



Your Septic System

If you are a suburban or rural resident, you probably depend on a septic system to treat and dispose of your household wastewater. The purpose of a septic system is to treat liquid wastes from your house in order to prevent contamination of your well and nearby lakes and streams.

When a septic system is...

Suitably located... properly designed... carefully installed... and adequately maintained

You will have a waste disposal system that is...

Effective... Economical... and Safe!

Maintenance is the key to a lasting septic disposal system. Read and use this folder to learn:

1. how a septic system works
2. why and how to adequately maintain your septic system
3. how to keep your own maintenance record

How Your System Works

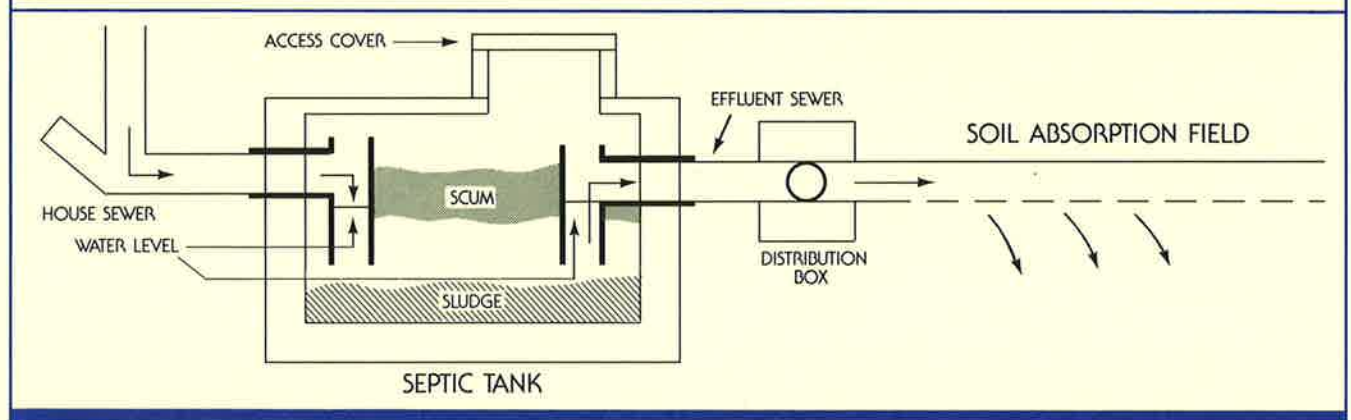
A septic system has two basic working parts:

Septic Tank

Wastewater flows from the house into the septic tank. Here heavy solids settle and are partially decomposed by bacteria to form sludge. Light solids and grease float to the top forming a scum layer.

Soil Absorption Field

Partially treated wastewater is discharged from the septic tank through perforated pipes into an absorption field. Here, the water is further purified by filtration and decomposition by microorganisms in the soil. This is the last line of defense to prevent polluted water from entering lakes, streams, and groundwater.



Why Maintain Your Septic System

Wastewater leaving your house comes from the tub or shower, wash bowl, toilet, kitchen sink, clothes washer and dishwasher. It carries chemicals, solids, grease, dirt, and bacteria and viruses which can cause disease. A good septic system treats and disposes of this wastewater. A failing septic system cannot perform these tasks, so pollution of drinking water wells and streams and lakes can result.

Even a properly designed and operated septic system will eventually fail unless the sludge and floating scum are periodically pumped from the tank, damaging materials kept out of the tank, and other protection measures are followed. Routine maintenance and a little common sense protects your investment and insures against the high cost of premature failure.

Pumping Out Your Septic Tank

Generally, septic tanks should be cleaned out every 3-5 years, depending on the size of the tank and the amount and quality of solids entering the tank. As a rule of thumb, the clean-out interval is determined on the basis of 100 gallons of tank capacity per person per year. For example, a 1000 gallon tank used by a family of two should be cleaned after 5 years [$1000 \div (100 \times 2)$]. **Note:** Use of a garbage disposal increases solids loading by about 50%.

