

Septic Systems (Overview & Maintenance)

Basic Operation:

Septic Systems are private wastewater management systems. The word "septic" comes from "sepsis," meaning bacterial action without benefit of air—an action also known as anaerobic. Wastewater from a house is carried through a pipe first to a septic tank buried in the ground several feet from the building, and then to leaching devices or drain fields. When sewage (solids or liquids) reaches the tank, depending on its composition and weight it will either sink to the bottom and form sludge, or rise to the top as scum. Anaerobic bacterial action begins to digest these solids, producing gases in the process. These gases, in turn, lift some of the smaller solid particles from the sludge to the scum, where digestion continues, and forces other particles to sink. As this interaction takes place, solids are liquefied, and the effluent flows out of the tank to the drain field in direct proportion to what is being flushed from the house into the tank.

Tank Basics:

One of the most important features of a septic tank is its size; it must be big enough to allow a large volume of liquid to be "clarified" (made clear) while chemical processes take place to digest the solids. A standard size tank is typically 1,000 gallons. Although a septic tank does not normally fail per se the leaching devices (or drain fields) do. A tank that is too small may allow undigested solids to leave the tank flowing out and clogging the drain field and creating the potential for failure.

Drain Field Options: (Conventional verses Mound Systems)

Both systems use "soil absorption" as a means of processing waste water. A "Conventional System" is buried using existing ground materials typically utilizing 4" diameter pipes. A "Mound System" is a pressurized equal distribution system utilizing 1" to 1 ½" pipes, designed and installed on top of existing grade/ground material. To assist with long-term functionality of both systems, landscaping considerations/limitations must be followed.

Dos / Don'ts & Considerations:

- Avoid using the garbage disposal or install a fine mesh removable screen limiting drain debris.
- Do not pour grease and oils down the drain.
- Do not flush anything down the drain that is not biodegradable (i.e. disposable diapers, condoms, etc.)
- Limit water softener regeneration discharge water.
 - Newer systems that regenerate based on water usage are less problematic.
- Do not use any type of additives in your system—they do not help your system and may actually harm it.
- Have your septic tank(s) pumped once per year.
- Install a effluent filter into your septic tank (More applicable/less clogging if a 2 tank system in place)
- Have a second septic tank installed (A second tank can reduce solids reaching the drain field by 50%)
- **Other Considerations:**
 - Tank and baffle materials: Metal components may corrode/deteriorate needing replacement.
 - Clay based organic soils may require more aggressive drain field and/or tank considerations.
 - Larger or multiple tanks / Filter options / Drain field designs / etc
 - Attend/watch when your tank is pumped: When the liquid sewage is initially pumped (sucked) from the tank observe the amount of water flowing back from the outlet pipe going to the drain field. A little water is normal. Excessive amounts of water suggest the drain field is not taking water at an adequate rate, and could be working its way to potential failure. The level of water/sewage also indicates system status. If it is below the outlet pipe, the tank could be leaking.

