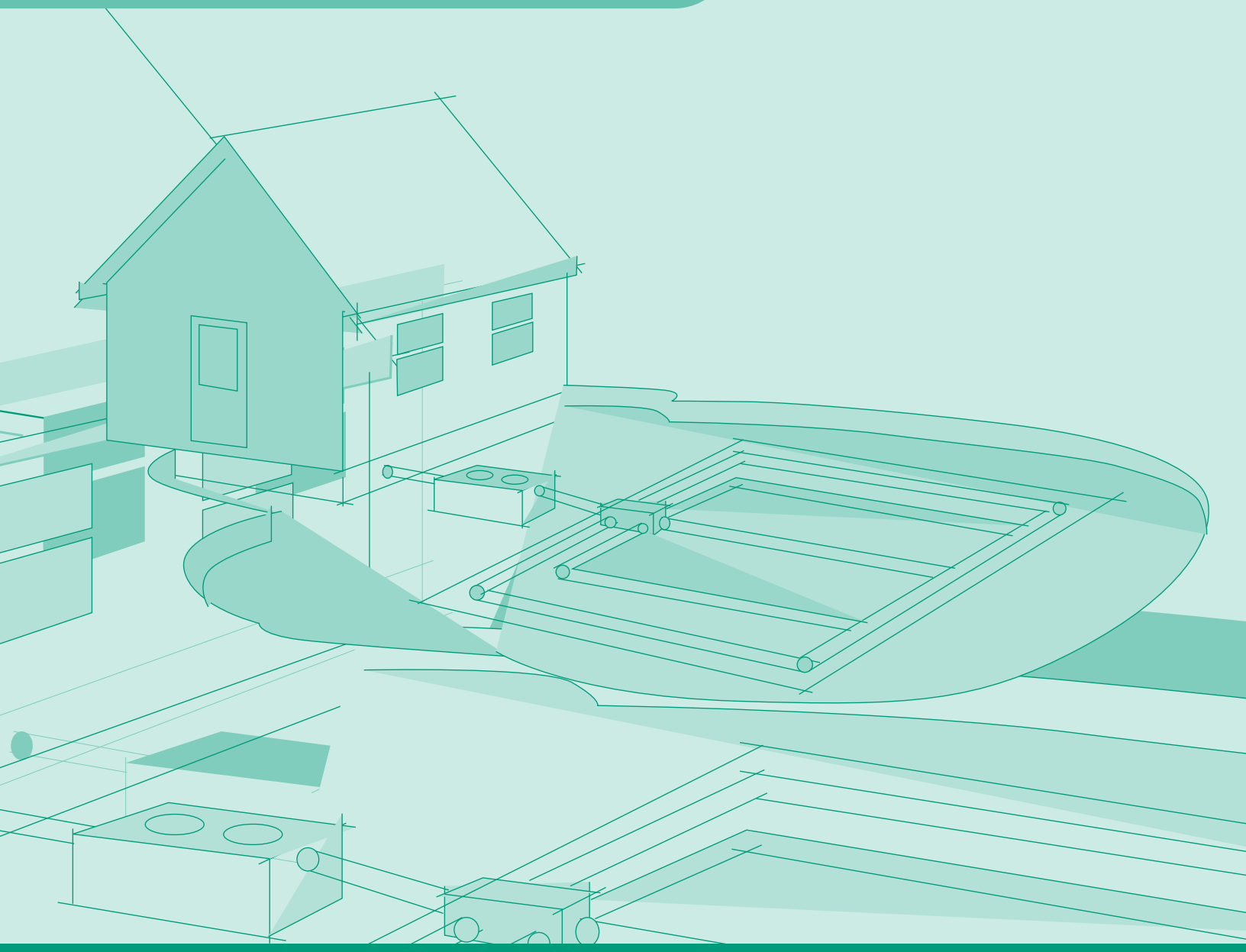
2011

Homeowner's Manual for Onsite Wastewater Management Systems

A guide to the installation, use and care of your onsite wastewater management system



Protecting & Managing our Future

Manitoba

TABLE OF CONTENTS

1.0 INTRODUCTION

This manual provides information for homeowners and cottagers about onsite wastewater management systems (OWMS). It includes descriptions of wastewater characteristics, the OWMS commonly used throughout rural Manitoba, as well as important tips on how to operate and maintain these systems.

All OWMS have their limitations, even when constructed in accordance with regulatory requirements and standards of practice. Quality design and installation does not guarantee a trouble-free system. Proper operation and maintenance are equally important in providing an efficient system that will last for many years. A malfunctioning system is not only a major inconvenience and expense for the homeowner, but can also lead to illegal discharge of wastewater into the environment. Wastewater contains many harmful elements. If not properly managed, it can pose a threat to public health and the environment.

Specific sections of the Onsite Wastewater Management Systems Regulation are highlighted throughout this manual. For the link to this regulation, forms and additional information, go to:

www.manitoba.ca/conservation/envprograms/wastewater/index.html

When planning your OWMS, you should also consult the local environment officer to see if there are any other applicable regulatory requirements. It's also a good idea to check with municipalities and provincial parks for any additional requirements (if applicable).

Homeowners should hire certified installers to set up their onsite wastewater management systems. A certified installer must have an identification card from Manitoba Conservation. For a list of certified installers, go to:

www.manitoba.ca/conservation/envprograms/wastewater/industry-group/index.html

NOTE
The role of an environment officer is to provide general information on regulations and to assess OWMS proposals to make sure they comply with those regulations. Environment officers do not design systems. The design of an efficient and cost-effective OWMS is the responsibility of a certified installer or a qualified designer/ environmental consultant.

2.0 APPLICABLE LEGISLATION

In Manitoba, the location/siting and installation of OWMS and the management of wastewater are governed by the Onsite Wastewater Management Systems Regulation (MR 83/2003), under *The Environment Act*. The regulation provides criteria for the location/siting and installation of OWMS, and acts to reduce the risk to human health and the environment by preventing human waste from contaminating ground and surface water. The regulation also provides criteria for registration; requirements to connect to wastewater collection systems; requirements for installers, sewage haulers and sewage disposal; and decommissioning out-of-service systems.

For the link to this regulation, go to:

web2.gov.mb.ca/laws/regs/pdf/e125-083.03.pdf

The Nutrient Management Regulation (MR 62/2008), under *The Water Protection Act*, prohibits installing or replacing OWMS in certain areas of the province. This is to protect water quality by encouraging responsible nutrient planning, regulating the application of materials that contain nutrients and restricting certain types of facilities in environmentally sensitive areas.

For the link to this regulation, go to:

web2.gov.mb.ca/laws/regs/pdf/w065-062.08.pdf

Nutrient Management Zone N4 is defined as class 6, class 7 and unimproved organic soils, using the agricultural capability classification from the Canada Land Inventory. Nutrient Management Zone N4 soils are considered to be environmentally sensitive and include landscapes with steep slopes, stable and active sand dunes, marshes, bogs, fens, etc.

Before installing OWMS, you or your designer/installer must determine if the proposed system is located on land within Nutrient Management Zone N4. Constructing an OWMS on land mapped as being in this zone is prohibited, with the exception of holding tanks and composting toilets.

To find out if your proposed system is within Nutrient Management Zone N4, you'll need to check the agriculture capability classifications. They can be found through the Agri-Maps Map Gallery on the Manitoba Agriculture, Food and Rural Initiatives' (MAFRI's) website:

geoapp2.gov.mb.ca/website/MAFRI/index3.html

To receive nutrient management zoning information, landowners can contact Manitoba Water Stewardship by email:

nmr@gov.mb.ca

or phone: 204-945-7096 (in Winnipeg).