Checking sludge and scum build-up can be an unpleasant task. The best suggestion for most homeowners in determining a maintenance schedule is simply to have the tank pumped at regular intervals. The cleaning of a tank is usually done by a commercial septic tank cleaning service, which must have a permit from the New York State Department of Environmental Conservation in order to perform this service.

Finding Your Septic System

In order to maintain your system, the tank needs to be accessible for pumping and the drainfield should be protected. Locating your system is not always an easy task. If the access manhole to the tank is at ground level, there is no problem. Unfortunately, these manholes are often buried under lawns.

To locate your system, go into the basement or crawl space and find where and in what direction the sewer pipe goes out through the wall. The tank can be traced back from the drainfield by checking the yard for an area

where the grass doesn't grow or grows very well, or for slightly depressed or mounded areas. Any likely site can be probed with a thin metal rod.

If you are unable to find the tank, your local septic tank pumper will find it when he comes to pump out the tank solids. You may want to have the manhole extended up to just below ground level and marked clearly with a stake, rock or a birdbath. Do not plant a shrub or tree to mark the location. Once your septic system is uncovered, be sure to make a map.

HELPFUL SOURCES OF ADDITIONAL INFORMATION

- SS-1 — *What to Do if Your Septic System Fails*
- SS-2 — *Maintaining Your Septic System: Special Considerations for Shoreline Property Owners*
- SS-3 — *How to Conserve Water in Your Home and Yard*
- SS-4 — *Your Septic System: What You Need to Know When Buying or Selling a House*
- SS-5 — *Your Septic System: Considerations When Building or Remodeling a Home*

Evaluate Your Septic Practices

As a homeowner, you have a tremendous impact on the efficiency of your septic system. Evaluate your maintenance practices based on the suggestions below.

Safe Disposal

- Do not put substances such as motor oil, gasoline, paints, thinners and pesticides in drains. These materials may pollute the groundwater and are toxic to the microorganisms which maintain an active system.
- Moderate use of household cleaners, disinfectants, detergents or bleaches will do little harm to the system, but remember that where there is a high density of septic systems, there may be a cumulative impact on groundwater from household cleaners.
- Fats, grease, coffee grounds, paper towels, sanitary napkins, disposable diapers, etc., will clog your septic system.

Protect the Absorption Field

- Keep automobiles and heavy equipment off the absorption field.
- Grass cover and shallow rooted plants are beneficial over an absorption field, but the deep roots of trees and shrubs stress and may plug nearby drain tiles. Do not fertilize the soil above the drainfield.
- Grass on the surface of an absorption field should be mowed regularly to promote evaporation and transpiration.

Conserve Water

- Remember to consider the capacity of your septic system when installing new appliances or plumbing.
- Limit the water entering the tank. Use water saving fixtures. Repair toilet float valves, leaks and dripping faucets. Spread clothes washing over the entire week. Do not connect rooftop drains, a basement sump pump, or footing drains to the septic tank.

Avoid Septic Tank Additives

- Yeasts, bacteria, enzymes or chemicals are sold with the claim that they help a system work better; however, there is **no** scientific evidence that additives are effective. In fact, some cleaners can allow the solids in an overloaded tank to be re-suspended and clog the drainage lines and soil absorption field.
- Additives are not an alternative to proper maintenance and do not eliminate the need for routine pumping of your septic tank.
- Commercial biological additives are not needed to begin decomposition after pumping because the sludge residue contains active microorganisms.

Record Keeping

1. Make a rough sketch locating your septic tank and absorption field in relation to surrounding reference points. Begin by sketching your house, driveway, water well, and other landscape features such as trees, rocks, or fences.
2. Measure and record distances from your house to the cover of your septic tank and to the corner of your absorption field, if possible. As long as the distances are correct, do not be concerned whether or not the drawing is to scale.
3. Keep this information on file as a permanent record for use in maintenance and to pass on to subsequent owners.

YOUR MAP

Maintenance Record

Keeping a record of your septic system maintenance experience will help you anticipate when the next cleaning may be needed.