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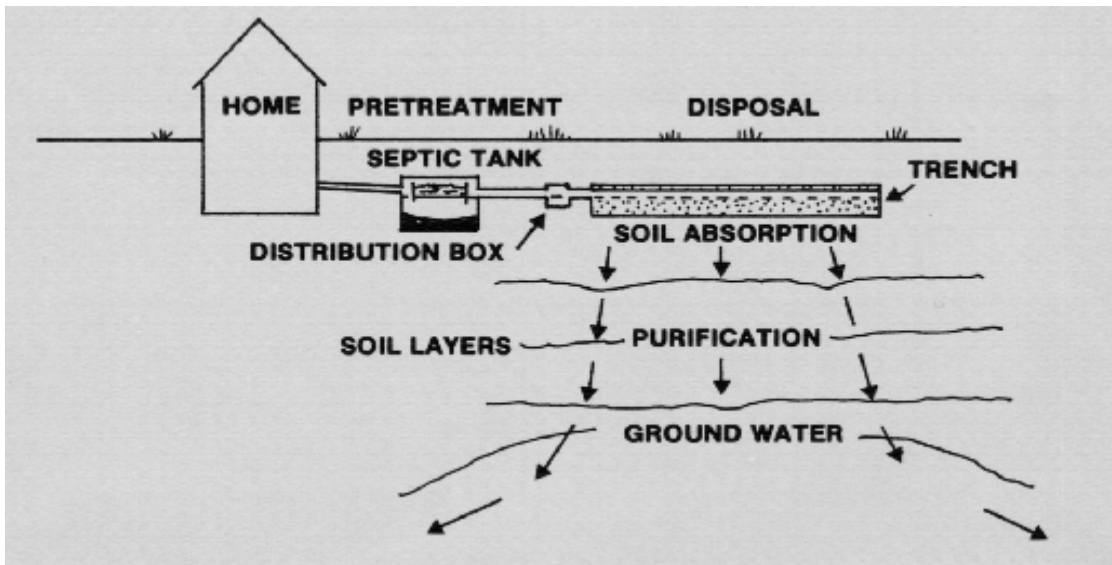
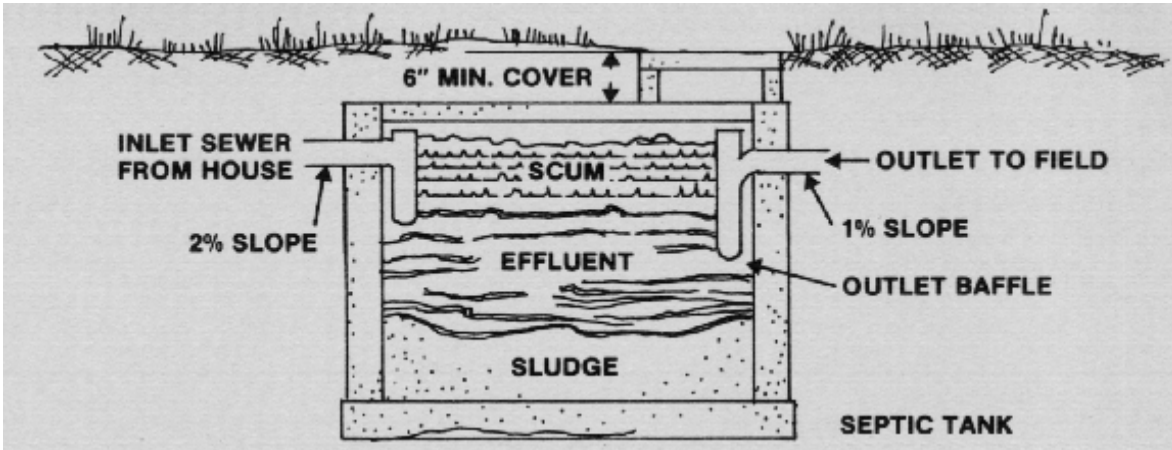
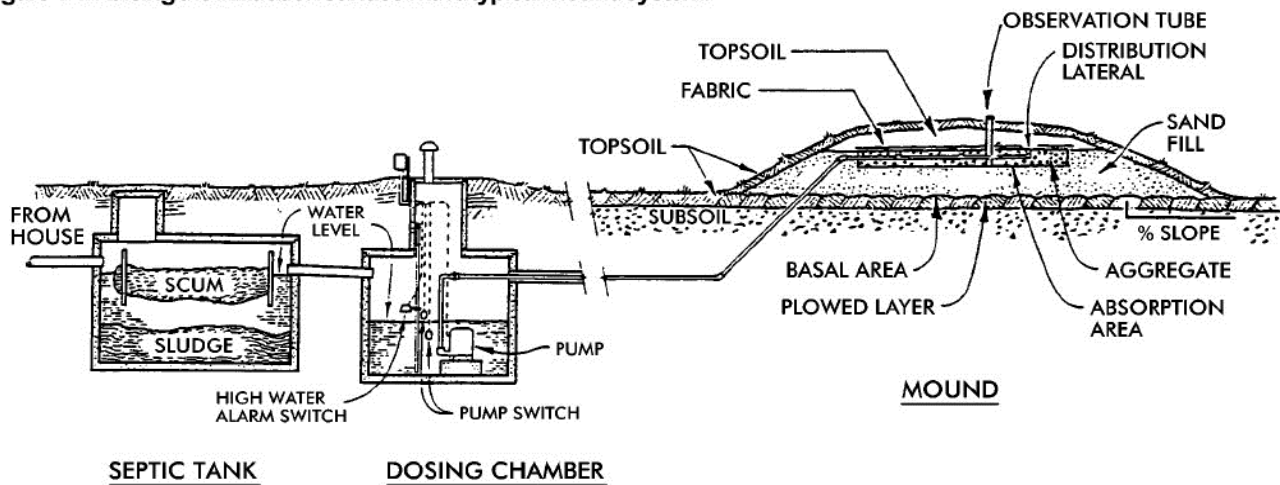


Figure 4-4. Raising the infiltration surface with a typical mound system.



Source: ASAE, Converse and Tyler, 1998b.