3.0 DEFINITIONS

AEROBIC BACTERIA
an organism that can survive and grow in an oxygenated environment

BIOMAT
a bacterial slime layer in the soil below the disposal field that in a properly functioning system is responsible for treatment and reduction of biological solids and pathogens in wastewater effluent discharged into the soil from a septic tank

COMPOSTING TOILET
a self contained toilet where biological action breaks down organic material and converts it into a compost like substance

DECOMMISSION (FOR THE PURPOSES OF THIS MANUAL)
take out of operation and disassemble as required

EVAPOTRANSPIRATION
loss of water by evaporation from the soil and transpiration (release of water vapor) from plants

FECAL
waste product from the digestive tract of animals and humans, expelled during defication

GEOTEXTILE FABRIC
permeable fabric that prevents soil cover from infiltrating into the system

GRADED STONE
durable, insoluble, decay-resistant, washed rock or stone from one centimetre (0.4 inches) to 7.6 centimetres (three inches) long

GREYWATER
liquid waste from a dwelling, or other building, produced by things like bathing, laundering, and food preparation, including drainage related to these sources – it specifically excludes sewage and septage

GREYWATER PIT
an excavation filled with graded stone and covered with topsoil for greywater disposal

INSTALLER (FOR THE PURPOSES OF THIS MANUAL)
a person responsible for the installation, repair or modification of an onsite wastewater management system, who is certified by Manitoba Conservation

LOADING RATE
the amount of liquid the soil can accept, measured in litres/day/m^2 (gallons/day/ft^2)

LOW-WATER USE CLOSET
a toilet that uses less than five litres (one gallon) of water for each flush

ONSITE WASTEWATER MANAGEMENT SYSTEM (OWMS)
all or part of a treatment, holding or management system for sewage, wastewater, greywater, wastewater effluent or septage, including:

- an aerobic treatment unit
- a composting toilet system
- a disposal field
- a greywater pit
- a holding tank
- a septic tank
- a sewage ejector

SCUM
a layer of impurities that accumulates at the surface of a liquid

SECONDARY TREATMENT SYSTEM
a method of sewage treatment that produces a better quality of effluent

SEPTAGE
solid material or liquid removed during routine maintenance of a septic tank or an aerobic treatment unit

SEWAGE
fecal or urinary waste (and other human body and toilet waste), and may include the water used by an OWMS to carry the waste

SEWAGE HAULER
any person who removes or transports solid or liquid material from an onsite wastewater management system or privy, and is registered with Manitoba Conservation

SLUDGE
the residual semi-solid material left from the sewage treatment process

SULLAGE (for the purpose of this manual)
liquid waste from kitchen and bathroom sinks

WASTEWATER
greywater, sewage or both

WASTEWATER EFFLUENT
wastewater, after it's undergone at least one form of physical, chemical or biological treatment

WATERCOURSE
a natural or man-made channel or basin which holds water or in which water flows including a river, stream, creek, rivulet, ditch, lake, pond, slough, reservoir or an intermittent watercourse

4.0 CHARACTERISTICS OF WASTEWATER

Domestic wastewater contains many contaminants that may pose a threat to human health and the environment if not properly managed.

NITROGEN

- Nitrogen from human or animal waste, and from fertilizers, can cause health and environmental problems.
- Where drinking water supply comes from groundwater, excess concentrations of nitrates (formed by the conversion of nitrogen to ammonia to nitrates) can cause blue baby syndrome in infants.
- Blue baby syndrome occurs when a lack of oxygen in the blood results in a bluish skin discoloration in infants. Infants can get it by drinking water contaminated with nitrates.
- Ammonia, one form of nitrogen, is toxic/deadly to fish.

PATHOGENS

- Pathogens are bacteria, viruses or parasites in domestic sewage that cause disease.
- Because finding pathogens in wastewater is difficult, other organisms that show they contain pathogenic micro-organisms (ex: coliform or E. coli bacteria), are measured.
- One hundred millilitres (about half-a-cup) of septic tank effluent contains between one thousand and one million fecal coliform bacteria, and about the same number of viruses.

ORGANIC COMPOUNDS

- Domestic wastewater contains organic matter that can pollute water bodies and groundwater.
- Bacteria can consume organic matter, but it also reduces the level of dissolved oxygen in water, killing fish and other marine life.
- The depletion, or reduction, of oxygen can clog onsite absorption systems and cause them to fail.
- The biochemical oxygen demand (BOD5) test measures the oxygen-depleting strength of wastewater.
- Excess BOD5 will cause sliming in disposal fields, making the soil harder to penetrate.

TOTAL SUSPENDED SOLIDS

- The total suspended solids (TSS) in wastewater means the amount of solid matter that can be removed by filtration.
- TSS is another diagnostic measure that defines wastewater quality.
- The TSS will clog equipment and soil, affecting the efficiency of the treatment of wastewater effluent.

PHOSPHOROUS

- Phosphorous is present in human waste and detergents.
- Phosphorous can cause excessive plant growth (including algae) in ditches, streams, rivers and lakes.
- It is critical to limit the amount of phosphorous released into fresh water bodies.

OTHER CHEMICALS

- Household chemicals (ex: cleaners, solvents, perfumes, dyes, medications, preservatives, hair care products, food additives) released into sewage systems are a concern for groundwater contamination. This is because the way soil treats these chemicals is unknown.
- Overuse of these chemicals may kill the bacteria needed for the wastewater management system to operate properly.

5.0 COMMON TYPES OF WASTEWATER MANAGEMENT SYSTEMS

Several options are available for proper onsite management of domestic wastewater:

- septic tank and disposal field (trench and total area type)
- alternative systems (sand mounds, modified disposal fields)
- aerobic treatment tank, packaged treatment plant or other type of secondary treatment system
- holding tank
- pit, vault and pail privy
- greywater (sullage) pit

The system that would best meet your needs depends on the soil conditions, the wastewater flow, the location of your property (ex: remote site) and site specific conditions. A thorough site evaluation is necessary to choose the system that is best for you – once that is both efficient and cost-effective.

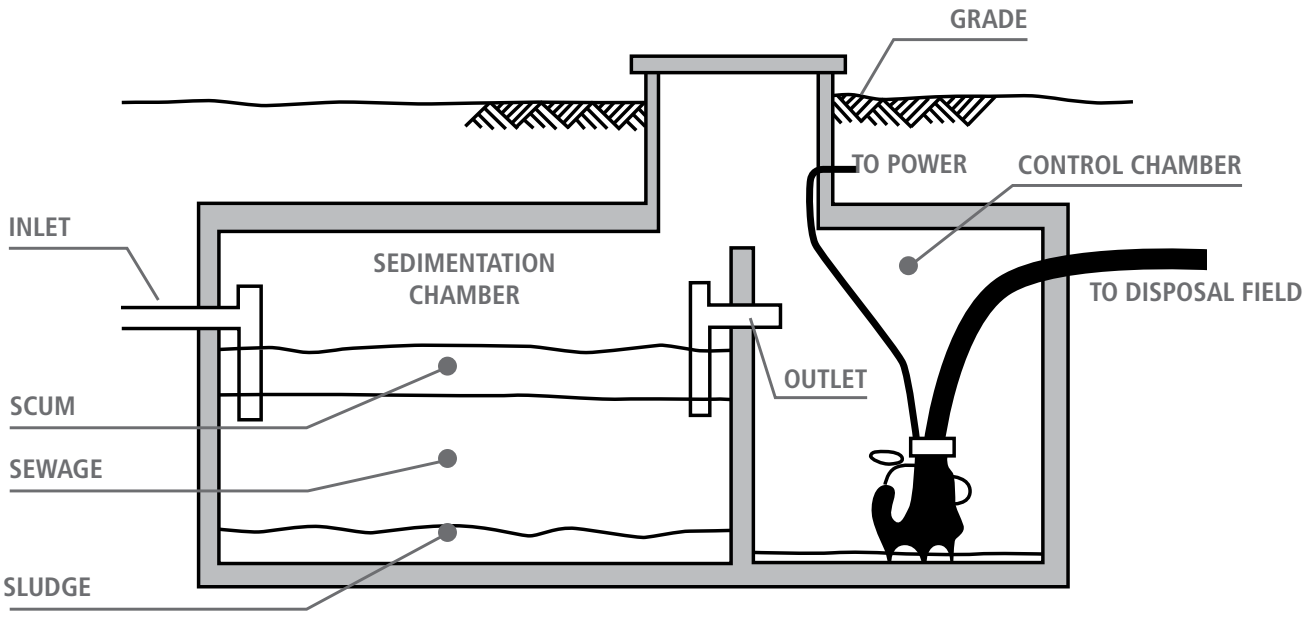
The most common system installed for rural residential dwellings in Manitoba is a **septic tank and disposal field**.