Date	Work Done	Firm	Cost

Size of Tank

_____ gallons

Your Septic System Installer

Name _____
 Address _____
 Phone _____
 Date Installed _____

Your Septic System Pumper

Name _____
 Address _____

 Phone _____

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What to Do if Your Septic System Fails

Discovering that your septic system is failing is a miserable experience. This fact sheet is designed to help you recognize this problem, determine what to do if it happens and, most importantly, learn how to prevent it. These tips are best used in conjunction with the information in Extension publication FS1 — *Your Septic System*.

What is Septic System Failure?

A septic system should effectively accept wastewater from your house and prevent biological and nutrient pollutants from getting into your well and nearby lakes and streams. Anytime your septic system is not treating or disposing of sewage in an effective manner, the system is failing.

For example, when wastewater backs up into your home or is bubbling up in your backyard, the system has obviously failed. If significant amounts of biological or nutrient pollutants reach your well or surface waters, the system is also failing, even though it may appear visually to be working just fine.

Why Septic Systems Fail

Most septic systems will fail eventually. These systems are designed to have a useful life of 20 to 30 years, under the best conditions. Eventually, the soil in the absorption field becomes clogged with organic material, making the system unusable.

Many other factors can cause the system to fail well before the end of its "natural" lifetime. Pipes blocked by roots, soils saturated by high water tables, crushed distribution pipes, improper location, poor original design or poor installation can all lead to major problems.

By far the most common reason for early failure however is improper maintenance by homeowners. When a system is poorly maintained (not

pumped out on a regular basis) solids build up in the septic tank, then flow into the absorption field, clogging it beyond repair.

How to Know If Your System is Failing

Look for these symptoms to determine if you have a serious problem:

- **Sewage backup in your drains or toilets.** This is often a gray or black liquid with a disagreeable odor.
- **Slowly draining sinks, bathtubs and toilets.** The drains in your house will drain much more slowly than usual, despite the use of plungers or drain cleaning products.
- **Surface flow of wastewater.** Sometimes you will notice soggy areas or standing water on the ground above or near your septic system. There may or may not be a foul odor.
- **Lush green grass over the absorption field, even during dry weather.** Often, this indicates that an excessive amount of liquid from your system is moving upward through the soil instead of downward, as it should. While some upward movement of liquid from the absorption field is good, too much could indicate a problem.
- **The presence of nitrates or bacteria in your drinking well.** This indicates that wastewater from the system may be flowing into the well through the ground or over the surface. A water test will indicate if you have this problem. Your local health department can advise you where to have testing done.
- **Excessive growth of aquatic weeds or algae in lakes or ponds adjacent to your home.** This may indicate that nutrient-rich septic system waste is leaching into the surface water. This may lead to both inconvenience and possible health problems.
- **Unpleasant odors around your house.** Often, improperly vented or failing septic systems cause a buildup of disagreeable odors around the house.

Health and Economic Effects of a Failing System

The most serious effect of a failing system is the potential for serious disease from the improperly treated wastewater. Dysentery and hepatitis can be spread by these wastes. In addition to these diseases, mosquitoes and flies that can spread infectious diseases can breed in areas where liquid waste reaches the surface.

Chemical or nutrient poisoning can also be a problem. Many of the products you use around the house, such as strong cleaning products, can be poisonous to humans, pets and wildlife if they travel through soil to your well or on the surface to lakes, streams or ponds. Excess nitrate levels in drinking water can pose serious health threats to infants.

The health of plants around your home also can be seriously affected.

The economic costs of failure are no less important. The most obvious effect is the direct expense of replacing your septic system. This could cost up to \$5,000 (or more depending on where you live). Also consider the indirect cost of losing the use of your house while the system isn't working and the long-term inconvenience of a system that doesn't operate properly.

There is no proof that chemical or enzyme additives are effective remedies for a failing system, contrary to what ads for those products may claim.

What to Do if Your System Fails: Immediate Actions

Follow these steps if you notice any of the symptoms listed above:

- **Call your local health department.** This is the first thing you should do. Health department staff members have the expertise to assess your situation quickly and offer advice on how to cure the problem.
- **Exercise caution in working near an opened septic tank.** Toxic and explosive gases present a hazard. *Never enter a septic tank.*
- **Have your septic tank pumped.** This will help the problem temporarily, especially when it is combined with drastic water conservation. If a clog does not exist between the house and the septic tank, or if very high water levels are not the cause of the problem, pumping may be an effective solution provided that the absorption field is still in good condition.
- **Conserve water in your home.** This is particularly effective if your system has not failed completely. It can help lessen the problem for a short time. Water-saving devices and reduced consumption, especially in your bathroom, can have a significant effect.

