

CHAPTER 6. SEPTIC TANK PUMPERS' GUIDANCE MANUAL

6.1 Introduction

The use of a septic tank system requires periodic maintenance which includes pumping out the accumulated scum and sludge, called septage. Septage, because of where it comes from may give off offensive odors and present the health hazards of diseases. The septic tank pumper has the important task of not only helping the homeowner maintain his system, but protecting the homeowner from the various health hazards associated with the septage.

In order to protect and help the homeowner, the pumper needs to know something about the operation of the sewage system as well as the proper procedures for pumping and disposal of the septage. Hopefully, this manual will help the septic tank pumper get off on the right track to a successful career.

6.2 The Public Health Importance of Septage

Many very important diseases, including any that will pass in urine and feces, can be found in sewage. Therefore, septage may contain some or all of them. The bacterial diseases of diarrhea (*Salmonella*, *Shigella* and *Clostridium*) and Typhoid (*Salmonella typhi*) may be present. Parasites, such as Pinworm, Roundworm and Hookworm can often be found, especially in the scum layer. The organisms that cause Amoebic Dysentery, Polio and Hepatitis could also exist in septage.

6.3 Parts and Mechanics of a Sewage System

The most common septic tank system consists of the septic tank, either rectangular or round and usually made out of concrete, and a disposal field under the ground, usually trenches or a bed filled with gravel and containing perforated plastic pipe. Figure 6-1 shows the components of a standard sewage system.

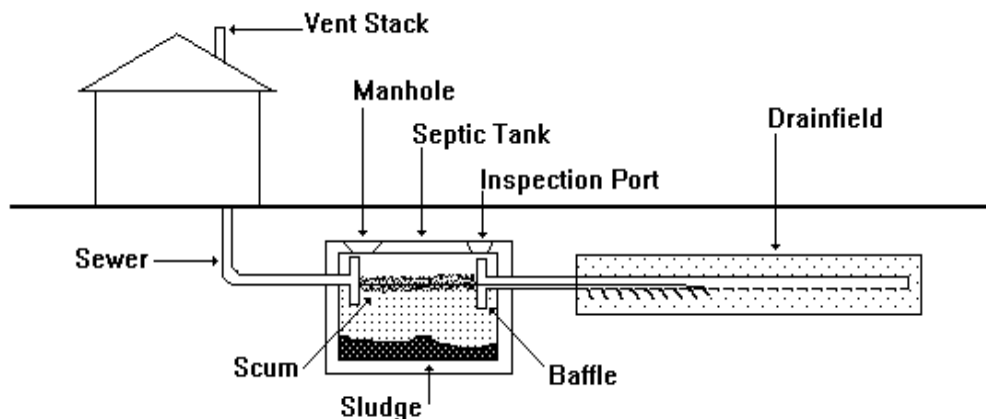


Figure 6-1. Components of a Standard Sewage System

Wastewater from the home or business enters the tank where the flow slows quickly. Because of the slowing (with a loss of energy) material heavier than water, such as feces and garbage, settle to the bottom as sludge. Lighter-than-water matter, such as grease and plastics, float to the top, as scum. The liquid in the center of the tank, now with the sludge and scum removed, is called effluent and is the liquid that flows to the drain field for treatment by the soil and organisms in the ground. The septic tank and drain field will work satisfactorily until such time as the sludge fills over 40% of the volume of the tank or the scum fills the air space in the tank. Before the tank reaches these levels it should be pumped.

If the tank is not pumped, it will be unable to perform its separation function and will let the solids and greases be carried out into the drain field. There they will fill and clog the soil causing the septage to back up into the house or business, or to even overflow the tank.

6.4 Checking the Level of Scum and Sludge

The septic tank should be checked at least once every three years and, preferably, once a year, if the sewage system receives heavy use. Either the homeowner or the septic tank pumper can check the tank.

The following outlines a procedure for checking the scum and sludge. First, locate the septic tank. If the homeowner does not have a plot plan of the location of the tank, often the Health Department will have its location on file. If no drawings can be found, a guess as to where the tank is located can be made by finding the 3" or 4" vent stack on the roof. The tank is often located directly out from that stack. Also the building sewer can be located under the crawl space and the place where it exits under the house foundation can be noted. With a steel rod probe the ground to locate the tank. It, or the manhole cover on a riser, should be within 18" of the grounds surface. Once located, excavate to the top of the tank and pull off the manhole cover.

