



Assessing Your Septic System

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The goal of *Home•A•Syst* is to protect your health and the environment from pollutants in and around your home.

The following checklist is designed to help you pinpoint potential problem areas on your property that may affect the quality of your surface and groundwater. If a statement reflects the current situation in your household, check “Agree.” If the statement does not describe your household, check “Disagree.”

If you disagree with any of these statements, or if you are unsure, you may have a situation on your property that could affect the environment or your health. Refer to the fact section with the same number as that statement (under the heading, “What you should know about . . .”) for more information.

Don’t be alarmed if you disagreed with many or even all of these statements. That does not automatically mean you have a surface or groundwater problem. It may, however, tell you that change is needed

Agree Disagree

- | | | |
|-----------------------|-----------------------|--|
| <input type="radio"/> | <input type="radio"/> | 1. I have a thorough understanding of how a septic system works. |
| <input type="radio"/> | <input type="radio"/> | 2. My septic system is more than 50 feet from my well or spring. |
| <input type="radio"/> | <input type="radio"/> | 3. I’ve never had problems with shrub or tree roots plugging my septic lines. |
| <input type="radio"/> | <input type="radio"/> | 4. The soil under my septic lines is a medium-textured soil, such as a clay or loam. |
| <input type="radio"/> | <input type="radio"/> | 5. I’ve had my tank pumped within the last six years. |
| <input type="radio"/> | <input type="radio"/> | 6. I never drive heavy vehicles over my system. |
| <input type="radio"/> | <input type="radio"/> | 7. My family and I take measures to conserve water. |
| <input type="radio"/> | <input type="radio"/> | 8. I never use my septic system to dispose of trash like paper towels or disposable diapers. |
| <input type="radio"/> | <input type="radio"/> | 9. I don’t use the garbage disposal every day, <i>and</i> I don’t regularly put kitchen wastes down the drain. |

Continued on p.2

Agree Disagree

10. I don't use my septic system to dispose of chemicals like paints, solvents, or pesticides.
11. I've never noticed wet spots, standing water, or sewage smells near the system, *and* sewage has never backed up into the house.

to avoid potential problems. In the same way, agreeing with every statement does not mean you are *not* at risk or cannot make improvements.

Why should you be concerned?

Groundwater is the underground water that supplies wells and springs and recharges surface water bodies. It is the source of drinking water for many Tennesseans. **Surface water** includes ponds, lakes, rivers, streams, and other bodies of water. Besides their aesthetic and recreational value, they are often an important source of drinking water for livestock. Both surface and groundwater can be affected by improperly managed or failing septic systems.

Many homes in Tennessee use some type of septic system to treat household wastewater. These systems are generally economical and effective. However, your septic system must be correctly designed, installed, and maintained to reduce the possibility of contaminating surface and groundwater.

Potential contaminants in household wastewater include bacteria, viruses, household chemicals, and nitrate. If any of these contaminants enters surface or groundwater, it could create health problems for you and your family, your livestock and pets, or your neighbors.

Proper operation and maintenance of your septic system can have a significant impact on how well it works and how long it lasts. Maintenance saves you money in the long run; failing systems are expensive to repair or replace compared to the cost of pumping the tank.

The amount of water entering your septic system is also an environmental concern. Excess water

reduces the efficiency of the system and can shorten its life.

Water quality is least likely to be affected by your septic system if you use as many low-risk practices as you can.

Home•A•Syst is only for your own use and benefit. It is a voluntary program intended to provide general information about protecting your health and the environment. Information from a *Home•A•Syst* assessment will not be collected by Extension or any other outside agency and should remain in your private records.

What you should know about . . .

1. Septic system operation

Septic systems are used to treat and dispose of wastewater from the home. A properly installed and maintained system will function for many years and minimizes the potential for both surface and groundwater contamination. A poorly constructed or maintained system can fail and return contaminated water to surface or groundwater. Good maintenance can save you money. If your system fails, your only options are expensive ones.

A septic system typically has two parts: a **septic tank** and a **drainfield**.

Wastewater flows from the house into the septic tank. The heavier solids settle to the bottom and form a layer of **sludge**. The light solids and grease float to the top and form a layer of **scum**.

Bacteria break down the solids into liquids. The bacteria cannot completely break down all the sludge and scum, and so solids accumulate in the tank over

time. This is why septic tanks need to be pumped periodically. The liquid flows through an outlet into the drainfield as more wastewater enters the tank from the house.

The drainfield is usually a series of parallel trenches containing perforated pipes in a bed of gravel or rock. Wastewater trickles out the holes, through the gravel, and into the soil.