5.1 SEPTIC TANKS

A septic tank is a large container made of concrete, fibreglass, polyethylene, or other approved material, that receives wastewater from the plumbing drains of homes and buildings. Septic tanks must be watertight and resistant to corrosion. Pre-fabricated septic tanks must bear a Canadian Standards Association (CSA) stamp.

A septic tank is normally made up of two chambers: the sedimentation chamber and the control chamber (Figure 1). The **sedimentation chamber** is designed to hold at least a day and one-half of wastewater flow, with additional storage capacity for sludge. In this chamber, solids settle and break down into liquids, gases and sludge. This is an important process, because the accumulation of solids, not broken down, would soon fill the tank. Along with the settling of solids, grease and soap scum rise to form an airtight scum layer in the sedimentation chamber. The scum layer is important to maintain an oxygen-free environment in which bacteria digest the sludge.

FIGURE 1
SEPTIC TANK



As wastewater effluent enters the sedimentation chamber, an equal amount of liquid overflows into the smaller chamber of the septic tank, called the **control chamber**. When the contents of the control chamber reach a pre-determined volume, they are rapidly discharged or pumped through a watertight pipe to the treatment area (usually a disposal field). The rapid and intermittent discharge of liquid provides:

- a more even distribution of wastewater effluent throughout the treatment area
- an important rest period between discharges to allow the treatment area to ventilate
- protection against freezing

NOTE
Sludge and scum must be routinely removed from septic tanks by a registered sewage hauler. Sludge accumulates at a rate of about .06 cubic metres (two cubic feet) per person, per year.

THE SEPTIC TANK MUST BE SET BACK AT LEAST:

1 metre (3.25 feet)
from a building

3 metres (10 feet)
from any property boundary

8 metres (26 feet)
from any well

15 metres (50 feet)
from a watercourse (excluding a ditch)

8 metres (26 feet)
from a cut or embankment

3 metres (10 feet)
from a swimming pool

3 metres (10 feet)
from a cistern (water holding tank)

5.2
DISPOSAL FIELDS

The disposal field manages the wastewater effluent discharged from the septic tank. The effluent is naturally treated as it percolates through the soil. The ability of the soil to accept and treat the effluent is based on the soil texture and local groundwater conditions at the depth where the effluent enters the soil. There must be at least one metre (3.25 feet) between the base of the disposal field and the high water table or restrictive layer. The two most common types of disposal fields are the **trench** and the **total area**. Described below are typical installations; however, sometimes modifications are made to satisfy site-specific requirements.

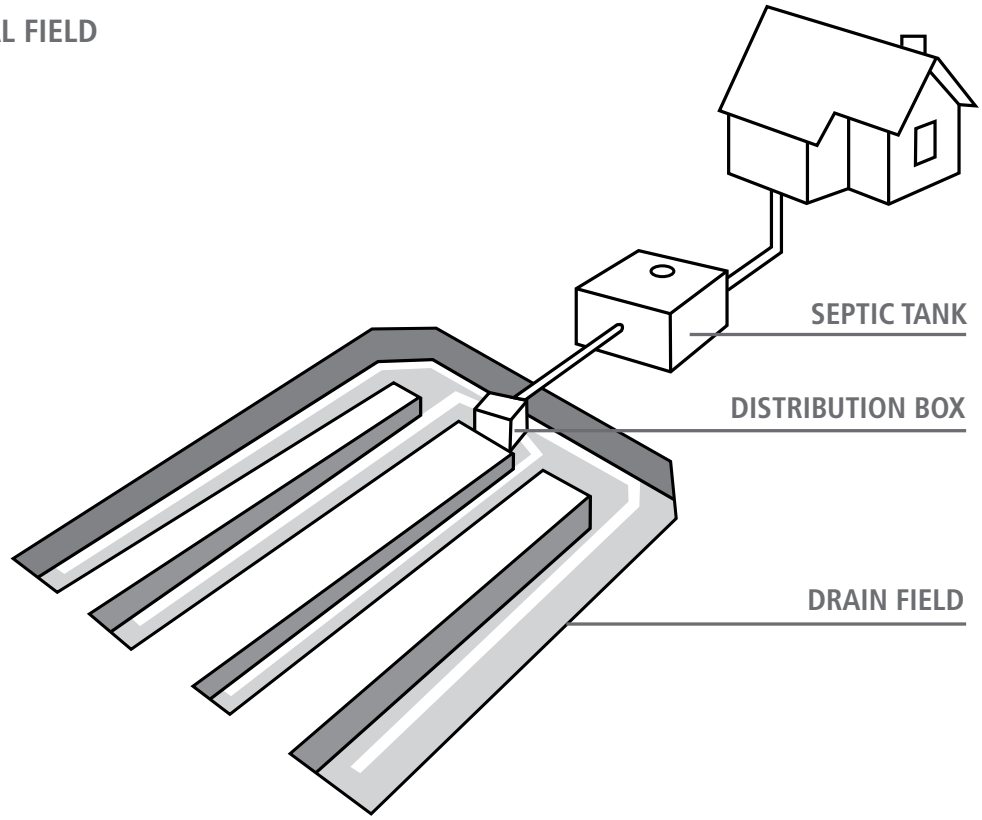
TRENCH TYPE

The trench type of disposal field (Figure 2) is made of trenches with a maximum depth of one metre (3.25 feet) and a width of 60 centimetres to one metre (two feet to 3.25 feet). The excavation is then filled with graded stone at least 30 centimetres (one foot) high. A perforated pipe is laid out in the trenches and covered by 10 to 15 centimetres (four to six inches) of graded stone. The surface is covered with geotextile fabric to prevent soil clogging. Trench-type disposal field designs may incorporate pre-constructed chambers in place of the graded stone. Regardless of whether graded stone or chambers are used, the entire surface of the field must be covered with topsoil, sloped and then seeded with grass. This final step is important because it prevents the field from becoming saturated with surface water and enhances the evapotranspiration of the wastewater effluent.

NOTE

Greywater is water from bathing, laundering and food preparation. There is a common misconception that greywater does not require treatment – but it does. A greywater disposal field (no toilet waste) must be built to the same design criteria as a standard disposal field, and must be no smaller than 75 per cent of the size required for a standard disposal field.

FIGURE 2
TRENCH STYLE DISPOSAL FIELD



TOTAL AREA TYPE

The total area type of disposal field (Figure 3) is constructed by digging a shallow excavation. It should be no deeper than one metre (3.25 feet). The excavation is filled with at least 60 centimetres (two feet) of graded stone to, or above, the level of the surrounding grade. Perforated pipe is laid out from a central distribution box in an evenly spaced pattern.

