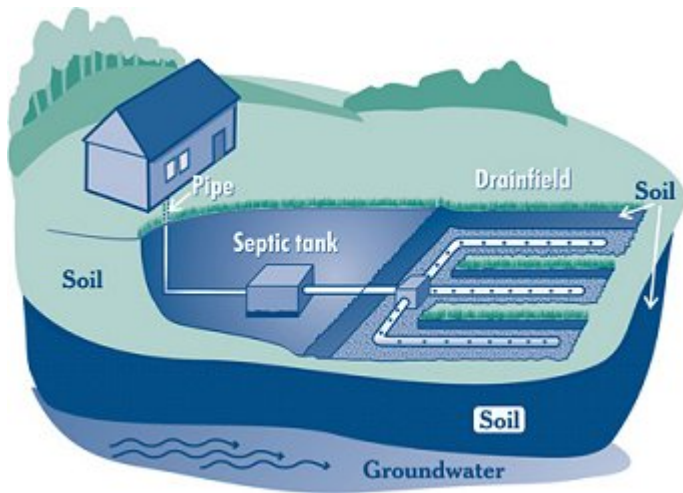


# A Homeowner's Guide to Septic Systems



Waste Water  
Nova Scotia Society



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# Your Septic System

is your responsibility

**Did you know** that as a homeowner you're responsible for maintaining your septic system? Did you know that maintaining your septic system protects your investment in your home? Did you know that you should regularly inspect your system and pump out your septic tank?

A properly designed, constructed, and maintained septic system can provide long-term, effective treatment of household wastewater. If your septic system isn't maintained, you may need to replace it, costing you thousands of dollars. A malfunctioning system can contaminate groundwater that might be a source of drinking water.

This guide will help you care for your septic system. It will help you understand how your system works and what steps you can take as a homeowner to ensure your system will work properly. To help you learn more, consult the resources listed at the back of this booklet (see page 14-16). A helpful checklist is also included at the end of the booklet to help you keep track of your septic system maintenance.

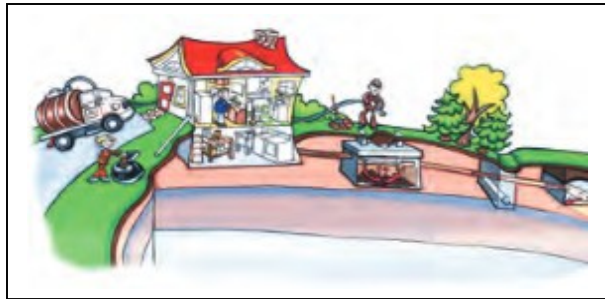
## Top Four Things You Can Do To Protect Your Septic System

1. Regular pumping of the septic tank
2. Spread water use out over time
3. Do not dispose of hazardous wastes (paint, harsh cleaners, etc.) in your septic system. Contact your municipality for proper disposal
4. Plant grass and keep large roots out of your disposal field

## How does it work?

### Components

A typical septic system has four main components: a pipe from the home, a septic tank, a drain field, and soil. Microbes in the soil digest or remove most contaminants from wastewater before it eventually reaches groundwater (this is where your drinking water comes from).



## Septic System Names

- ▶ On-lot system
- ▶ On-site system
- ▶ Individual sewage disposal system
- ▶ On-site sewage disposal system
- ▶ On-site wastewater treatment system

### ***Pipe from the home***

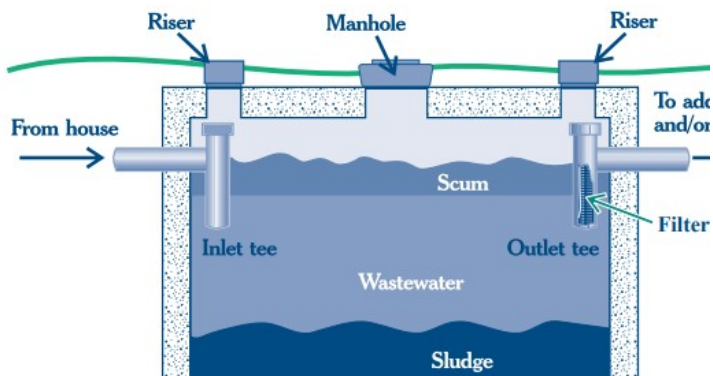
All of your household wastewater exits your home through a pipe to the septic tank - even “grey” water from your sink, shower and washer.

