1. How Septic Systems Work

A septic system receives all household wastewater including wastewater from toilets, showers, dishwashers, washing machines, and other plumbing fixtures. Its job is to treat the wastewater so it may safely return to the groundwater.

A basic septic system is made up of:

1. a septic tank
2. a distribution box
3. a drainfield
4. the soil

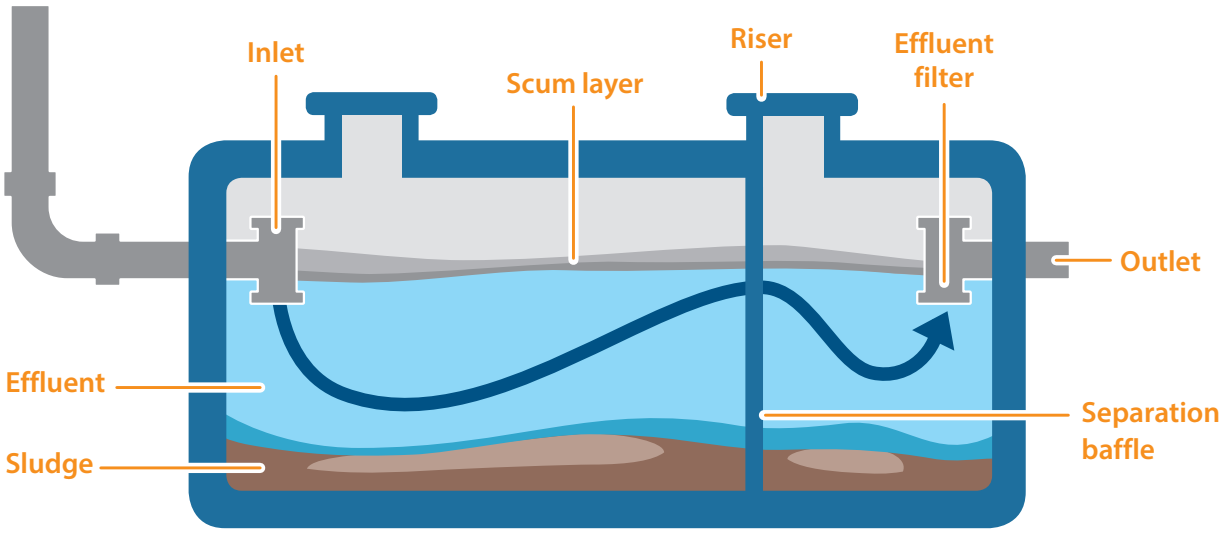
How Septic Systems Work

1. **Septic tank** – The tank's main job is to separate the liquid from the solids and oils. By itself, the tank doesn't provide a high level of treatment.

2. **Distribution box** – When present, a distribution box should distribute effluent evenly to the drainfield pipes. A tilted or damaged distribution box will distribute the effluent unevenly. Over time, this could cause your drainfield to fail, leading to costly repairs.

3. **Drainfield** – A drainfield is a network of underground perforated pipes that work with the soil filter. Small holes in the drainfield pipes allow the wastewater to seep into the soil. For the drainfield to work effectively over the long term, each pipe must receive an equal flow of effluent.

4. **Soil filter** – Naturally-occurring bacteria in the soil filter and treat the effluent. When it finally reaches the water table, the wastewater has been treated. Most of the treatment "work" of a septic system happens in the soil. Grass above helps draw moisture away so the soil can continue to accept and treat effluent.



Common septic tank with access risers and effluent filter.

2. Septic System Maintenance

When a septic system is working properly, it is an inexpensive and safe way to treat household wastewater. A failing or poorly maintained system can cause odours, contaminate local drinking water sources, and cause serious illness. Routine maintenance is often cheaper than repairing or replacing a system.

Maintenance

Routine maintenance can maximize the life of your septic system. Systems built since 2005 come with a maintenance plan that recommends the frequency of monitoring, maintenance, and component replacement. Older systems may not have a maintenance plan but maintenance is just as important.

Inspection

The frequency of inspections depends on the type of septic system, the number of users, and the size of the system. Most systems should be inspected every 3 to 5 years. If your house uses an in-sink disposal unit (garburator) then your septic system should be inspected every year; or, if you have a package treatment plant, your system should be inspected according to the maintenance plan.