As with the trench-type field, the perforated pipes in the total-area field are covered with another 10 to 15 centimetres (four to six inches) of graded stone and a layer of geotextile fabric. Finally, the entire surface of the disposal field is covered with topsoil, sloped, then seeded with grass.

The size (area) and type of field are determined by the onsite soil conditions and the number of bedrooms in your dwelling. **For sites not suitable for conventional disposal fields, other onsite wastewater management systems must be considered.**

DISPOSAL FIELD MUST BE SET BACK AT LEAST:

6 metres (20 feet)
from a dwelling without a basement

11 metres (36 feet)
from a dwelling with a basement

30 metres (100 feet)
from a watercourse (excluding a ditch)

15 metres (50 feet)
from a cut or embankment

8 metres (26 feet)
from a swimming pool

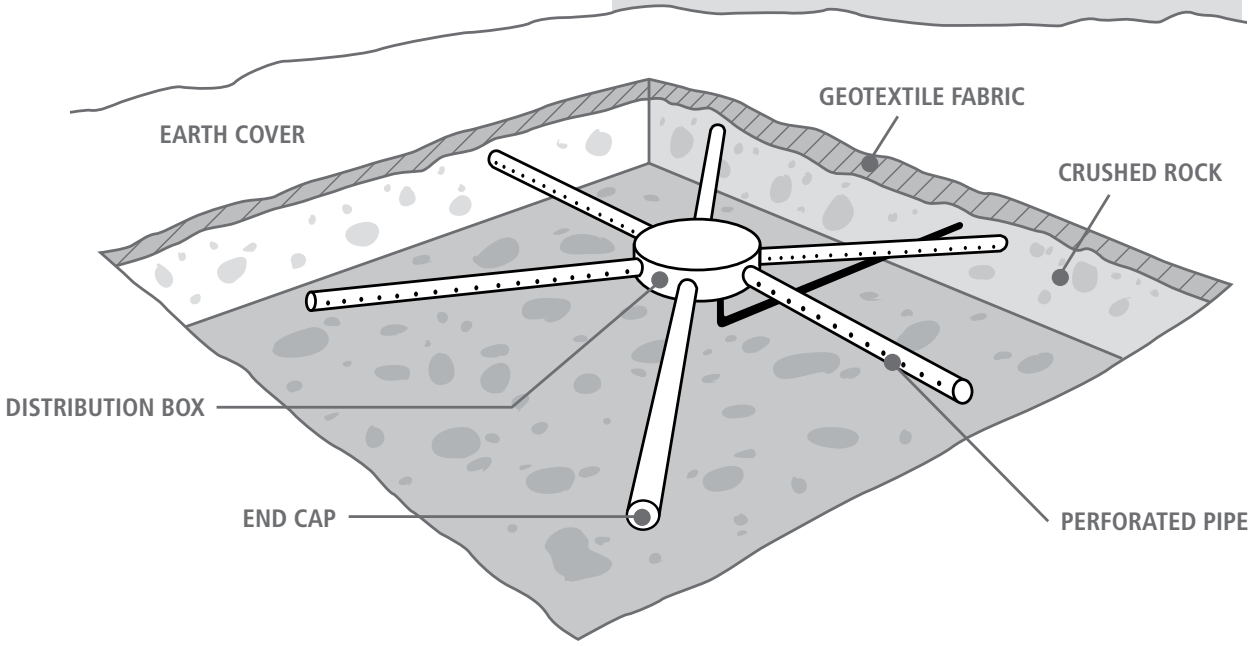
8 metres (26 feet)
from water service pipes

15 metres (50 feet)
from a well (drilled and cased to a minimum of 6m below ground)

30 metres (100 feet)
from other wells and springs

8 metres (26 feet)
from any property boundary

FIGURE 3
TOTAL AREA TYPE DISPOSAL FIELD



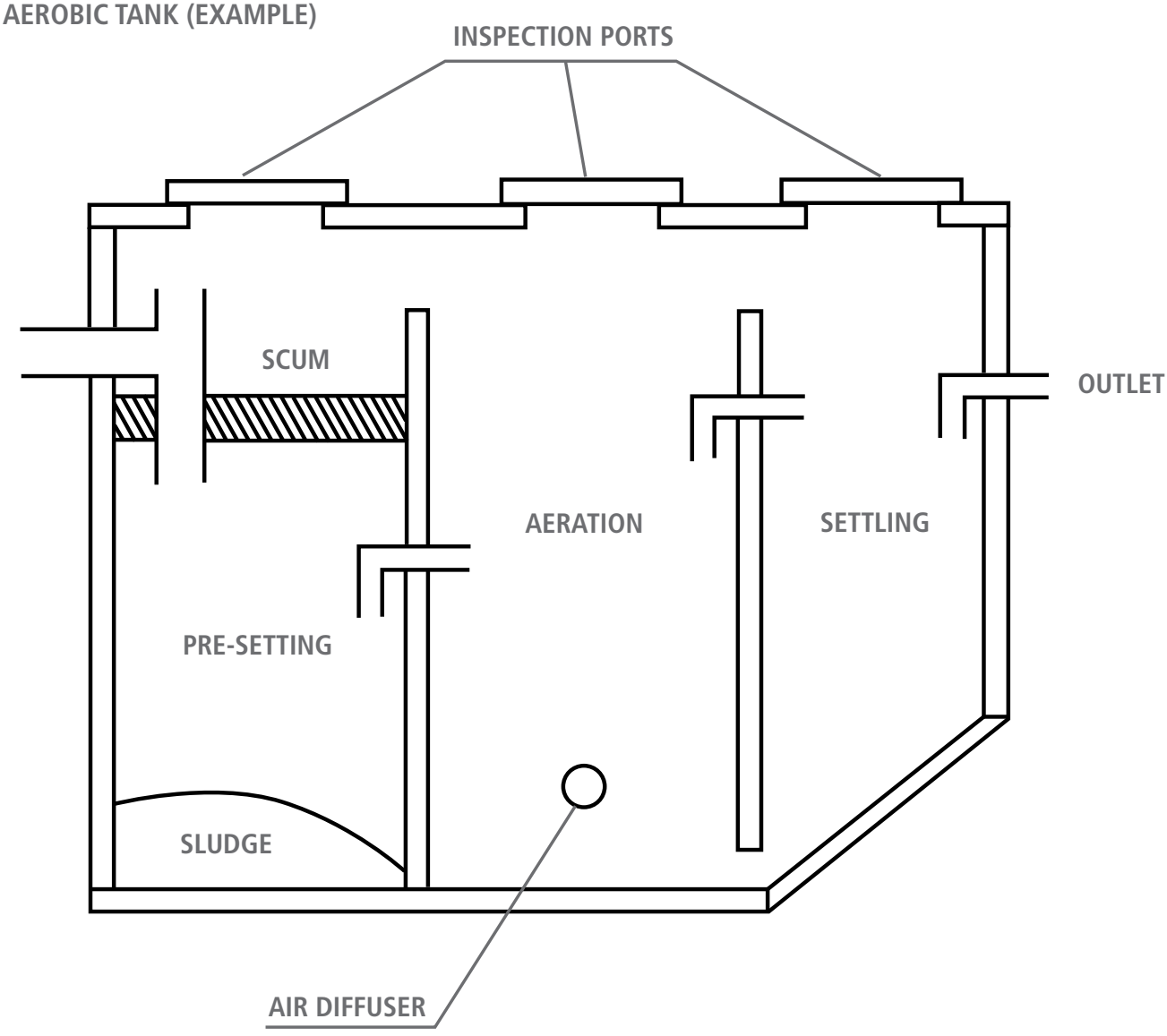
5.3
AEROBIC TANKS AND PACKAGE TREATMENT PLANTS

Aerobic tanks (figure 4) and package treatment plants are similar in construction to septic tanks, but the treatment process is quite different. They produce a cleaner effluent and are considered to be advanced treatment systems. In these tanks, air is mixed into the wastewater to promote the growth of oxygen-using aerobic bacteria. A stirring agitator or an air compressor is used to supply oxygen to the aerobic bacteria.

