



What to Expect When Getting Your Septic Tank Pumped

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Introduction

With about 20% of the USA and about 30% of the Commonwealth of Virginia disposing of their household water waste by septic systems, it is important that homeowners know how to effectively use and maintain their septic system. This publication will help homeowners understand how, why, and how frequently septic tanks are pumped. Understanding these factors is a key part of owning a septic system and ensuring it works safely and correctly.

What are Septic Systems

Septic systems use the natural characteristics of soils to dispose, filter, and treat household waste for homeowners who are not part of a municipal sewer system. When wastewater leaves the house, it is transported first to a septic tank (Figure 1).

Wastewater is separated into three distinct layers in the septic tank: a scum layer made up of fats, oil, and grease less dense than water; an effluent water layer; and a bottom sludge layer made up of heavier solids. Decomposition of the solids occurs while they are contained within the septic tank. Naturally present bacteria in the septic system digest solids that have settled to the bottom of the tank. These bacteria can transform up to 50% of the solids in the tank into liquids and gases.

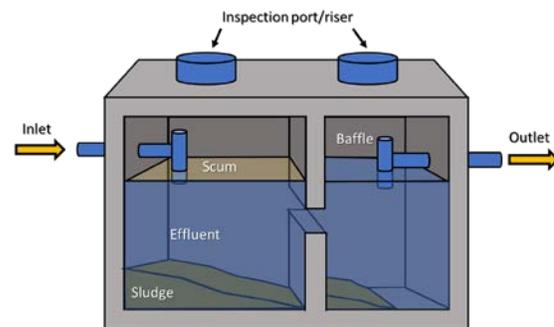


Figure 1. Illustration of a septic tank. Fats, oils, and grease that make up the scum layer float on the top, while heavier solids that make up the sludge settle to the bottom. This allows effluent water to leave the tank and enter the drainfield where it is treated by the soil.

The main function of the septic tank is to remove solids from household wastewater so that the effluent can more readily filter through the soil in the soil absorption field. Removing solids from the wastewater protects the soil absorption field from getting clogged and failing. When the liquid within the tank rises to the level of the outflow pipe, it enters the drainage system. This outflow, or effluent, is then distributed throughout the drainfield through a series of subsurface pipes typically bedded in gravel (Figure 2). Final treatment of the effluent occurs as it enters the soil profile and is filtered, where soil microbes convert the rest of the waste into harmless products.

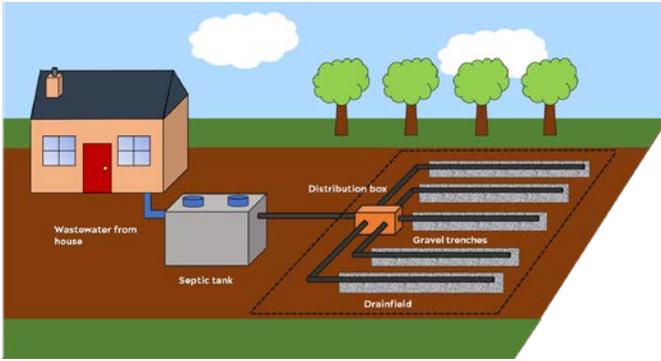


Figure 2. Effluent leaves the septic tank and is distributed through the drainfield via a distribution box. Effluent is treated as it passes through the soil profile.

Why do Septic Tanks Need Pumping?

The septic system is a clever and timeless engineering design; however, they cannot operate infinitely without some assistance. Bacteria in the septic tank break down roughly half of the solid material, but there is inherently a gradual increase in solids over time. It is especially difficult for bacteria to break down the greasy scum that floats on top of the water in the tank. Eventually solids that have built up within the tank have to be pumped out.

What is being pumped out of the septic tank?

The goal of pumping a septic tank is to remove the solids, this includes the heavy solids from the bottom of the tank and the fats, oils, and greases found at the top of the tank. So long as the septic system drain lines are functioning correctly the effluent water in the tank should not cause any problems. It is common for a small quantity of solids to be left in the bottom of the tank when it is pumped, this allows for a more rapid buildup of bacteria required to break down the next load of solids. Only the septic tank itself is pumped, the drainlines and distribution box are not pumped. In some systems effluent is pumped into the gravity distribution box, utilizing a pump chamber. If the septic tank has not been pumped in a while, solids can move out of it and into the pump chamber where they can be distributed into the trenches. Pump

chambers commonly require pumping on a less frequent basis than the tank.

Who do I contact and where can I find them?