Pumping

The septic tank should be pumped out when it is 1/3 full of solids. The frequency depends on the tank size, quantity of solids entering the tank, and user habits. **Most septic tanks need to be pumped out every 3 to 5 years.**

Summer or early fall is the ideal time to have the tank pumped out as weather conditions make the ground drier. Biological activity in the tank can then re-establish itself before it gets cold, as microorganisms prefer warmth.

An "Authorized Person" Can Perform Maintenance and Repairs on Your System

According to the provincial Sewerage System Regulation, only an "Authorized Person" can install, repair and maintain a septic system.

An authorized person is one of the following:

A Registered Onsite Wastewater Practitioner (ROWP) registered through the Applied Science Technologists and Technicians of BC (ASTTBC)

To find a ROWP:
Call: 604-585-2788 ext. 238
Visit: https://owrp.asttbc.org/rowp-finder/

A Professional Engineer or Geoscientist
Registered through Engineers and Geoscientists of British Columbia (EGBC)

To find a Professional:
Call: 1-888-430-8035
Visit: https://www.egbc.ca/Member-Directories/Professionals-for-Sewerage-System-Regulation

Effluent Filter

Some septic tanks include an effluent filter. The filter protects your system by preventing solids from clogging the distribution pipes and soil. An effluent filter can make the system last longer and save you the expense of costly repairs. If your system has an effluent filter, it should be cleaned regularly. Many filters need to be cleaned every 8-12 months.

Drainfield

Maintaining your drainfield is as easy as leaving it alone to do its job. Helpful tips include:

- Know the location of your drainfield. This will help you protect your system and monitor its performance.
- Plant grass over your drainfield. Grass makes the best cover because it has shallow roots and helps to draw moisture away from the soil.
- Build structures such as parking areas, patios, and decks away from the drainfield. The soil needs oxygen so the bacteria can treat the wastewater.
- Maintain good ventilation and adequate sunlight to promote evaporation.
- Avoid planting deep-rooting or moisture-seeking shrubs and trees like cedars and willows. Their roots will plug your drainfield pipes.
- Do not drive vehicles over the drainfield. The weight of a vehicle can crush the distribution pipes and compact the soil, compromising effluent distribution in the drainfield.
- Keep extra moisture away. Direct surface drainage away from the drainfield and do not water the grass. Additional water may reduce the soil's ability to absorb and treat the wastewater.

Additives are Not Needed

Septic tank additives that claim they break down the solids faster are not recommended and they can cause more damage than they are worth. Other biological additives such as yeast or meat do not need to be added to your system. There is already naturally occurring bacteria in wastewater that stimulates the natural biological activity in your system.

Keep Records

Keep records of the septic system maintenance history and pass them on to future property owners.

No Septic System Lasts Forever

Most septic systems last 25-30 years. Eventually, all systems need to be replaced.

Warning Signs of a Failing System

Look for these warning signs of a failing system:

- Sewage surfacing over the drainfield
- Lush, green growth or soggy areas over the drainfield
- Slow or backed up drains, toilets or sinks
- Sewage odours around the property.

If you notice a problem with your system, it is important to act immediately. Contact a ROWP or qualified professional for advice. Remedies can include pumping out the septic tank, repairing a broken tank baffle or cracked pipe, replacing the septic tank, or replacing the drainfield. Conserve water until the system has been repaired.

3. Water Conservation

Conserving water is one key to a healthy septic system.

Why? Because septic tanks are designed to hold wastewater long enough to settle out solids. Only clear effluent should pass through to the drainfield. Solids in the drainfield may clog the pipes and soil and lead to inefficient treatment. Water conservation is especially important for older septic systems that were designed when people used less water.

If your household uses more water than your system is designed for, the tank will fill before it has time to perform its job of settling solids. High flows in a short period of time can also re-suspend settled solids and push them into the drainfield. For that reason, avoid running multiple water-using appliances at the same time or back-to-back.

Next time you upgrade your appliances, switch to low flow models. You can also follow these water-saving practices to help keep the solids in the septic tank where they belong.