The wastewater feeds the bacteria, which then breaks down complex organic compounds into simpler, harmless ones. The treated effluent is released into a disposal field and final infiltration to the soil. The sludge must be pumped out of the tank regularly by a registered sewage hauler.

The aerobic tank and the package treatment plant require routine maintenance and monitoring by a factory-trained certified installer. Sometimes, annual effluent testing is needed. An analysis must be done by an accredited testing agency and submitted to Manitoba Conservation.

FIGURE 4
AEROBIC TANK (EXAMPLE)



5.4 HOLDING TANKS

Holding tanks are commonly used for wastewater collection in cottage country or in areas where disposal fields are not permitted. Holding tanks are normally single-compartment tanks that need to be pumped out regularly by a registered sewage hauler.

A holding tank must be made of concrete, fibreglass, polyethylene or other approved material, and must bear a Canadian Standards Association (CSA) stamp. The minimum total capacity for sewage holding tanks in Manitoba is 4,500 litres (1,000 gallons). If all water closets installed in a building are low-water use toilets (use less than five litres/one gallon per flush), the holding tank may have a minimum total capacity of 3,400 litres (750 gallons).

Holding tanks must be installed with the same minimum setback requirements as septic tanks (page 7) but should also be located where they can be easily accessed by a sewage pump-out truck. A holding tank cannot be installed in areas where pump-out service is not available, or where there are no facilities for the final disposal of the wastewater.

5.5 SEWAGE EJECTOR SYSTEMS

The sewage ejector system consists of a septic tank and pump, an underground pipe extending to the discharge area, and an above-ground discharge point. In this system, the wastewater effluent is sprayed onto the ground surface at the discharge point, where it seeps into the surrounding soil. There will also be some evaporation of the effluent – the amount depends on the outside temperature.

Though not required, it is recommended that a gravel bed surround the discharge point to minimize erosion, open pooling of effluent and odours. The area surrounding the discharge point should also be fenced to keep out children, pets and livestock.

NOTE

In Manitoba, the installation of a **NEW** sewage ejector system is not permitted.

The phase-out of existing sewage ejector systems is triggered by the transfer or subdivision of the land on which the sewage ejector system is located. Before a transfer or subdivision of land, the landowner must decommission the sewage ejector system. However, the landowner can obtain a certificate of exemption to maintain the sewage ejector system, as long as its location complies with the requirements as set out in *Schedule E* along with other applicable sections of the regulation.

A person wanting to keep a sewage ejector would submit an application to Manitoba Conservation, prior to the transfer of land or upon receipt of conditional approval for the proposed subdivision of land. An applicant is entitled to be issued a certificate of exemption providing the existing sewage ejector system:

a) is not located within:
- a sensitive area listed in *Schedule H* of the regulation
- the Red River Corridor Designated Area
- a provincial park
- a Crown land recreational cottage subdivision
- land classified as soil class 6 or 7 or unimproved organic soil

b) is located:
- on a minimum parcel size of four hectares (10 acres)
- in a place where the wastewater effluent will not run off the property

c) meets the setback distances as listed in *Schedule E* of the regulation

d) services a single family dwelling

Applications can also be made requesting an extension of the time available to phase out the ejector or to transfer the responsibility for decommissioning the ejector.

These application forms can be obtained from Manitoba Conservation offices or viewed at:

www.manitoba.ca/conservation/envprograms/wastewater/index.html

THE DISCHARGE POINT OF A SEWAGE EJECTOR MUST BE SET BACK AT LEAST:

60 metres (200 feet)
from any occupied building

60 metres (200 feet)
from any watercourse (including a ditch)

60 metres (200 feet)
from a cut or embankment

60 metres (200 feet)
from a market garden

60 metres (200 feet)
from a well

60 metres (200 feet)
from a property boundary

460 metres (1500 feet)
from the boundary of a city, town, village or hamlet

5.6 PRIVIES (OUTDOOR TOILETS/OUTHOUSES)

Privies are normally installed in remote areas or where regular sewage hauling services are not easily accessible. The Onsite Wastewater Management Systems Regulation recognizes three types:

PIT PRIVY
waste collected in a hole in the ground

VAULT PRIVY
waste collected in a small sealed tank or vault, and pumped out by a registered sewage hauler for final disposal at a treatment facility

PAIL PRIVY
waste collected in a small pail that must be emptied regularly

A PIT PRIVY MUST BE SET BACK AT LEAST:

6 metres (20 feet)
from any habitable building

15 metres (50 feet)
from a drilled well cased to a depth of no less than 6 metres (20 feet)

30 metres (100 feet)
from other wells and springs

30 metres (100 feet)
from the normal high-water level of a watercourse

3 metres (10 feet)
from any property boundary

1 metre (3.25 feet)
from the bottom of the pit to the bedrock or normal high water table

VAULT AND PAIL PRIVIES MUST BE SET BACK AT LEAST:

6 metres (20 feet)
from any habitable building

8 metres (26 feet)
from a well

15 metres (50 feet)
from the normal high-water level of a watercourse

3 metres (10 feet)
from any property boundary

5.7 GREYWATER (SULLAGE) PITS

A greywater pit is simply a covered hole in the ground that is filled with stone. It's used to collect and distribute small volumes of greywater.

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

6.0
ALTERNATIVE ONSITE WASTEWATER MANAGEMENT SYSTEMS

There are several alternative, or non-traditional types of OWMS not described by the regulation. Non-traditional systems are installed when a better quality of effluent is desired or when soil conditions are challenging. Other methods of wastewater management include sand treatment mounds, modified disposal fields, filtration of wastewater through peat or synthetic fibres, intermittent sand filters and package treatment plants. If you are considering an alternative system, contact a designer or certified installer to learn more about the specific requirements.

7.0 REGISTERING AND INSTALLING YOUR SYSTEM

7.1 PLANNING AND SITE EVALUATION

A thorough site evaluation provides the information needed to select the most suitable treatment system among a broad range of design options. The site evaluation helps the owner and installer determine if the size of a property and the onsite conditions are suitable for the type of system being considered. In a site evaluation, the designer or installer should:

- consider how the location of the wastewater management system relates to the legal property description, if there any easements or caveats, the distance to neighbouring properties, improvements and zoning requirements, utilities, setback distance and physical characteristics of the property (ex: vegetation, topography, soils)
- determine if the system can handle the peak wastewater flow. Current and future plans for fixtures and water use must be discussed to ensure the life of the system – its ability to continue providing adequate treatment
- evaluate soil conditions through soil sample analysis and/or percolation tests describing accurate soil descriptions, depth to the normal high water table or to bedrock and noting other limiting factors

7.2 SOIL TYPES

Soil testing is required to determine the loading rate and the ability of the soil to accept the wastewater. The soil conditions determine whether a disposal field is permitted on your land, and if so, what type and size it must be. Before approving a registration for an onsite wastewater management system, Manitoba Conservation requires a soils analysis [particle-size analysis ASTM D422-63(2002)]. This will provide information on the soil composition. Other test methods may be requested by environment officers, such as a test pit or percolation test. In all cases, the soil must be sampled in the area where the proposed system will be placed. It is recommended that the designer/ installer take the soil sample and record the soil conditions at the time of sampling.