- **Fence off the area.** If liquid waste is seeping to the surface, prevent people and pets from coming into contact with the effluent.

What to Do if the System Fails: Long-Term Options

In many, if not most, cases, redesigning and replacing the system in a new location is the only practical long-term solution. This type of work only should be performed by a qualified contractor. Local health department permits are required before construction can begin.

Other solutions include:

- **Increase the size of the absorption field.** This may help if the original field was too small for the size of your family or if the soil does not allow water to percolate very well provided that the tank size is adequate.

- **Conserve water in your home on a long-term basis.** The smaller the amount of water flowing through your system, the longer it will last. For systems that perform marginally or leak nutrients into nearby lakes and streams, this is a good alternative.

- **If periodically saturated soils are a main cause of problems, consider installing perimeter drains.** This involves installing tile drains underground at a specified distance around the absorption field to help lower water levels. It works in some but not all situations and requires the assistance of a qualified contractor. The location should also be evaluated by your local health department.

- **Connect to a community sewage system, if one is available.** Although the long-term costs may seem high, the benefit of reduced worry and lowered maintenance for the homeowner are often worth the cost.

- **If septic system failures are common in your area, consider participating in the development of a small community "cluster" system or other similar alternatives.** These systems are designed for small communities and some rural areas and are generally much more cost effective than a conventional sewage treatment system.

How to Prevent the Problem

The key to preventing your septic system from failing is *proper maintenance*. Regularly pumping the tank, being careful what you put down the drains and avoiding things such as planting trees over the absorption field or covering the system with patios and home additions are important to keep the system running well.

Proper design is another critical aspect in preventing system failure. Be sure the system is designed to meet your present and future needs. If, for example, you are building a small home with plans to enlarge it as your family grows, design the septic system to accommodate the largest size you expect your family to grow to. Consider asking your contractor to include such useful features as junction boxes and observation ports, which aid in assessing the condition of the system.

Many septic systems are doomed from the start because they are put in poor locations or constructed improperly. Be sure a new system is installed in an area with proper soil conditions and at sufficient distances from your house and well as regulated by local health department codes.

Water conservation was mentioned earlier as a method to keep a marginal system operating, but it may also prevent future problems from occurring.

Where to Go for Help

If you believe your system is failing or just want advice about its operation or condition, contact your local health department or Cornell Cooperative Extension. Also they can assist you in finding reputable septic system installers and pumpers in your area.

For More Information About Your Water and Septic System...

Check other fact sheets in the series.

- SS-2 — *Maintaining Your Septic System: Special Considerations for Shoreline Property Owners*
- SS-3 — *How to Conserve Water in Your Home and Yard*
- SS-4 — *Your Septic System: What You Need to Know When Buying or Selling a House*
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- FS-1 — *Your Septic System*

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Adapted from a Michigan State University Cooperative Extension Service water quality bulletin by D. Solomon and E. Dersch.



Maintaining Your Septic System Special Considerations for Shoreline Property Owners

If you live on shoreline property, maintaining your septic system requires more care than maintaining a similar system located elsewhere. Soil and water conditions near the shoreline may make the system less efficient which could, in turn, cause harmful pollutants to get into your lake, stream or pond.

This fact sheet is designed to help shoreline property owners understand what they can do to effectively maintain their septic systems to preserve the quality of their lake, stream or pond and protect the health of their families. These tips are best used in conjunction with the information in Cooperative Extension publication FS-1 — *Your Septic System*.

How Septic Systems Work in Shoreline Property Areas

The purposes of a septic system are to treat liquid wastes from your house and to prevent biological and nutrient contamination of your well and nearby lakes and streams. Most of this treatment happens in the soil below the absorption field.