### ***Septic tank***

The septic tank is a buried, watertight container typically made of concrete, fiberglass, or plastic. The purpose of the tank is to let solids (sludge) settle to the bottom and oils and greases (scum) float to the top (the crusty layer you see when looking into the tank). It also allows partial breakdown of the

solid materials. Baffles, or a pipe “T”, are used in the septic tank to prevent the sludge and scum from leaving the tank and traveling into the drain field area. Filters are required on all new systems to keep solids from entering the drain field. Only the mostly clear water leaves the tank and continues to the drain field for further treatment.

Typical single-compartment septic tank with ground-level inspection risers and filter.



### **Advanced Treatment Units**

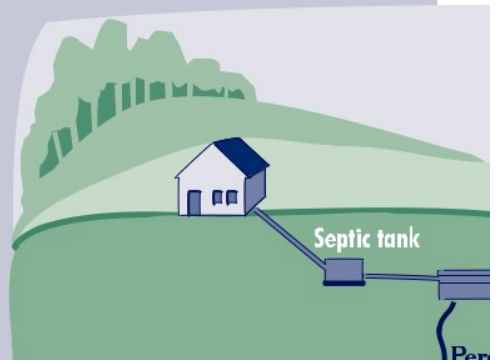
An Advanced Treatment Unit (ATU) may be part of an onsite sewage system designed by a Professional Engineer. ATU's are generally used on smaller or more difficult lots to provide a reduction in the amount of area needed for a septic system.

ATU's are required to have a maintenance agreement in place and require periodic inspections or maintenance.

# Finding Your System

When your system was constructed, a Qualified Person or P. Eng completed a “Certificate of Installation.” The drawing on this document will show the approximate location of each part of your system. The Certificate should be kept with your deed for future reference.

Older tanks are often hard to find because there are no visible parts. A certified person can help you locate your septic system if your septic tank has no risers using video inspection and locating equipment.



## ***Drainfield***

As sewage flows from the home and enters the septic tank, the sewage level in the tank rises slightly before liquid slowly flows to the drainfield. Minimizing the volume of raw sewage leaving your home allows maximum separation of solids in the tank before the clear liquid flows to the drainfield. This will help prevent excess solids from leaving your tank and clogging your drainfield. Furthermore, if the drainfield is overloaded with too much liquid at once, it will flood. This can cause sewage to flow to the ground surface or create backups in plumbing fixtures and prevent treatment of all wastewater. This is why spreading your water use over time is important to the life of your system.

## ***Soil***

In the drainfield, water will slowly seep through the soil to remove the remaining harmful contaminants, including bacteria, viruses, and nutrients. Suitable soil is necessary for successful wastewater treatment.

# Why should I maintain my septic system?

When septic systems are properly designed, built, and maintained, they reduce or eliminate most human health or environmental threats posed by pollutants in household wastewater. However, they require regular maintenance, or they can fail. Septic systems need to be monitored to ensure that they work properly throughout their service lives.

## **Saving money**

A key reason to maintain your septic system is to save money. Failing septic systems are expensive to repair or replace, and poor maintenance is often the culprit. Having your septic system inspected every 3 years is a bargain when you consider the cost of replacing the entire system. Your system will need pumping every 3 to 5 years, depending on how many people live in the house and the size of the system. An unusable septic system or one in disrepair will lower your property value and could pose a legal liability.

## **Protecting health and the environment**

Other good reasons for safe treatment of sewage include preventing the spread of disease and protecting water resources. Typical pollutants in household wastewater include nitrogen, phosphorous, and disease-causing bacteria and viruses. If a septic system is working properly, it will remove most of these pollutants.

