



# Q&A

NSFC ENGINEERING SCIENTIST

Andrew Lake



**Editor's Note:** This column is based on calls received over the National Small Flows Clearinghouse (NSFC) technical assistance hotline. If you have further questions concerning drainfields, call (800) 624-8301 or (304) 293-4191 and ask to speak with a technical assistant.

## Drainfield Inspection

### Does my drainfield ever need to be inspected?

In the last issue of the *Small Flows Quarterly*, we answered a question about septic tank inspections and the reasons why such inspections of onsite wastewater treatment system components need to be performed. Drainfields or soil dispersal systems are typically buried systems, and inspections are often not performed. Unless there are obvious signs of failure, or an inspection is required for property transfer, the drainfield is often overlooked when it comes to onsite system inspection and maintenance.

As mentioned in the previous Q&A on septic tank inspections, "Management is an important issue for the successful performance of any onsite system," and routine inspections are an important part of the picture.

This Q&A will discuss the inspection of a conventional drainfield, or soil dispersal system, which is the final component of the onsite wastewater treatment system. The drainfield size is based primarily on two main factors: the estimated amount of water being used and the amount of water the soil can accept—the soil loading rate.

The estimated amount of water used is generally determined one of two ways: the number of people living in the home or the number of bedrooms. Water usage will vary based on age and gender of the inhabitants and water usage patterns, but most commonly, based on the number of occupants in the household.

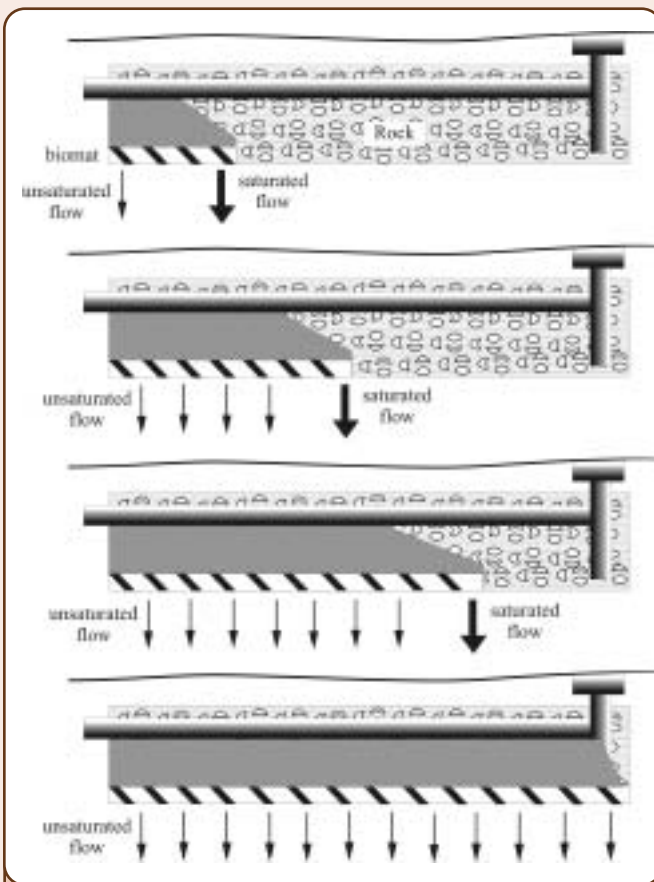
The soil loading rate can be determined by a percolation test or by a soil evaluation. Calculating or evaluating soil loading rates varies from state to state, but either of these two methods will provide a means of "determining" how well a certain soil is able to absorb water. This is important, because these two factors determine the amount of area needed to adequately treat the septic tank effluent or pretreated wastewater. It will also help determine the type of onsite system needed for the proper treatment of the wastewater.

With proper soil identification, siting, design, installation, and maintenance of the onsite system, the life of the system will be greatly increased. Periodic inspection of the drainfield is recommended so that problems or system failures can be addressed before they become critical. Often, the homeowner isn't aware there is a problem until it's too late. It is important not to wait until there is a problem with the drainfield because repair or rejuvenation can be costly.

Drainfield failure has varying definitions around the country. The most readily identifiable failure is surfacing effluent. If the soils can no longer accept the effluent being delivered, the effluent will either rise to the top of the trench, or "blow out" at the end of



**Figure 1** Identifying and Flagging the Drainfield



**Figure 2** Biomat Formation

the last trench. Either of these two events will certainly alert the homeowner that there is a problem.

The reason the soils can no longer accept the pretreated effluent is most often because of the biomat. As the effluent or pretreated wastewater enters the drainfield, bacteria in the soil begin to thrive on the new food source. As these bacteria grow, a thick "slimy" mat is formed called the biomat.

As the biomat grows, the effluent is slowed from entering the soil and is forced to continue down the trench. The natural build-up of the biomat is necessary for treatment of the wastewater. Over time, the biomat becomes too thick, the entire trench bottom is covered, and the drainfield becomes clogged.

If the drainfield can no longer accept the pretreated wastewater, the tank becomes full, and wastewater will begin to back up into the home. Some other possible signs that there are problems with the drainfield may include odors and sometimes, but not always, lush vegetation or "swampy" ground.

If effluent drains back into the septic tank from the drainfield after being pumped, this would also indicate that there



**Figure 3** Identified Trench

are problems. This is another good reason to have your septic system inspected regularly.

Inspecting a drainfield is not as straight forward as inspecting a septic tank. Because the drainfield is buried, it is difficult to visually determine its condition.

If there are no visible problems, as mentioned earlier, the drainfield inspection consists mostly of locating the drainfield area and checking the soils to make sure the system is designed and installed correctly.