Because septic systems on shoreline property are often close to both surface and ground waters and absorption fields are sometimes saturated during high water periods, partially treated wastewater is likely to enter adjacent lakes and streams. Also, when shorelines erode, the distance between the septic system and the shoreline decreases, making it more likely that wastewater could move horizontally through the soil to the shoreline and then quickly into the lake or stream.

This pollution can happen even though your system appears to be working well and complies with local health department codes.

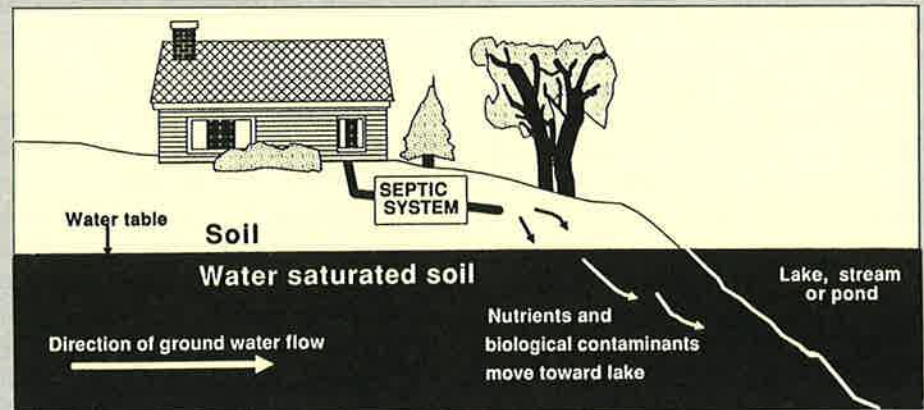


Figure 1. When septic systems are near lakes, ponds or streams, the water table is often close to the surface and the absorption field near open water. This can result in nutrients and biological contaminants "leaking" to the water causing excessive weed and algae growth in lakes and ponds.

The Effects of Septic System Wastes on Lakes and Streams

Nutrients (especially phosphorus) from leaky septic systems play a major role in causing excessive weed and algae growth in lakes and ponds. Just a small amount of additional phosphorus in a lake or pond can make a large difference in aquatic weed growth.

Excessive weed growth, in turn affects the ability of fish to grow and could even result in fish kills. Excessive weed growth also makes boating, fishing and swimming less enjoyable due to weed-tangled boat motors, weedy swimming areas, etc.

Wastewater from your septic system that reaches adjacent surface waters also increases the chance that swimmers near your shore could catch a variety of infectious diseases that are associated with these wastes.

How to Tell if Contaminants are Reaching the Water

Look for these symptoms to tell if waste from your system is reaching surface water:

- **Excessive weed or algae growth in the water near your shore.** Phosphorus leaking from septic systems would be a major cause of this type of growth. Other factors, such as a combination of shallow water and a lake bottom rich in organic matter, or sediment and lawn fertilizer runoff, could also lead to this type of problem. Septic systems, however, are often prime suspects as sources of these pollutants.
- **An increase in infections or illnesses associated with swimming in the area.** These are most often minor ailments, such as ear or eye infections, but could be major diseases, such as dysentery or hepatitis.
- **Unpleasant odors, soggy soil or sewage flow over the land surface.** These symptoms often indicate failure and the need for drastic action such as replacement of the system. Under these conditions, wastewater could travel directly into nearby surface waters instead of being treated in the soil.

- **Water test results indicate the presence of biological contamination.** These tests may show the presence of harmful bacteria in the water. Although wastes from septic tanks are not the only source of these contaminants, they are likely suspects. Your local health department can advise you as to where to have testing done.

- **Indicator dye put into your septic tank reaches lakes or ponds.** Special dyes may be available from your local health department and may help to find problems that may otherwise be difficult to notice. This method can help verify the other symptoms listed above.

How to Prevent Problems

You can do many things to help prevent the problems associated with having a septic system near shoreline areas. Try these activities:

- **Regularly pump and maintain your septic system.** This is the simplest yet most effective thing you can do to prevent excessive amounts of pollutants from reaching your lake, stream, pond or water supply. Regular maintenance also protects the value of your home by helping to ensure a safe water supply and disposal system. Shoreline property sells for a premium, but a failed septic system can reduce that value tremendously, even to the point of making the property unmarketable until the system is repaired or replaced.