With close to half of Nova Scotian homes using septic systems, more than 1 million litres of wastewater per day is dispersed below the ground surface. Poorly treated sewage from septic systems can be a cause of groundwater contamination. It poses a significant threat to drinking water and human health because it can contaminate drinking water wells and cause diseases and infections in people and animals. Improperly treated sewage that enters nearby surface water also increases the chance of swimmers contracting infectious diseases. These range from eye and ear infections to acute gastrointestinal illness and diseases like hepatitis.



# How do I maintain my septic system?

## Inspect and pump frequently

You should have your septic system pumped and assessed every 3 to 5 years. A certified pumping professional can assess the condition of your septic tank and a Qualified Person or Professional Engineer can assess all parts of your septic system. Your service provider should inspect for leaks and look at the scum and sludge layers in your septic tank to determine if pumping is needed.

### What Does an Inspection Include?

- ▶ Locating the System
- ▶ Uncovering access holes
- ▶ Flushing Toilets
- ▶ Checking for signs of backup
- ▶ Measuring scum and sludge layers
- ▶ Identifying any leaks
- ▶ Inspecting mechanical components
- ▶ Pumping the tank if necessary

An inspection may also include:

- ▶ Video inspection of components in your septic system
- ▶ Load and dye testing

## Tip

Septic system additives are not recommended.

## Tip

Spread water use over time. Do one load of laundry each day through the week instead of doing all 7 loads in one day. This will promote the best settling conditions in your septic tank and avoid damage to the disposal field.

Four major factors influence the frequency of pumping:

- ▶ the number of people in your household
- ▶ the amount of wastewater generated
- ▶ the volume of solids in the wastewater
- ▶ the size of your septic tank

Septic system additives are not necessary because septic tanks already contain the microbes they need for effective treatment. Periodic pumping is a much better way to ensure that septic systems work properly and provide many years of service. In any case, every septic tank requires regular pumping.

In the service report, the pumper should note any repairs completed and whether the tank is in good condition. If the pumper recommends repairs he or she can't perform, hire a certified septic system contractor to make the repairs as soon as possible.

## Use water efficiently

Average indoor water use in a typical single-family home is about 1000 litres per day. Leaky toilets can waste as much as 900 litres each day. The more water a household conserves, the less water enters the septic system. Efficient water use can improve the operation of the septic system and reduce the risk of failure.

## High-efficiency toilets

Toilet use accounts for 25 to 30 percent of household water use. Do you know how many liters of water your toilet uses to empty the bowl? Most older homes have toilets with 15 to 20 litre tanks, while newer low-flow toilets use 6 litres of water or less per flush. The newest toilet designs are dual flush - using 6 litres to flush solids and only 4 litres to flush liquids. Investing in higher efficiency toilets will greatly reduce the amount of liquid reaching your system, which can save you a bundle in potential future maintenance.



## Faucet aerators and low-flow showerheads

Faucet aerators help reduce water use and the volume of water entering your septic system. Low flow showerheads or shower flow restrictors also reduce water use.

## Water fixtures

Check to make sure your toilet's tank isn't leaking into the bowl. Add five drops of liquid food colouring to the tank before bed. If the dye is in the bowl the next morning, the tank is leaking and repairs are needed.

A small drip from a faucet can waste many liters of water every day. To see how much a leak adds to your water use, place a cup under the drip for 10 minutes. Multiply the amount of water in the cup by 144 (the number of minutes in 24 hours, divided by 10). This is the total amount of clean water traveling to your septic system each day from that little leak.



# Use Water Efficiently

- ▶ Install low-flow showerheads
- ▶ Fill the bathtub with only as much water as you need
- ▶ Turn off faucets while shaving or brushing your teeth
- ▶ Run the dishwasher and washing machine only when they're full
- ▶ Use toilets to flush sanitary waste only (not kitty litter, diapers, or other trash)
- ▶ Make sure all faucets are completely turned off when not in use
- ▶ Maintain your plumbing to stop leaks
- ▶ Install aerators in the faucets in your kitchen and bathroom
- ▶ Replace old dishwashers, toilets and washing machines with new models that use less water

## Watch your drains

What goes down the drain can have a major impact on how well your septic system works.