7.3 SOIL ANALYSIS AND/OR PERCOLATION TEST

Soil analyses and percolation tests show the ability of the soil to accept wastewater. To work well, disposal fields rely on both evapotranspiration and percolation into the soil. There are a number of people you can contact to perform soil analyses and/or percolation tests, including installers in your region and engineering consultants.

To install a **traditional subsurface total area field**, the soil analysis application rate must be between:

29.35 and 12.72 litres per day per square metre (L/D/SM)

[0.60 and 0.26 gallons per day per square foot (IGPD/SF)]

or, have a percolation rate between:

4.3 minutes and 23.6 minutes per centimetre

(11 and 60 minutes per inch)

A traditional subsurface total area style disposal field can be installed in soils that range in texture from silty loam to sandy-loam. This type of field cannot be installed in coarse sands with a very fast percolation rate or in clay soils with a very slow percolation rate.

To install a **traditional subsurface trench style field**, the soil analysis application rate must be between:

29.35 and 8.80 litres per day per square metre (L/D/SM)

[0.60 and 0.18 gallons per day per square foot (IGPD/SF)]

or, have a percolation rate between:

4.3 minutes and 31.5 minutes per centimetre

(11 and 80 minutes per inch)

A traditional subsurface trench style of disposal field can be installed in soils that range in texture from sandy clay to sandy loam. This type of disposal field cannot be installed in heavy clay soil with a very slow percolation rate or in coarse sands with a very fast percolation rate.

If the soil analysis application rate or the percolation rate is greater or less than these ranges, alternative options need to be looked at.

For information on alternative systems, or soil analyses and percolation tests, contact your OWMS installer or environment officer.

7.4 REGISTRATION

Onsite wastewater management systems (OWMS) must be registered **before construction, modification** or **replacement**. The application you register is the legal document that provides authorization to begin construction. An application allows environment officers to review the proposed design before construction begins, to make sure it meets the standard of practice and regulations.

To register your system, you must complete an **Application to Register** and submit it to your local environment officer. A site plan, indicating the location of the system and the distances to buildings, property boundaries, wells and watercourses, must accompany the application. Forms and site-plan templates are available at the offices listed on the back cover of this manual. A **registration fee** must also be paid in full at the time of registration. The fee varies with the type of system registered, and is indicated on the application.

A sample application can be found at:

www.manitoba.ca/conservation/envprograms/wastewater/information/index.html

The following systems are exempt from the registration requirement and associated fees:

- patent closets
- chemical closets
- composting toilets
- privies (outhouses, outdoor toilets)
- other systems as approved by director

NOTE

The completed application to register, and accompanying site plan, with appropriate fee, must be presented by the homeowner or installer at a Manitoba Conservation office. Incomplete forms and site plans will be returned to the applicant for corrections or completion.

7.5 AUTHORIZATION TO COVER

When your system is registered, the information will be reviewed by an environment officer to ensure it complies with the regulations. If your system passes, the environment officer will provide the installer with authorization to proceed.

You or your installer must let the local environment officer know when construction will begin, so an inspection can be arranged **before** the system is covered. The installer should provide the environment officer with at least **48 hours notice** to make sure there are no delays in completing your installation.

When the installer receives authorization to cover your system, a copy of the application to register will be returned to the homeowner. This copy and the site plan should be kept and passed on to future owners/users as proof of registration and to identify the type of system installed and its location on the property.

7.6 MINIMUM PARCEL SIZE

The regulation requires that the parcel of land a new disposal field is placed on must be at least 0.8 hectares (two acres) in area and have a minimum site width of at least 60 metres (198 feet).

NOTE

It is illegal to proceed with an installation or modification of an onsite wastewater management system without authorization from the director or environment officer.

7.7 RED RIVER CORRIDOR DESIGNATED AREA

A map of the Red River Corridor Designated Area is found on the last page of this manual and can also be viewed at:

www.manitoba.ca/conservation/envprograms/wastewater/index.html

The method of sewage disposal for a **NEW** installation in this area is limited to a holding tank.

The installation of secondary treatment systems will be considered, pending director approval and the timing for proposed municipal sewer system installation.

7.8 PROVINCIAL PARKS AND CROWN LAND COTTAGE SUBDIVISION

The method of disposal for a **NEW** installation in these areas is limited to a holding tank.

The installation of secondary treatment systems in these areas will be considered if they comply with the minimum parcel size and satisfy the director that the system will not negatively affect the quality of the environment.

7.9 SENSITIVE AREAS

Schedule H of the Onsite Wastewater Management Systems Regulation designates certain lands as "sensitive areas." On these lands, no one can construct, install, site, locate, replace, expand or modify a disposal field except when approved by the director. To find out if you are in a sensitive area, check the regulation or contact your local environment officer.

7.10 CONNECTION TO NEW OR EXISTING WASTEWATER COLLECTION SYSTEMS

The regulation says homeowners serviced by existing or new wastewater collection systems, must connect their wastewater sources to these systems. Once the connection to the wastewater collection system has been made, the onsite wastewater management system must be taken out of service and decommissioned. *Schedule I* of the Onsite Wastewater Management Systems Regulation provides requirements for decommissioning.

A disposal field decommissioning guideline can be found at:

www.manitoba.ca/conservation/envprograms/wastewater/information/index.html

NOTE
Secondary treatment systems refer to aerobic treatment units, package treatment plants, biofiltration units and intermittent sand filters.

8.0 OPERATING AND MAINTAINING YOUR SYSTEM

8.1 SEPTIC TANK MAINTENANCE

- Sludge and scum should be removed from your septic tank every one to three years, depending on the amount of wastewater generated from your home. Sludge accumulates at a rate of about 0.06 cubic metres (two cubic feet) per person per year. An excessive accumulation of sludge in the septic tank may cause solids to overflow into the tank's discharge chamber and into the disposal field, resulting in clogging of the disposal field.
- The sludge layer should not be any higher than one-third the depth of your tank. You should consult with your sewage hauler, or be present when the sludge is being pumped from your tank, to determine if your maintenance schedule is adequate.
- If you have just installed a septic tank for a new home, it should be pumped out within one year following startup. Wastewater from new homes may contain small amounts of paints, stains or other materials that can slow the growth of the bacteria needed to break down the solids in your tank.
- Septic tanks (and holding tanks) such as those servicing **seasonal cottages**, should not be pumped completely dry at the end of the season.
- If a pump is used to move wastewater effluent from your septic tank to the treatment area, installing a filter will protect and prolong the life span of the pump and field.
- **A septic tank can only handle biodegradable waste.** Do not put fuels, grease, paints, thinners, pesticides, cigarettes, condoms, paper towels, diapers, sanitary napkins, tampons, or other items that do not decompose, into a septic tank.

NOTE
Check your local yellow pages under Septic Tanks for a registered sewage hauler near you, or find a list of registered sewage haulers at:

http://www.gov.mb.ca/conservation/envprograms/wastewater/industry-group/index.html

Only registered sewage haulers can remove liquid or solid material from an onsite wastewater management system or privy.

IMPORTANT

Never enter your septic tank or holding tank for any reason.

Toxic gases, like hydrogen sulfide, are often present and may be life-threatening.