The soil filters out remaining solids. Bacteria, natural chemical processes, and other organisms in the soil help break down the waste. If the soil is deep enough and the movement of the wastewater slow enough, the solids, microorganisms, and dissolved substances are removed. The safe, naturally treated **effluent** (the liquid from the septic system) then flows into surface or groundwater.

2. Distance from the well

If a septic system is too close to a well or spring, contaminated effluent can get into your drinking water. Current Tennessee regulations require septic systems to be at least 50 feet from a private drinking-water well. (There are no regulations for springs yet, but the 50-foot guideline is a good one to follow.) Ideally, the system should also be downhill from the well or any other source of drinking water.

If a septic system is close to a well or spring or uphill from it, the water source is not necessarily being contaminated. However, proper maintenance of the system becomes even more important to reduce the risk of contamination.

3. Distance from trees

Roots can enter drainfield lines and plug them. Effluent can become blocked in the drainfield and can saturate the soil, reducing the soil's natural ability to renew wastewater. In extreme cases, flow can be so limited that wastewater backs up into the house.

To prevent this problem, don't install a system in a wooded area. When landscaping, don't plant trees or bushes within ten feet of the field lines. Your risk is reduced even more if no trees are within 50 feet of the lines.

If roots plug the lines, removing the trees or bushes may be necessary. Some septic tank additives claim to prevent root growth, but, according to experts, evidence to support this is not conclusive.

4. Soil type

If the soil under the drainfield is deep enough and the movement of the wastewater is slow enough, the solids, microorganisms, and dissolved substances in the effluent are removed, producing water of acceptable quality.

If the soil is too shallow (generally less than four feet to bedrock or the groundwater level), the effluent will not be adequately renovated. Likewise, if the texture of the soil is too coarse (as in sands or gravels), wastewater will move quickly and contact time will be too short for adequate natural treatment.

In heavy clays, on the other hand, effluent may move too slowly. The soil may become saturated, resulting in incomplete treatment or in effluent's coming to the surface.

5. Septic tank cleanup

Bacteria cannot completely break down all the solids in the tank. Solids build up over time and reduce the volume of wastewater the tank can hold. If enough accumulates, sludge and scum can flow out and plug the drainfield. Pumping your septic tank regularly is probably the single most important thing you can do to maintain your system.

Most systems should be pumped every four to six years. It should be done more often if you have a small tank for your family size, if your household produces a lot of wastewater, if you use a garbage disposal frequently, or if your family often disposes of trash in the system. On the other hand, if you have a large tank and a small family, conserve water, and are careful about what you flush, pumping the system may only be necessary every 10 to 12 years or even less frequently.

6. Traffic over the system

The weight of vehicles or heavy farm equipment can damage the septic tank and drainfield. Reroute traffic and change driving patterns if needed. If you are planning a new system, locate it away from traffic. Driveways or other paved surfaces should not be constructed over septic tanks or drainfields.

7. Water conservation

If too much water enters the septic tank in a short period of time, wastewater is pushed out of the tank before solids and grease have time to separate. The system can be overloaded, and the soil in the drainfield becomes saturated because the water has less time to soak in.

Reducing the amount of water entering your system means less chance of overloading it, which in turn means better treatment of wastes and longer system life. Water-conservation practices such as taking shorter showers, running only full dishwasher or washing-machine loads, and turning off the water while washing or shaving make surprisingly significant reductions. Repairing leaking faucets or running toilets immediately, as well as using water-saving shower heads, toilets, and other plumbing devices, can also help conserve water.

8. Trash disposal

The septic system is not designed to be a disposal all. Paper towels, disposable diapers, sanitary napkins, and other trash are not readily digested by bacteria in the tank. They increase the solid buildup, which can plug the system. The more unnecessary trash you flush, the more often your septic tank will have to be pumped. Flushing trash into the tank also increases the system's water load.

Don't dispose of anything in your septic system except wastewater, toilet tissue, and human wastes.

9. Kitchen garbage disposal

Garbage disposals add to the solid load as well as increasing the amount of water entering the tank. Kitchen wastes like grease, fats, and cooking oils can plug pipes and build up the scum layer in the tank.

Minimize the use of the garbage disposal. Don't add a disposal if you don't already have one. Some experts recommend that disposals not be used by households with septic systems.

Don't put grease or oil down the drain. They can plug pipes or build up in the septic tank. Dispose of them with other household garbage.

10. Chemical disposal

Paints, solvents, pesticides, and similar products can damage your septic system. They can kill the beneficial bacteria that break down sewage, making the treatment process less effective.