### ***Waste disposal***

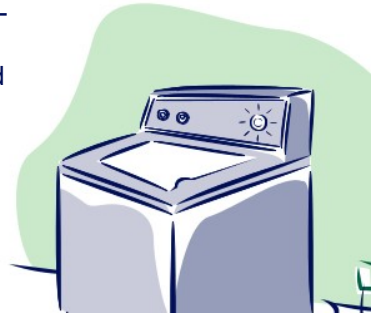
What shouldn't you flush down your toilet? Dental floss, feminine hygiene products, condoms, diapers, cotton swabs, cigarette butts, coffee grounds, cat litter, paper towels, and other kitchen and bathroom items that can clog and potentially damage septic system components if they become trapped. Flushing household bleach, gasoline, oil, pesticides, antifreeze, or paint can slow or stop the biological treatment taking place in the system and might contaminate surface water and ground water. Minimize the amounts of fats, oils, and grease that are dumped down your drain. Dispose of them in your compost or contact your local municipality for other options.

### ***Washing machines***

By selecting the proper load size, you'll reduce water waste. Washing small loads of laundry on the large-load cycle wastes precious water and energy. If you can't select load size, run only full loads of laundry.

Doing all the household laundry in one day might seem like a time saver, but it could be harmful to your septic system. Doing load after load does not allow your septic tank time to fully treat wastes. You could be flooding your drainfield without allowing enough recovery time. Try to spread water use throughout the week.

You may also want to consider investing in a more efficient machine. An Energy Star-certified washing machine uses 35% less energy and 50% less water than a standard model.



## Care for your drainfield

Your drainfield is an important part of your septic system.

Here are a few things you should do to maintain it:

- ▶ Plant only grass over and near your septic system. Roots from nearby trees or shrubs might clog or damage the drainfield;
- ▶ Don't drive or park vehicles on any part of your septic system. Doing so can compact the soil in your drainfield or damage the pipes or tank;
- ▶ Keep roof drains, basement sump pump drains, and other rain-water or surface water drainage systems away from the drainfield. Flooding the drainfield with excess water slows down or stops treatment and can cause plumbing fixtures to back up.

## What can make my system fail?

Excessive water use is one of the main reasons for septic system failure. There are many practices that result in excessive water use, including:

- ▶ Concentrated water use such as running the dishwasher while showering and doing a load of laundry, or doing more than two loads of laundry in one day;
- ▶ Operating a business out of your home that increases the wastewater volume (for example, operating a daycare when the septic system was not originally designed for this activity);
- ▶ Allowing lint to go down the drain (there are lint filters available for your washing machine discharge);
- ▶ Allowing water softener and other water treatment unit backwash that was not part of the system design to drain to your septic system;
- ▶ Allowing trees and other deep-rooted plants to grow on or near your septic system;
- ▶ Forgetting to pump out the tank every 3 to 5 years.

The other main reason septic systems can fail is dumping the wrong things down the drain. Household hazardous waste such as chemicals, paints, paint thinners, pesticides, and motor oil should never be disposed of in your septic system. Call your municipality to find out how to dispose of these products. Left over food waste and coffee grounds should go in your green bin.

Septic systems are not made to last forever. The better you treat your septic system, the longer it will last, thus saving you money.

## Failure symptoms

The most obvious septic system failures are easy to spot. Check for pooling water or muddy soil around your septic system or in your basement. Look for evidence of high water levels in your tank. Notice whether your toilet or sink backs up when you flush or do the laundry. You might also notice strips of bright green grass over the drainfield. Septic systems also fail when partially treated wastewater comes into contact with groundwater. This type of failure is not easy to detect, but it can result in the pollution of wells, nearby streams, or other bodies of water. Check with a septic system professional and the local Nova Scotia Environment office if you suspect such a failure.

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*Stop, Look & Smell!*

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## Failure causes

### ***Household toxins***

Does someone in your house use the utility sink to clean out paint rollers or flush toxic (poisonous) cleaners? Oil-based paints, solvents, and large volumes of toxic cleaners should not enter your septic system. Even latex paint cleanup waste should be minimized. Squeeze all excess paint and stain from brushes and rollers on several layers of newspaper before rinsing. Leftover paints and wood stains should be taken to your local household hazardous waste collection center. Remember that your septic system contains a living collection of organisms that digest and treat waste and can be harmed by toxins.