8.2
DISPOSAL FIELD MAINTENANCE

- Manage your water use wisely. Conserving water, and staggering your water use, will put less stress on your disposal field.
- Inspect your field regularly for pooling or other signs that it may be failing.
- Direct run-off from drains, spouts, sump pumps, driveways etc. away from the disposal field area.
- Insulate the disposal field with a layer of straw, at least 30 centimetres (one foot) thick, during the winter months.
- Avoid any activities that may pack down the soil in the disposal field area. Nothing heavier than a riding lawn mower should be allowed on the field. If you are building a new home, rope off the future site of your field to prevent soil getting packed down from vehicles and construction equipment.
- Plant trees and shrubs at a safe distance from the disposal field area. Roots will seek out the moisture and nutrients within the disposal field, and possibly damage the system. Grass **should** be grown over the disposal field area because it encourages evapotranspiration of the effluent.

8.3
WHY ONSITE WASTEWATER MANAGEMENT SYSTEMS FAIL

INADEQUATE DESIGN
- system not correctly sized
- challenging onsite soil conditions – soil percolation rates are too fast or too slow for the type of system proposed
- uneven distribution of wastewater into the disposal field – likely a result of improper installation of pipes and/or distribution box

HIGH FLOW AND ORGANIC LOADING
- high wastewater flows from occupants (ex: appliances, hot tubs)
- leaking plumbing fixtures
- the addition of fats, oils, grease, meat and vegetable or food products into the system
- use of garburators, which produce high-strength effluent causing thickening of the biomat or anaerobic (absence of air) conditions in the treatment system
- sump pump, hot tub and water softener recharge water is not wastewater – directing it to field will cause premature field saturation

INADEQUATE MAINTENANCE
- failure to pump septic tank periodically
- failure to maintain distribution chambers
- failure to service or maintain pumps (when they are part of the system)
- overuse of household chemicals
- failure to have professional maintenance providers inspect your system (once a year for first three years; then once every three years)

PHYSICAL DAMAGE TO SYSTEM
- tree roots
- collapse of tanks, pipes or distribution boxes
- compaction of soils
- corrosion of metals and concrete

LANDSCAPE POSITION
- surface and groundwater seeping into septic or holding tank, and pump chamber
- high groundwater table
- poor drainage of water from the site

8.4
TROUBLE SHOOTING GUIDE

TROUBLE SIGNS	POSSIBLE CAUSES	RECOMMENDED ACTION
SEWAGE BACK-UP INTO BUILDING *Serious health risk - avoid contact with sewage effluent*	• roots clogging pipes • frozen pipes • plumbing blockages • excessive water use • pump failure • field saturation	• reduce water use (check for leaking taps or running toilets) • consult a professional installer to inspect your system and clean septic tank if required
SEWAGE SURFACING IN YARD *Serious health risk - avoid contact with sewage effluent*	• excess water use • system blockages • improper system elevations • system is undersized • pump/controls failure • field saturation	• reduce water use • consult a professional installer and fence off area until problem is resolved
SEWAGE ODOUR IN BUILDING *Toxic gases can cause discomfort and illness*	• sewage back-up into house • roof vent is blocked • improper plumbing • sewage surfacing in yard	• check and clear roof vent • consult a plumber • consult a professional installer to check pump and clean septic tank if required
SEWAGE ODOUR OUTSIDE *Major nuisance but not a serious health risk*	• sewage surfacing in yard • tank manhole cover partially or fully open • malfunctioning disposal field	• replace and secure manhole • consult a professional installer to repair or replace disposal field
CONTAMINATED SURFACE OR GROUNDWATER *Serious health risk - ingesting contaminated water can lead to serious illness including dysentery and hepatitis*	• sewage discharge to surface • sewage leaching into groundwater • broken sewage pipe • improper water well construction • inadequate distance between disposal field and water source • inadequate vertical separation between disposal field and groundwater table • contamination from an off-site source	• eliminate improper discharge of sewage • repair broken pipes • repair or relocate water well • if an off-site source is suspected, contact your local environment officer
PUMP ALARM ACTIVATED *Sewage may back-up into house, solids may enter disposal field*	• electrical breaker tripped • pump is unplugged • controls malfunctioning • pump failure	• check breaker/electrical plugs • consult a professional to inspect controls and alarm, and possibly to replace pump
FREEZING OF DISTRIBUTION LINES OR DISPOSAL FIELD *System may be inoperable*	• lack of use • low flow rate • foot or vehicle traffic over piping/ disposal field • pump undersized • improper construction of system • inadequate insulating cover (ex. snow, straw etc.) over field in winter months	• run water into system • increase water use and frequency of pump cycle • fence out traffic • increase pump size • apply snow fencing or straw on disposal field in winter months • have a professional check construction and pump out septic tank regularly until system is operable

8.5

HOMEOWNER'S ONSITE WASTEWATER MANAGEMENT SYSTEM MAINTENANCE RECORD

Routine inspections and maintenance of your onsite wastewater management system are essential. Poor maintenance or neglect may lead to failure of your OWMS.

INSTALLER'S NAME:

PHONE NUMBER:

DATE OF INSTALLATION:

REGISTRATION NUMBER:

DATE	MAINTENANCE COMPLETED	SERVICE PROVIDER

- The sludge and scum should be removed from your tank about every **one to three years** by a registered sewage hauler. The frequency will depend on how much you use it. Check the sludge level in your septic tank **once a year** to determine the frequency of clean-out that is best for your household. **Avoid cleaning the tank during winter months** (unless absolutely necessary).
- If you're having trouble with your system, see the **Troubleshooting** section of this document on the preceding page to help determine what services you may need.
- Attach the site plan for your OWMS to your maintenance record, so all components of your system will be easily located for inspection, maintenance or repair.
- It's highly recommended you keep this maintenance record and pass it on to future owners/users of the onsite wastewater management system. The registration number provides proof of registration according to the Onsite Wastewater Management Systems Regulation.

9.0 REDUCING YOUR INDOOR WATER USE

There are a number of good reasons to reduce our indoor water use. Water conservation not only protects our water sources, and delays the need to expand municipal water and wastewater treatment facilities; it also prolongs the life of your onsite wastewater management system.

LEAKS

- A leak of one drop per second wastes 10,000 litres (2,641.72 gallons) of water a year. A toilet that runs after a flush can waste 200,000 litres (52,834.41 gallons) of water a year. Fixing a hot water leak will save energy and water.
- Conduct a periodic leak check at least twice a year on water-using fixtures and appliances, including outside hose connections. Replace worn washers, O-rings and faulty fixtures.

BATHROOM

- Replacing toilets that flush 13 to 26 litres (3.43 to 6.87 gallons) of water with six litre (1.59 gallon) or dual-flush toilets, cuts water use by half or more. Meanwhile, you can reduce a toilet's water per flush by up to 35 per cent by installing early closure devices (don't use bricks, as they break down and pieces interfere with the flapper seal).
- See www.cwwa.ca for toilet performance ratings.
- Don't use the toilet to get rid of trash.
- A partially filled tub uses less water than a long shower; a short shower uses less than a full tub.
- Replace your 20 litre/minute (5.28 gallon/minute) showerhead with a low-flow 9.5 litre/minute (2.51 gallon/minute) showerhead. You'll cut your water use by more than half.
- Make it a habit to finish your shower in under five minutes.
- Install a water-conserving, 3.5 litre/minute (.92 gallon/minute) aerator on your bathroom tap.
- When shaving, rinse the razor in a cup or a partially filled sink instead of letting the tap run.
- Brush teeth using a glass of water to rinse.