- **Conserve water in your home.** The smaller the amount of water that enters your septic system, the less the likelihood of liquid wastes reaching lakes or ponds. Water conservation devices such as faucet aerators, water-saving shower heads and toilet tank inserts installed in your bathroom and kitchen are inexpensive and effective. Other practices such as spreading the daily effluent load by running the dishwasher and clothes washer at night are easy and don't change your present lifestyle.

- **Redirect surface water flow away from your absorption field.** Many times, water from driveways, roof downspouts or lawns travels toward

the absorption field putting an extra load on the system. Make modifications to drain this water away from the septic system.

- **Plant a greenbelt between your absorption field and the shoreline.** This involves planting areas of small shrubs and trees to help intercept and absorb some of the nutrients before they reach the shoreline. They also can reduce erosion and create a very attractive landscape.

- **Participate in a community sewage system or alternative disposal methods, if available.** Sometimes these systems offer cost-effective, long-range solutions to the problems caused by septic systems. Alternative systems may include multiple-home "cluster" septic systems, mound septic systems, gray water recovery and reuse systems, or improved treatment systems. The use of some of these systems may be restricted by local health department codes or require design and construction by experienced engineers and contractors, as well as special permits. Consult your local health department regarding alternative disposal methods.

Before selecting a larger-scale, community-based solution, be sure that it will yield the anticipated results. Many factors contribute to excessive weed growth and other effects, so it is possible that wastes from septic systems may have a relatively minor impact on lake or stream quality.

- **Replace your septic system.** Although this alternative is costly, sometimes it is the only alternative, especially when your system is undersized because of conversion of a seasonal residence for year-round use.

- **If you're building a new home, construct the septic system as far away from the shoreline as possible.** This distance should be even farther than health department codes require. Those regulations are designed primarily to protect human health rather than prevent other effects, such as excessive weed growth. Pollutants, especially nutrients, can easily travel farther than those minimum distances in some soils.

Also, design the system to meet your present as well as future needs. If, for example, you are building a small summer home with plans to enlarge and convert it to year-round use when you retire, design the septic system to accommodate that increased future use.

Where to Go for Help

For advice about your septic system's operation, condition or possible alternatives, contact your local health department, or Cornell Cooperative Extension.

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How to Conserve Water in Your Home & Yard

This bulletin is designed to help you save money, protect your health and reduce the risk of damaging your septic system and the quality of your drinking water, lake, pond or stream by practicing water conservation in your home. These tips are best used in conjunction with the information in Cooperative Extension publication FS-1 — *Your Septic System*.

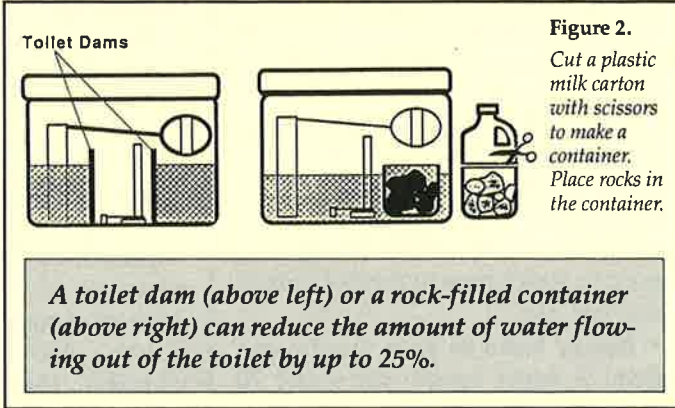
Conserving Water. . . Here?

New York has abundant water resources. In some parts of the country, water conservation by homeowners is often necessary, just to have enough water for basic needs. But why conserve here in water-rich New York?

The simplest answer is that conserving water saves money — in many cases, very significant amounts of money. If you depend on your own well and septic system, the hundreds of extra gallons of water released each day will, over a period of years, continually saturate the soil in the septic system absorption field to a point where extensive repair or replacement is necessary. Replacing a septic system costs up to \$5,000 (or more) depending on where you live. Conserving water can extend the life of the system and delay the need for repair.