Toilets

- Reduce the number of times you flush your toilet with multiple uses before flushing.
- Replace your older toilet with a low flow toilet or dual flush toilet. A low flush model uses 6 litres of water, while a dual flush has one button for 3 litres and one for 6 litres. Older toilets can use as much as 13 to 26 litres of water per flush.
- Retrofit your existing older toilet model by using a toilet displacement device. Insert a weighted plastic container, such as a 2 litre pop bottle filled with water, into the tank. This will displace the water and reduce flush volumes. Do not use bricks as they disintegrate with prolonged water exposure and damage your toilet.
- Use a wastebasket. Do not use the toilet as a garbage can for dental floss, cotton swabs, "flushable" wipes, and other solids – these can clog your drainfield.

Breakdown of indoor water use

Toilet	26.7 %
Clothes washer	21.7 %
Shower	16.8 %
Faucet	15.8 %
Leak	13.7 %
Other domestic use	2.2 %
Bath	1.7 %
Dishwasher	1.4 %

Laundry and Household Cleaning

- Operate washing machines at full capacity and use the water saving features.
- When buying a new washing machine, consider purchasing a model with an Energy Star water factor below 9.0. The lower the value, the more water efficient the machine.
- Stagger your laundry by doing one load of laundry per day instead of all at once.
- For regular household cleaning, use a pail or bucket rather than running water.

Showers

- Reduce your shower time to 5 minutes or less. This can save up to 40 litres of water every time you shower.
- Install an efficient showerhead. Current models work effectively using 9 litres of water per minute, saving water and water heating costs.

Faucets

- Turn the tap off when brushing your teeth or washing your face.
- Fill the sink with water instead of leaving the water running when washing dishes or shaving.
- Retrofit your faucets with water saving aerators.
- Replace faucets with water-saving models.

Dishwasher

- Only run the dishwasher when full.
- Replace your older dishwasher with an Energy Star model which saves water and energy.

Outside

- Do not water over the drainfield as excessive water in the drainfield will interfere with the ability of the soil to absorb and treat the wastewater.
- Make sure eaves troughs and any surface drainage is not going into the septic tank, as the additional water will dilute the wastewater.

Checking for a Leaky Toilet

To check for a toilet leak, use food colouring or a dye tablet (available at the RDN). Place the dye in the toilet tank and leave it for 15 minutes without flushing. After 15 minutes, check the water in the toilet bowl. If the water is coloured you have a leak. Toilet repairs may require the assistance of a plumber.

Note: After you flush your toilet, there will be dye in your bowl for a few flushes.

No Drainers!

Let's make this a no brainer

These things don't belong in your septic system!

Visit rdn.bc.ca/what-goes-where to learn more about where these items should go.

Regional District of Nanaimo

4. Greener Cleaners

Whether on sewer or septic, we all need to be careful of what goes down the drain. Small amounts of most household cleaning products should not harm your septic system. However, some strong chemical products can affect the microorganisms and bacteria treating the wastewater. If you use a strong cleaner like bleach or ammonia, use it in moderation.

Other cleaning tips include:

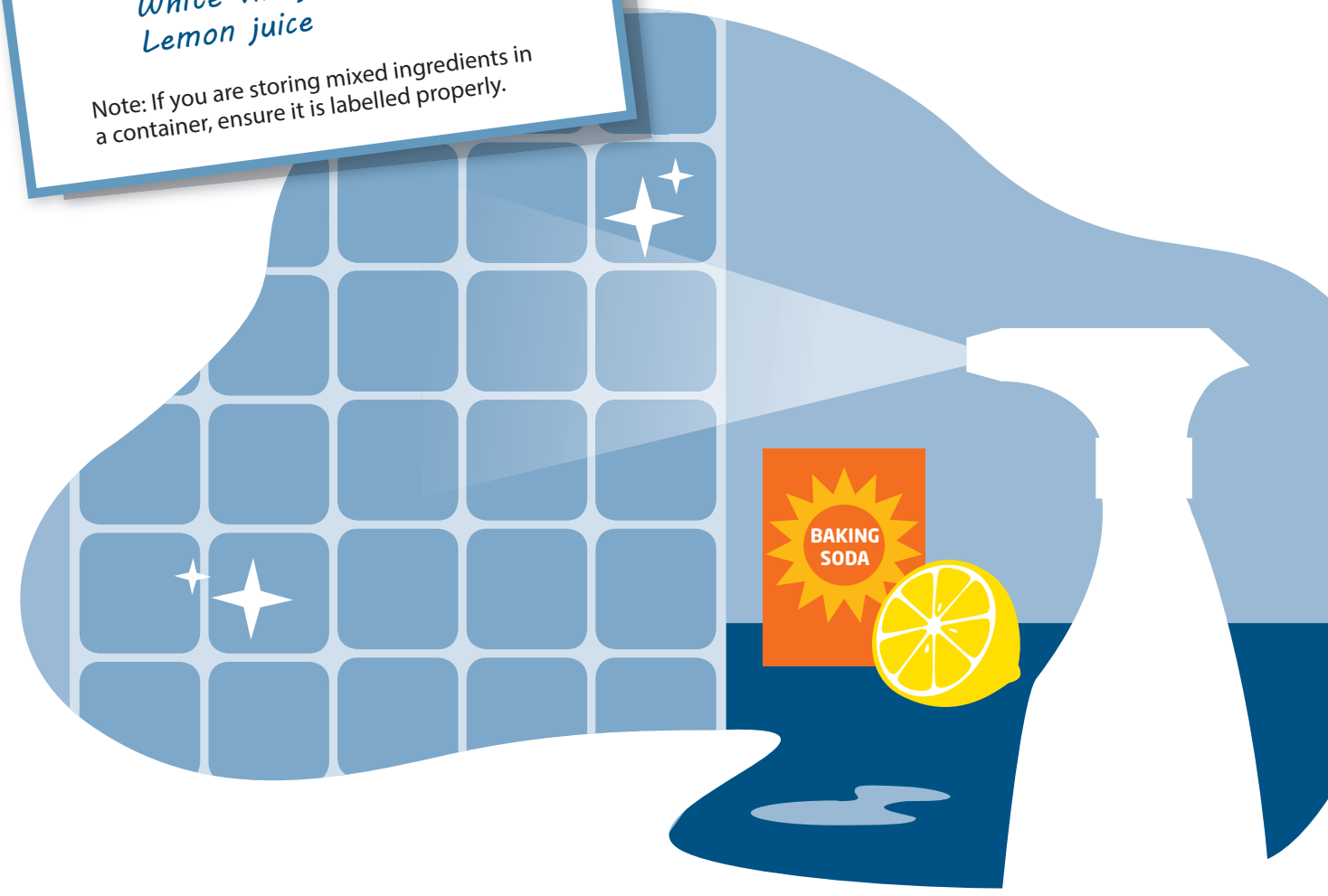
- Use liquid detergent instead of powdered detergents which can clog the pipes in the drainfield.
- Stagger your laundry by doing one load of laundry per day instead of all at once.
- Avoid running multiple water-using appliances at the same time or back-to-back. High flows in a short period of time can also re-suspend solids that have settled in the tank and push them into the drainfield.

Ingredients to Keep on Hand

Cleaning Ingredients

Baking soda
White vinegar
Lemon juice

Note: If you are storing mixed ingredients in a container, ensure it is labelled properly.



Recipes for Greener Cleaners

Simple All-Purpose Cleaner

- ½ cup vinegar
- 1 cup to 1 litre of warm water

Mix ingredients together and apply.

Scouring Solution

- 1 part baking soda
- 1 part water

Mix all ingredients together and apply to hard surfaces.

Window Cleaner

- 1 part white vinegar
- 1 part water

Mix ingredients together and spray onto windows or mirrors. Wipe off with a cloth.

Drain Cleaner

- ½ cup baking soda
- ½ cup white vinegar
- 2 litres boiling water

Pour baking soda down the drain, followed by white vinegar. Cover and let stand for 15 minutes. Flush with boiling water. Perform weekly if grease builds up.

Note: Do NOT use on ceramic toilets, as the boiling water may crack them.

Toilet Bowl Cleaner

- 2 tbsp baking soda
- Lemon juice

Sprinkle a few tablespoons of baking soda and scrub with a brush. Add a few drops of lemon for freshness.