When having your septic tank pumped you should have it done by a reputable service. Check to make sure the septic tank service is licensed and has a state permit to handle and dispose of the material removed from a septic tank by an approved sanitary method. Septic tank pumping services can be found online or in the telephone directory. Your local health department may also be able to provide information about septic tank services in your area. A list of various septic system professionals in Virginia can also be found at the following website <http://www.vdh.virginia.gov/environmental-health/onsite-sewage-water-services-updated/septic-system-and-private-well-service-providers/>.

As with most work you have done at your house you should obtain several estimates before having the tank pumped. There may be considerable variation in charges for tank cleaning, so talking to the service about what their charges cover is important.

What can I do to help facilitate the pumping?

To make it easier for septic services to work on your tank it is important that they can locate it. If your tank and/or observation ports have been covered by vegetation or soil, it is a good idea to clear the obstruction and flag it off or mark it in some way. Some septic services may charge additional fees to locate and uncover septic tanks.

If you currently do not know the location of your septic tank the local health department may be able to help locate it from construction permits, which should contain an accurate map of the system. When you know the location of your septic system it is good practice to make a simple map of where it is for future reference; try to include the location of the tank, the house, the ports, the distribution box, the drainfield, and any other items of note (wells, car ports, sheds etc.).

It is important that the contractor can get access to the tank with their vehicle, so make sure a pathway is cleared for this. It can also be beneficial to let the contractor know if your system is a conventional system or an alternative one. Whilst the septic tank in most systems operates in a similar way providing them with this kind of information can help them be best prepared. For more information about alternative systems see On-site Sewage Treatment Alternatives 448-407.

What are the consequences of failing to have a septic tank pumped?

Failure to have a tank regularly emptied is one of the major causes of failure in septic systems. With normal use and upkeep septic tanks should need pumping every 3-5 years. Table 1 shows the periods that are recommended to have your tank pumped based on household size and tank size. It is recommended that your septic tank be inspected every two years. Some counties in Virginia require that your tank is pumped every five years regardless of how full it is, it is important the homeowner is aware of this and keeps up with it.

If septic tanks are not emptied solids build up to an extent that they can enter the drainfield where they will block soil pores and prevent drainage and treatment of effluent. If drainfield failure occurs then a new drainfield may have to be installed which could cost be very expensive. Effluent from failing septic systems can rise to the soil surface or back up into the house's plumbing. This can cause offensive odors and put people in danger of coming into contact with organisms that cause dysentery, hepatitis, typhoid, and other infectious diseases. Septic fluid is not only unsightly but also creates breeding grounds for mosquitoes and other insects. Furthermore, septic fluid can also contaminate groundwater with bacteria, viruses, degradable organic compounds, synthetic detergents, and chlorides.

If you do not know when your tank was last pumped it is recommended that you have it inspected. It is good practice to inspect your tank in this manner every 2 years, this will help minimize any unforeseen problems.

You should never enter your septic tank. Toxic gasses build up in septic tanks, these can quickly overcome anyone coming into contact with them and potentially result in the loss of life. Open flames or smoking should be avoided near the opening of a septic tank, due to flammable gas build up within the tank.

How long will it take?

The length of time it will take for your tank to be pumped will depend on how quickly and easily the septic services can access the tank and the size of the tank. Another factor is the presence or absence of unforeseen circumstances such as broken baffles and roots getting into the system. During pumping contractors will commonly examine the tank for these types of problems, but it is best to ask them to do so to make sure it gets done.

References

- Galbraith, G., C. Zipper, R. Reneau, and P. Brown. 2023. On-Site Sewage Treatment Alternatives. Virginia Cooperative Extension publication 448-407. https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/448/448-407/SPES-520.pdf
- Mancl, K. 1984. "Estimating Septic Tank Pumping Frequency." *Journal of Environmental Engineering*. 1984.10(1): 283-285.

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Table 1. Septic tank pumping frequency based on tank size and home occupancy

		Number of occupants									
		1	2	3	4	5	6	7	8	9	10
Size of septic tank (Gallons)	Pumping Frequency (years)										
500	5.8	2.6	1.5	1.0	0.7	0.4	0.3	0.2	0.1	-	
750	9.1	4.2	2.6	1.8	1.3	1.0	0.7	0.6	0.4	0.3	
1000	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.8	0.7	
1250	15.6	7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2	1.0	
1500	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5	1.3	
2000	25.4	12.4	8.0	5.9	4.5	3.7	3.1	2.6	2.2	2.0	

Source: Adapted from Mancl (1984).