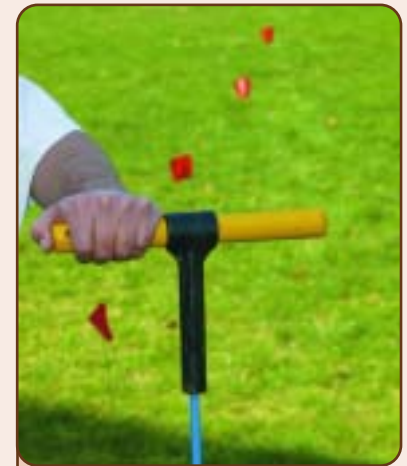
Drainfield inspections are most often performed at the same time a septic tank is being inspected or pumped. During the septic tank inspection, the outlet of the tank is easier to identify, which makes locating the piping to the drainfield easier. Also, it is easier to watch the outlet pipe when the septic tank is pumped to see if any water drains back into the tank from the drainfield.

Once the piping is located, a soil probe is most often used to follow along the length of the drainfield. These soil probes come in different shapes, sizes, and materials.

The probe is easy to use and extremely helpful in determining the length of the drainfield, as well as the width of drainfield trenches. The reason that each of these parameters must be checked is to ensure the proper amount of drainfield area is present.

The probe is pushed into the ground until it touches the top of the drainfield pipe. This is usually easily recognized, but not always. Once the pipe is located, the inspector will insert a flag or marker, take a few steps back, and repeat the procedure. Probes are also used to check trench widths, not just the length.

Identifying the drainfield area will help the inspector determine if the actual drainfield meets the design specifications listed on the septic system permit. If there is no permit for your septic system, it is probably an indication that this is an older system, which emphasizes the need for inspection. After the inspection is performed, the inspector can obtain the necessary information needed for a permit.



**Figure 4** Insulated Probe Handle



**Figure 5** Probing for Trench Location



The inspector may want to check the trench lines for the amount of biomat growth within the trenches. To do this, a soil auger can be used to allow access to the trench bottom. The biomat occurs naturally and is an essential part of the soil treatment process. For more information on biomat formation, please refer to the Fall 2001 issue of the *Small Flows Quarterly*.

The inspector will also note the conditions surrounding the area where the drainfield is located. A low-lying area is not a good location because rainfall may accumulate on top of the drainfield, causing the ground to be saturated and not allowing the drainfield to work properly. Also, trees and bushes will be noted. It is important not to have trees and bushes near the drainfield, because their roots may cause clogging.

It is important to keep your drainfield in working order. So having periodic inspections performed will help to let you know how well it's operating. Other things that homeowners can do to ensure the "health" of their drainfield is to practice water conservation and reduce the amount of wastewater generated. Remember, the drainfield is important too!

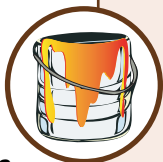
## Do not flush

**coffee grounds**  
**dental floss**  
**disposable diapers**  
**kitty litter**  
**sanitary napkins**  
**tampons**  
**cigarette butts**  
**condoms**  
**fat, grease, or oil**  
**paper towels**

and *hazardous chemicals*, such as:

**paints**  
**varnishes**  
**thinners**  
**waste oils**  
**photographic solutions**  
**pesticides**

These items can overtax or destroy the biological digestion taking place within your system.



## SEPTIC SYSTEM DO'S AND DON'TS

**Do** learn the location of your septic tank and drainfield. Keep a sketch of it handy with your maintenance record for service visits.

**Do** have your septic system inspected annually.

**Do** call a professional whenever you experience problems with your system, or if there are any signs of system failure.

**Do** keep a detailed record of repairs, pumpings, inspections, permits issued, and other maintenance activities.

**Do** conserve water to avoid overloading the system. Be sure to repair any leaky faucets or toilets.

**Do** divert other sources of water, like roof drains, house footing drains, and sump pumps, away from the septic system. Excessive water keeps the soil in the drainfield from naturally cleansing the wastewater.

**Don't** allow anyone to drive or park over any part of the system.

**Don't** plant anything over or near the drainfield except grass. Roots from nearby trees or shrubs may clog and damage the drain lines.

**Don't** dig in your drainfield or build anything over it, and don't cover the drainfield with a hard surface such as concrete or asphalt. The area over the drainfield should have only a grass cover. The grass will not only prevent erosion, but will help remove excess water.

**Don't** make or allow repairs to your septic system without obtaining the required health department permit. Use professional licensed septic contractors when needed.

**Don't** use your toilet as a trash can or poison your septic system and the groundwater by pouring harmful chemicals and cleansers down the drain. Harsh chemicals can kill the beneficial bacteria that treat your wastewater.

**Don't** use a garbage disposal without checking with your local regulatory agency to make sure that your septic system can accommodate this additional waste.

**Don't** allow backwash from home water softeners to enter the septic system.



## Related Products

For ordering information, see page 43.

**Fall 1995, Vol. 6 No. 4**, Item #SFPLNL03

The Fall 1995 *Pipeline* focuses on educating homeowners about proper septic system operation and maintenance. Topics include groundwater pollution, system inspections, and the use of additives and cleaners. The newsletter includes a handy list of important septic system do's and don'ts.

**Spring 1998, Vol. 9, No. 2**, Item # SFPLNL13

The Spring 1998 *Pipeline* focuses on the advantages of having regular onsite wastewater system inspections. It explains what occurs during an inspection, when and how often systems should be inspected, and how to locate a qualified inspector. The newsletter lists questions homeowners may be asked about their systems and discusses the homeowner's role in the process. A Delaware inspector shares his experiences and offers advice to homeowners.