If you live in an area serviced by a municipal water system, the greater your water use, the more you pay for water.

In addition to saving money, water conservation can help to prevent water pollution. Overloading a poorly designed septic system may cause nutrient and bacterial contamination of nearby lakes, streams and drinking water, even the water from your own well. The smaller the amount of water flowing through these systems, the lower the likelihood of pollution.



Pollution costs money, too. Excessive weed growth in a lake caused by nutrient enrichment from poorly functioning septic systems often means costly weed control measures paid for by you and your neighbors. Polluted home water wells, if they can be repaired at all, cost thousands of dollars to fix.

Water Use Around Your House

The first step in understanding how to conserve water in your home is to know where water is used.

Most people use 50 to 70 gallons of water indoors each day and as much as the same amount outdoors, depending on the season. Indoors, three-quarters of all the water is used in the bathroom (Fig. 1). Outdoors, lawn and garden watering and car washing account for most of the water used.

How to Conserve Water Daily

Because such a large percentage of the water use is in the bathroom, that is where water conservation efforts should begin. You can install a few simple, inexpensive devices in the bathroom that can save a lot of water with no change in your lifestyle or your present habits. Many hardware and plumbing supply stores stock these items. They are:

- **Toilet dams or rock-filled containers.** These devices (one of which you can make yourself, Fig. 2) reduce the amount of water flowing out of the toilet by up to 25 percent. They do not affect its flushing ability. Never use a brick to accomplish the same effect — particles from it could harm your plumbing. Always be sure that at least 3 gallons of water remain in the tank so it will flush properly.

A water-saving shower head can reduce the amount of water used in a shower by as much as 50%.

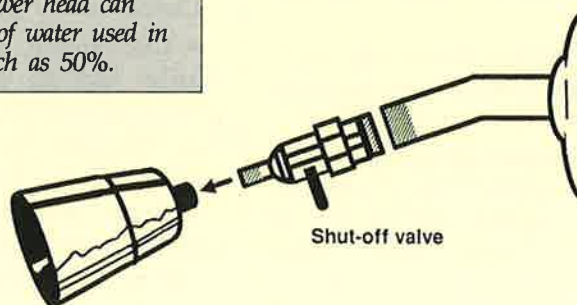


Figure 3.

- **Low flow, water-saving shower heads.** This plumbing device (Fig.3) reduces the amount of water flowing through your shower by up to 50 percent, but increases its velocity so the shower feels the same. This also saves hot water. You may even be able to avoid buying a larger water heater, should the need arise.

- **Faucet aerators.** These devices restrict the amount of water going through your faucet by up to 50 percent but add bubbles so the flow of water appears the same. They can be installed on all of your faucets, not just the ones in your bathroom.

Other relatively simple things you can do in your home to further reduce water use are:

- **Repair leaks in your faucets and toilets.** A leaky faucet can waste 20 gallons or more per day. Leaky toilets, even though they are usually silent, can waste hundreds of gallons per day. To find out if your toilet leaks, put a little food coloring in the tank. If, without flushing, color appears in the bowl, you have a leak that should be repaired. Repairing a faucet is usually as simple as changing an inexpensive washer. Leaky toilets often can be repaired by adjusting the float arm or plunger ball.

- **Use your dishwasher and clothes washer only when you have a full load.** If you are purchasing a new clothes washer, choose one with variable load or suds-saver options. Many dishwashers are also now available with water-saving options. If you already have these options, use them whenever possible.

- **If you are building a new home or remodeling an old one, consider installing "low flush" toilets.** These toilets use 1 to 2 gallons per flush instead of the 3 to 5 gallons used by conventional toilets. They are readily available and, although they cost more, they can save you a lot of money in the long run through decreased water and energy use.

Outdoor uses of water are often high volume. Nevertheless, there are ways you can save water. Try these:

- **Attach a pistol-type sprayer to the end of your garden hose.** In addition to enabling you to adjust the rate of flow, this device keeps water from continuing to run during the short periods when you put down the hose without

turning it off (while you are washing your car, for example).