With a shovel break through the scum, making a hole about one foot in diameter. Wrap a strip of terry cloth toweling spirally around a pole and lower the pole into the tank. If the pole is fitted with a hinged flapper about two feet from its bottom such that the flapper swings down the scum level can be checked. Lower the pole into the septic tank liquid until the flapper is about one foot below the scum. Pull the pole towards you a little to get the flapper under the scum, then raise the pole until the scum begins to move up, indicating that the flapper has made contact with the scum. mark the pole at the top of the scum so that the depth of the scum can be measured from the pole after it is removed. Continue to lower the pole into the septic tank until it meets the bottom. Tap the bottom of the tank two or three times with a sharp rap. That permits the sludge to enter into the coarse weave of the terry cloth. Very slowly remove the pole. The depth of the sludge will then be seen in the terry cloth.

Calculate the depth of the sludge as a percent of the liquid depth: Equation 6-1 can be used to determine if a septic tank is in need of pumping.

$$\text{Equation 6-1. Percent Sludge Depth} = \frac{\text{Depth of sludge, in inches}}{\text{Liquid depth of tank, in inches}} \times 100$$

When sludge is greater than 40% of the liquid volume the tank should be pumped.

Figure 6-2 illustrates methods used to check scum and sludge depth.

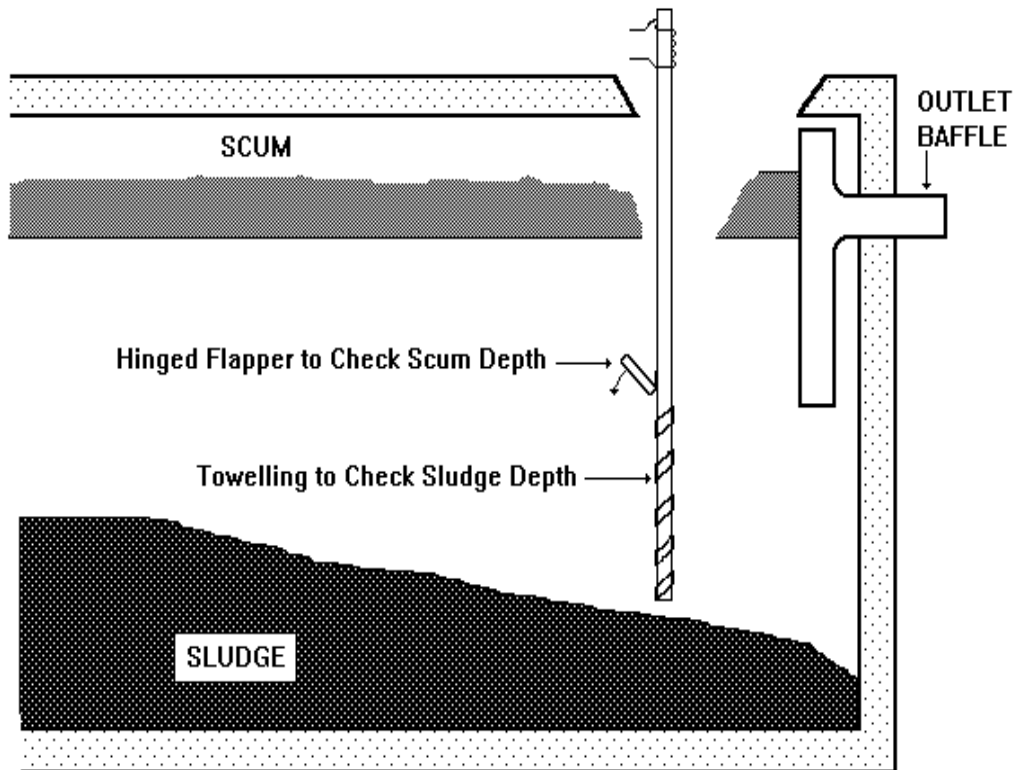


Figure 6-2. Methods Used to Check Scum and Sludge Depth

6.5 Practices of the Septic Tank Pumper

Equipment

The major and most expensive piece of equipment is the truck. Certain information should be located on the side of the truck, including the name of the firm, address, business phone number and capacity of the tank. All the information should be in letters at least three inches high on both sides of the truck. The capacity of the tank should be at least 1,000 gallons. It should have an access port for the periodic inspection and maintenance of its interior and some sort of gauge to indicate the volume of liquid it is to contain. The tank should also have a gravity drainage valve that can be safely locked during transportation and storage. The pumping equipment on the truck should be sized to provide at least fifteen feet of suction lift and should be able to reverse flow. If the pump pulls a vacuum on the tank there should be a water trap between the tank and pump to prevent liquid from entering the pump. The hoses from the tank and pump should be at least three inches in diameter. The discharge valve used to dispose of the septage should be at least two and one-half inches in diameter and equipped with a cam-lock quick couple or screw cap. The valve should be located so that the discharge stream is not blocked in any way, unless it is necessary for disposal. An additional piece of equipment that should be included is a spray bar or

splash plate, for use in land spreading. There are also several other small pieces of equipment that should be included in the truck:

- | | |
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| <input type="checkbox"/> Flashlight | <input type="checkbox"/> Long-handled shovel |
| <input type="checkbox"/> Steel probes | <input type="checkbox"/> Pry bar or pick |
| <input type="checkbox"/> Manhole Sealer | <input type="checkbox"/> Container of Quick Lime |
| <input type="checkbox"/> Bucket | <input type="checkbox"/> Pole, hoe or rake for scum mixing |
| <input type="checkbox"/> 50' Garden Hose | |

Permits and Licenses

A Septic Tank Pumpers Permit is required throughout Idaho for the pumping and disposal of septage. The permit is good for one year and must be renewed at the end of the year. It can be obtained from the District Health Department. An Environmental Health Specialist at the department will inspect the truck prior to issuing the license.

Pumping the Septic Tank

Once the septic tank has been located and the manhole cover exposed and removed, draw down the liquid level six inches to a foot, then break the scum up and mix it and the rest of the tanks contents. Continue pumping until most of the contents are removed. It may be necessary to force septage back into the tank to mix up the sludge on the bottom. After the tank contents have been mixed be sure not to let the septage come back up to the outlet as sludge may then run into the drain field. Leave a few inches of sludge in the bottom of the tank as “seed” to start bacterial action as the tank refills. Do not clean or disinfect the interior of the tank.

When pumping is complete make a thorough inspection of the tank and note the following:

- Is the outlet baffle in good condition?
- Is the inlet baffle in good condition?
- Is water running back into the tank from the drain field? (Possible sign of high ground water in the drain field).
- Is water running in through the sides of the tank? (Sign of a leaking tank in high ground water).
- How much septage was pumped out?
- Does the sewer line from the house appear to be free-flowing? (Flush a toilet inside the house to see that there is no obstruction).

NEVER enter the tank as the methane gas produced by the septage can kill quickly!!!

If the manhole cover of the tank was found to be more than 18" below the ground (as may be the case with older tanks or tanks serving basements) the homeowner should be advised to add a concrete standpipe that would place the cover within 18" of the ground surface.

After the lid is replaced, replace soil and sod if the manhole was below ground. Put a little Quick Lime on places where septage has spilled.

6.6 Disposal of Septage

One of the conditions for a license to pump septic tanks is the approval of all sites where septage is disposed. Therefore, the pumper must use only those methods approved by the Health District or the Department of Environmental Quality.

Septage may be disposed of in several ways:

1. At a Municipal Wastewater Treatment Plant. Some plants have special facilities just for the disposal of septage. These should be used whenever practical.
2. By land spreading on private or public land in accordance with 40 CFR Part 503. If the spreading of septage is done on private land, the pumper should have written permission of the landowner and a permit from the Health District. Check with the local Health District on any restrictions. The following general rules should be observed:
 - a) Do not apply septage to any land used for root crops, such as potatoes, unless that land won't be used for growing those kinds of crops for 20 to 38 months dependant on the method of land application.
 - b) Don't apply septage in a floodplain.
 - c) The septage shouldn't be applied on porous soils or where it can contaminate ground water or surface water.
 - d) Don't let animals, whose products (milk, meat) will be eaten, use land where septage has been applied for one month.
 - e) The population of vectors, such as flies, should be minimized by rapid drying of the septage, lime addition, covering or other appropriate techniques as per 40 CFR Part 503 Subpart D.

Also beware that the property owners next to the disposal site can cause enforcement action and have been very successful in court when odors create a problem for them.

Public sites for septage disposal on land are pre-approved by the Health Districts and the Department of Environmental Quality. Such sites may be municipal sludge management farm or farm areas leased or rented for sludge disposal.

After dumping the sludge, clean the truck inside and out. The wastewater from such cleaning should be considered the same as septage and handled accordingly.