### ***Household cleaners***

For the most part, your septic system's bacteria should recover quickly after small amounts of household cleaning products have entered the system. Of course, some cleaning products are less toxic to your system than others. Labels can help you tell just how toxic these products are. The word "Danger" or "Poison" on a label indicates that the product is highly hazardous. "Warning" tells you the product is moderately hazardous. "Caution" means the product is slightly hazardous. Although these warnings are telling you how harmful these products are to a human, you can assume that anything that will do harm to us is not good for your septic system.



Regardless of the type of product, use it only in the amounts directed on the label and minimize the amount discharged into your septic system.



### **Outdoor hot tubs**

Outdoor hot tubs are a great way to relax. Unfortunately, your septic system was not designed to handle large amounts of water from your hot tub. Emptying hot tub water into your septic system stirs the solids in the tank and pushes them out

into the drainfield, causing it to clog and fail. Draining your hot tub into a septic system or over the drainfield

can overload the system. Instead, drain cooled hot tub water onto turf or landscaped areas well away from the septic tank and drainfield, according to local regulations. Use the same caution when draining your swimming pool.

### **Water purification systems**

Some water purification systems, including water softeners and iron filters, pump extra water into the septic system. This backwash can add hundreds of litres of water to the septic tank, disturbing the solids and causing excess flow to the drainfield. Talk to your licensed plumber about redirecting backwash water away from your septic system.

### **Garbage disposals (Garburators)**

Eliminating the use of a garbage disposal can reduce the amount of grease and solids entering the septic tank and possibly clogging the drainfield. A garbage disposal grinds up kitchen scraps, suspends them in water, and sends the mixture to the septic tank. Once in the septic tank, some of the materials are broken down by bacterial action, but most of the grindings have to be pumped out of the tank. Using a garbage disposal frequently can greatly increase the amount of sludge and scum in your septic tank, resulting in the need for more frequent pumping.

**Not in My  
Septic System**

X  
diapers, cat litter, cigar  
filters, coffee grounds,  
grease, feminine hygiene  
products, etc.

X  
household chemicals

## ***Improper design or installation***

Untrained and inexperienced septic system designers do not understand how sewage is treated through soils. This is why Nova Scotia Environment (NSE) sets standards for sewage system design and construction. Construction or modification of septic systems requires design by a Qualified Person or Professional Engineer licensed through NSE. The contractor installing the system must also be certified and prior approval must be obtained from NSE. This is all required so that you, the homeowner, have confidence that your new sewage system will work for years to come.

### ***Septic Inspection:***

A septic system inspection is a great way to identify issues before they become a bigger problem.

When buying a home or property with a septic system, have it inspected by a reputable, trained and insured inspector to identify any issues that may arise.

## **T**ip

*Do not allow roof drains, building drains, or water softener backwash to enter the septic system. You can place ditches upslope of the system to reduce the amount of rainwater that flows into the system.*



# How do I choose my installation team?

Professional Engineer or Qualified Persons (QP) are professionals who do the drawing specifications for your septic system according to the Nova Scotia On-Site Sewage Disposal Standard. A Professional Engineer may also create a more customized design. Installers are the people who build the septic system. In some cases, Installers have QP certification too.

Good advice when choosing a P. Eng, Qualified Person and installer:

- ▶ Verify they are certified (see below);
- ▶ Ask for references from family, friends, or neighbours;
- ▶ Check the Better Business Bureau (<http://www.maritimeprovinces.bbb.org/>; (902) 422-6581);
- ▶ Get three quotes. Cheaper is not always better, but price is an important part of the hiring decision;
- ▶ Get quotes in writing with details showing the costs for labour, equipment, and materials and site evaluation, system design, final inspection, etc. ;
- ▶ Check for liability insurance and workers' compensation insurance. Make sure your installer can prove he or she is insured.