Also, bacteria cannot break down some of these chemicals. They pass through the septic system in pure form and may move through the soil to contaminate groundwater.

Dispose of these products according to label directions. Household hazardous-waste roundups may

accept many of them; contact your local solid-waste authority or county government to find out when one is scheduled in your area. You may be able to give away or swap leftover materials.

These precautions do not apply to household cleaners, laundry soaps, bleach, or drain cleaners. These products should not damage the system with normal use. Also, washing clothes worn when applying pesticides should not harm the system.

11. Symptoms of trouble

Wet spots, standing water, and sewage odors are signs of problems with the septic system. In addition to being unpleasant, they may signal that the system is contaminating surface or groundwater with bacteria, nitrates, or other pollutants.

Sewage backups are caused by clogs in the drainfield or the plumbing system, or by some other problem blocking the flow of wastewater. Identifying and solving the problem will reduce risks to water quality as well as eliminating unpleasant situations in your home.

Suggestions found in this worksheet may solve the problem. However, unclogging drain lines, expanding the drainfield, or installing a new system may be required.

Make a note:

The table on page 6 of SP508M, *Assessing Your Homesite*, provides a space for you to list all the problem areas in your home that you find while completing *Home•A•Syst*. Take a few minutes now to list any septic-system problems you discovered as you completed *Assessing Your Septic System*. Later, when you complete *Assessing Your Homesite*, you will include these items on the map you draw of your property. Potential items from this factsheet include:

- trees within 50 feet of your drainfield
- areas of standing water
- septic system within 50 feet of a well or spring

Remember:

- Construct any new septic system at least 50 feet from your spring, well, or other drinking-water source. Locate it downhill from the spring or well if possible.
- Don't construct a new system in a wooded area.
- Plant trees and shrubs at least ten feet from the drainfield.
- If soil depth and texture are not adequate for a conventional septic system, install an appropriate alternative system.
- Pump out your septic tank regularly. Pumping may be needed every year or two, or every 10 to 12 years or more, depending on the size of your tank and the amounts of solids and water entering it.
- Don't drive vehicles or heavy equipment over your septic system.
- Don't put a driveway or other paved surface over your septic system.
- Practice water conservation to reduce the amount of water entering your septic system.
- Don't add water that doesn't need treatment (like water from roof drains, foundation drains, or basement drain pipes) to the flow into your septic tank.
- Divert surface water from roof drains, driveways, and paved lots away from the drainfield; saturating the soil reduces its ability to treat wastewater naturally.
- Don't dispose of anything in your septic system that can be composted or put in the trash. Minimize the use of your garbage disposal.
- Don't put paint, solvents, pesticides, or similar products into your system.
- Investigate any signs of problems, such as sewage backup, wet spots, or odors. Take timely action to solve any problems you find to reduce risks of contaminating surface or groundwater.

If you want more information . . .

Contact:

- Your local Extension office
- Tennessee Department of Environment and Conservation
Division of Groundwater Protection
L&C Tower, 10th Floor
401 Church Street
Nashville, TN 37243-1540
(615) 523-0762
- Your county health department
- Septic-system contractors or pumpers

Read:

- *Septic Systems*. PB 1423.
- *On-Site Wastewater Treatment Systems*. PB 1472.
- *The Low-Pressure Pipe Septic System*. SP 392-E.

The above publications are available from your University of Tennessee Agricultural Extension Service county office.

- *Your Septic System*. 174FSSET. \$3.00. This set of five factsheets from Cornell University covers the construction and maintenance of a septic system. To order, write:

Cornell University Resource Center
8 BTP
Ithaca, NY 14850

Download:

- <http://funnelweb.utcc.utk.edu/~utext>
The University of Tennessee Agricultural Extension Service home page.
- <http://www.epa.gov>
The U.S. Environmental Protection Agency home page.
- <http://www1.mhv.net/~dfriedman/septbook.htm>
The Septic System Information Website.

- <http://www.webdirectory.com>
Comprehensive environmental search engine/bulletin board—a great way to find information about any environmental topic.
- <http://www.usda.gov>
The U.S. Department of Agriculture home page.
- <http://h2o.usgs.gov>
The U.S. Geological Survey home page.
- <http://www.dtnnsh.er.usgs.gov>
The Tennessee division of USGS.
- <http://hermes.ecn.purdue.edu:8001/server/water/water.html>
National Extension Water Quality Database Website, Purdue University.

This *Home•A•Syst* assessment does not cover all potential health or environmental risks related to septic systems. It is meant to be a starting point for identifying and addressing the most apparent risks.

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Agricultural Extension Service

Billy G. Hicks, Dean