KITCHEN AND LAUNDRY

- Install a water-saving, nine-litres (2.38 gallons)/ minute aerator on the kitchen tap.
- Use a stopper in your sink or basin when rinsing dishes – don't let the water run.
- Use a stopper in your sink or basin when washing vegetables; then rinse quickly using running water.
- Keep drinking water in the fridge. Wash the container and change the water every few days.
- Thaw food in the fridge rather than under a running tap. This conserves both energy and water.
- Compost organic wastes instead of using a sink garbage disposal.
- Buy a low-water use dishwasher to save on energy, water and detergent costs.
- Wash only full loads of laundry and dishes.
- Front-loading washing machines use less water than top-loading ones. If unavailable, choose a clothes washer with a suds saver and water-saving cycle.

GENERAL WATER USE

- Do not discharge backwash from the water softener into the disposal system. The additional water may overtax the system.
- Use water treatments or softening systems only when required. If possible, only use softened water for bathing and cleaning; use un-softened water for cooking, drinking and watering plants.
- Make sure your water softener restarts only when it's completely used up.
- Turn the water system off if you're away for more than a few days.
- Insulate the hot water tank and pipes to reduce the need to run water until it's hot. Install a heat trap on the pipe above your water heater to save energy and water.
- Know the locations of your sink, toilet and main shut-off valves, in case a pipe or water heater bursts, and so you can turn off the water when you're away.
- If your water pipes tend to freeze, do not let the tap run continuously. This wastes water and overloads sewer systems. Instead, install heat tape or connect a pump-back reservoir system. Discuss options with your plumber or electrician.

10.0
CONTACT INFORMATION

MANITOBA CONSERVATION
Environmental Services Onsite Wastewater Management Systems Program

1007 Century Street
Winnipeg MB R3H 0W4
Ph: 204-945-2970
Fax: 204-948-2420

Pour obtenir une version française de ce document, veuillez communiquer avec le bureau mentionné ci-dessus.

www.manitoba.ca/conservation/envprograms/wastewater/index.html

---

MANITOBA CONSERVATION
REGIONAL OFFICES

Brandon
1129 Queens Avenue
Brandon MB R7A 1L9
Ph: 204-726-6064
Fax: 204-726-6567

Dauphin
27-2nd Avenue SW
Dauphin MB R7N 3E5
Ph: 204-622-2030
Fax: 204-638-8626

Lac Du Bonnet
(Hwy 502 & Park Avenue)
P.O. Box 4000
Lac du Bonnet MB R0E 1A0
Ph: 204-345-1444
Fax: 204-345-1415

Portage la Prairie
25 Tupper Street N
Portage La Prairie MB R1N 3K1
Ph: 204-239-3608
Fax: 204-239-3215

Selkirk
Lower Level 446 Main Street
Selkirk MB R1A 1V7
Ph: 204-785-5030
Fax: 204-785-5024

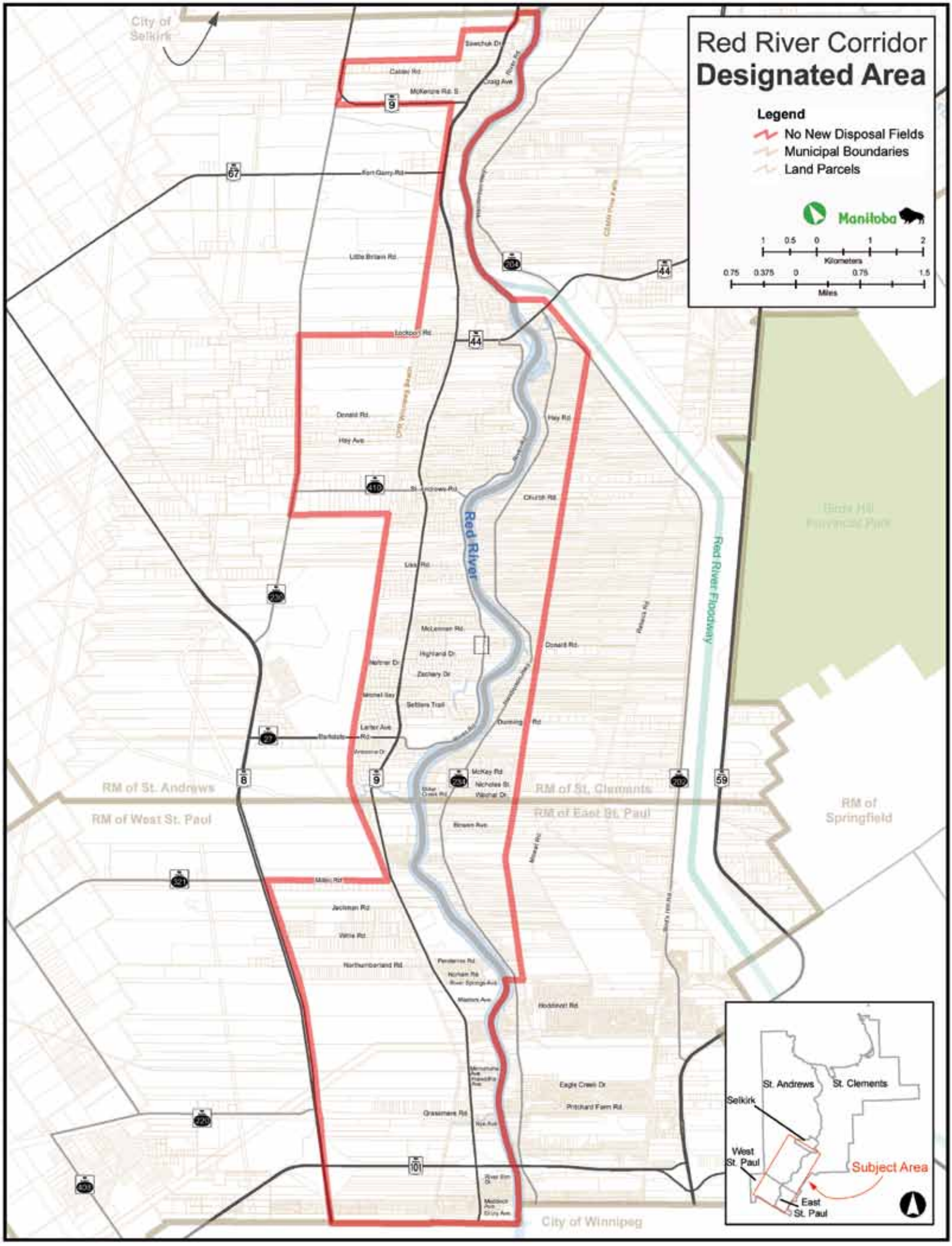
Steinbach
Unit B-284 Reimer Ave
Steinbach MB R5G 1N6
Ph: 204-346-6060
Fax: 204-326-2472

The Pas
P.O. Box 2550, 3rd Street & Ross Avenue
The Pas MB R9A 1M4
Ph: 204-627-8499
Fax: 204-623-1773

Thompson
P.O. Box 32, 59 Elizabeth Drive
Thompson MB R8N 1X4
Ph: 204-677-6857
Fax: 204-677-6888

Winkler
555 Main Street
Winkler MB R6W 1C4
Ph: 204-325-1750
Fax: 204-325-1758

Winnipeg
Ste. 160, 123 Main Street
Winnipeg MB R3C 1A5
Ph: 204-945-7043
Fax: 204-948-2338


Red River Corridor
Designated Area
Legend
No New Disposal Fields
Municipal Boundaries
Land Parcels
Manitoba
1 0.5 0 1 2
Kilometers
0.75 0.375 0 0.75 1.5
Miles
City of Selkirk
RM of St. Andrews
RM of West St. Paul
RM of St. Clements
RM of East St. Paul
RM of Springfield
City of Winnipeg
Red River
Red River Floodway
Birds Hill Provincial Park
St. Andrews
St. Clements
Selkirk
West St. Paul
East St. Paul
Subject Area