Try these resources for help finding QPs in your area:

- ▶ <http://www.gov.ns.ca/nse/resources/licence.certification.listings.asp>
- ▶ <http://www.wwns.ca/>
- ▶ visit your local Nova Scotia Environment office (see page 14)

## What is Nova Scotia Environment's role?

Nova Scotia Environment is there to:

- ▶ Protect your health and prevent environmental damage;
- ▶ Ensure standards are met so you can enjoy your home for many years to come.

# For more information...

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## Nova Scotia Environment Regional Offices

OFFICE	MAILING ADDRESS	TELEPHONE	FAX
<b>Central Region</b>			
Bedford	30 Damascus Road Suite 115 Bedford NS B4A 0C1	(902) 424-7773	(902) 424-0597
Truro	36 Inglis Place Truro NS B2N 5G6	(902) 893-5880	(902) 893-0282
Amherst	71 East Victoria Street Amherst, NS, B4H 1X7	(902) 667-6205	(902) 667-6214
<b>Eastern Region</b>			
Sydney	1030 Upper Prince Street Suite 2, Sydney, NS B1P 5P6	(902) 563-2100	(902) 563-2387
Port Hawkesbury	218 MacSween St, Suite 12, Port Hawkesbury, NS B9A 2J9	(902) 625-0791	(902) 625-3722
Antigonish	155 Main St., Suite 205 Antigonish, NS B2G 2B6	(902) 863-7389	(902) 863-7411
Pictou	20 Pump House Road R.R.#3, New Glasgow, NS B2H 5C6	(902) 396-4194	(902) 396-4765
<b>Western Region</b>			
Kentville	136 Exhibition St Kentville NS B4N 4E5	(902) 679-6086	(902) 679-6186
Bridgewater	81 Logan Road Bridgewater NS B4V 3T3	(902) 543-4685	(902) 527-5480
Yarmouth	55 Starrs Rd Unit 9 Yarmouth NS B5A 2T2	(902) 742-8985	(902) 742-7796



# Septic System Do's and Don'ts

## Do:

- ▶ Pump your septic tank every 3 to 5 years (the frequency depends on how well you take care of your system and how many people live in the home).
- ▶ Minimize water use by buying a low-flow showerhead, low-flow toilet, and low-volume washing machine and repair any leaky taps.
- ▶ Spread water use over time (for example, do only 1 or 2 loads of laundry per day, and try not to shower or run the dishwasher while doing laundry). Essentially, the slower you run sewage through your septic tank, the better the tank performs in settling and the cleaner the liquid going to the drainfield.
- ▶ Keep pumping records, system approval and design info, and the Certificate of Installation with your deed. Please pass these along to any future home buyer.
- ▶ Install lint traps for your washing machine. If there is no lint trap on your washer, you can purchase an add-on lint filter.
- ▶ Plant and maintain a healthy grass cover over the drainfield (an important part of septic design). Prevent roots from entering the drainfield.
- ▶ Divert roof drain and up-slope rain water from the drainfield.
- ▶ Compost kitchen waste instead of dumping it down the drain.
- ▶ Try to use only small amounts of household cleaners. There are septic system-friendly cleaners available.
- ▶ Install a filter at the outlet of your tank (effluent filter) for added protection for your drainfield. This will require yearly cleaning (simply spray off with garden hose).



# Septic System Do's and Don'ts

## Don'ts:

- ▶ Don't overload your septic system with water.
- ▶ Don't wash more than two loads of laundry per day.
- ▶ Don't allow water softener (or other water treatment device) backwash to enter the septic system.
- ▶ Don't use your system beyond its intended design. Operating a home-based business such as a daycare in a home that has a sewage system not designed for that purpose can ruin a system.
- ▶ Don't allow water from sump drains or roof drains to enter your septic system.
- ▶ Don't divert laundry water or sink/wash water away from the septic system. This is referred to as "greywater," which is sewage, and can cause harm to the environment and human health just like toilet water.
- ▶ Don't enter a septic tank. Sewage gases are explosive, toxic, and can suffocate you.
- ▶ Don't dump fats or oils down the drain.
- ▶ Don't dump household hazardous chemicals such as paint, paint thinner, motor oil, grease, pesticides, pharmaceutical drugs, or other chemical waste.
- ▶ Don't flush coffee grounds, disposable diapers, cigarette butts, dental floss, kitty litter, cotton swabs, feminine products or tampons, condoms, poisons, or paper towel. Quite simply, garbage goes in a garbage can, not the septic system.
- ▶ Don't use septic system additives. The sewage that comes from your plumbing provides lots of bacteria and microorganisms, so adding more will not be helpful. Septic systems are designed to treat the sewage without additives.
- ▶ Don't drive vehicles on the field bed. You may need barriers (posts or large rocks) to prevent visitors from driving over your field bed or tank.
- ▶ Don't use chemical drain openers. Instead, try using boiling water or a plumbing "snake" to clear clogged pipes.

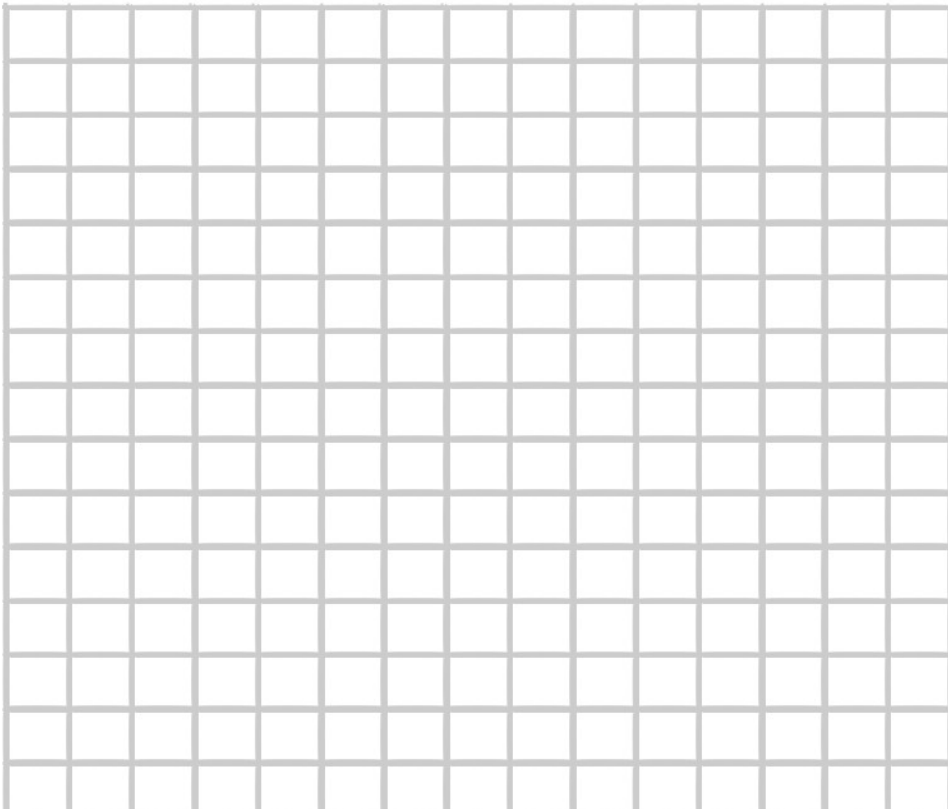


# My Property Sketch

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It is important to know where your system is located so that if the Certificate of Installation is not available, you can make your own drawing for future reference. Make sure you include measurements. Features to include in the drawing are:

- ▶ Property lines;
- ▶ Home and any outbuildings;
- ▶ Driveway;
- ▶ Septic tank: two measurements from separate corners of the home will allow accurate location of the tank. Note how deep the tank is so you know how far down to dig. Tank risers make digging much easier; if there are no risers, you may want to consider installing them once the tank is uncovered;
- ▶ Pump chamber (if there is one). See notes for septic tank above on locating the chamber and use of tank risers;
- ▶ Wells on your property and the neighbouring properties;
- ▶ Distance to nearby watercourses.







Waste Water  
Nova Scotia Society

**<http://www.wwns.ca/>**