- **Water your lawn only when necessary.** It takes 660 gallons of water to supply 1,000 square feet of lawn with 1 inch of water. This is nearly the same amount of water as you use inside the house in an entire week! Water your lawn when it begins to show signs of wilting — when the grass does not spring back when you step on it — rather than on a regular schedule.

Saving Water in Special Situations

Sometimes it is necessary to use extra measures to reduce even further the amount of water you are using in your house. Although useful in any situation, these techniques may be especially helpful or even necessary in some cases, when water levels are high around your house, your septic system shows signs of failing or your community water system temporarily loses capacity to supply adequate amounts of water.

Indoors, you should consider these changes:

- **Take short showers instead of baths.** A four-minute shower can use as little as 8 gallons of water, while a bath needs 50 to 60 gallons.

- **Avoid flushing your toilet unnecessarily.** Never use it as a wastepaper basket to dispose of cigarette butts or tissue paper.

- **Turn off the faucet while you are shaving or brushing your teeth or hand washing dishes.**

- **Avoid running water in the shower while you are shampooing or soaping.** Most people step away from the water to do this anyway. Many water-saving shower heads come with a button to shut off the flow without changing the mix of hot and cold water.

Outdoors, try these:

- **Use mulch around trees and shrubs and in garden beds.** This greatly reduces the amount of water lost through evaporation and so reduces the need for watering.

- **Consider using a drip irrigation system in your garden.** The system supplies water only to the root zones of plants. In addition to saving water,

it reduces weeding because it doesn't water the areas between rows and hills of crops.

- **Use only plant varieties that are well adapted to your locality and soil conditions.** Less suitable varieties may need greater amounts of fertilizer and/or water just to stay alive.

- **Avoid watering the lawn.** Your lawn may turn brown in the middle of the summer, but this does not mean that it is dead. Rather, the grass is dormant and will regrow when rain and cooler weather return.

- **Use the water from your roof downspouts for watering your garden and flower beds.**

Where to Go for Help

If you need help in locating water-saving devices or other advice about water conservation, contact your local health department or Cornell Cooperative Extension.

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Adapted from a Michigan State University Cooperative Extension Service water quality bulletin by D. Solomon and E. Dersch.



Your Septic System: What You Need to Know When Buying or Selling a House

Decisions about purchasing new homes are based on the looks of the house, size, location and price, but not the septic system. Since the septic system is half of the home's life support system, it needs to receive attention. Just imagine what would happen if you moved in, feeling financially strapped, and you discovered you needed to install a new septic system. Or, you have found a buyer, the deal is closed and you find out the new owner is suing you because the septic system failed. This fact sheet is a guide to the major points to consider when you are buying or selling a house. It is not a substitute for professional inspection which is recommended. These tips are best used in conjunction with Extension Publication FS-1 — *Your Septic System*.

Function of System

Since the septic system has no moving parts, it is easy to forget that it is a vital part of the home. The septic system accepts and treats wastewater (sewage) from your house to prevent biological and/or nutrient pollutants from contaminating your well or nearby lakes and streams. When functioning properly a septic system can last 20 to 30 years.

Age of the System

The age of the house may indicate the condition and type of septic system. Houses built in the last 30 years may be using the original waste disposal system. Older houses may have had the original system replaced. Just because the system is over 10 years old does not mean you will need to replace it soon. If the tank has been pumped regularly and the drain field treated properly, the septic system may function for many years. As most homeowners learn, parts of the house wear out, so a replacement fund is a good idea.

Another way to determine the age of the septic system is to check a copy of the Construction Permit and the Certificate of Occupancy. They will indicate when the system was installed. If these documents are lost or misplaced, the Health Department should have them on file and copies can be obtained. Check for any discrepancies between the location of the system and the placement in the sketch on the Construction Permit. When a considerable difference is found, an inadequate replacement system may have been installed without obtaining a permit.

If these forms are not available from the Health Department, the system may be very old and need replacement; it may not exist — wastes from the home may be just discharged into a dry well or cesspool, a roadside ditch, lake or stream; or it may have been installed without the health department's knowledge or approval.

Size of the System

Septic systems usually are designed to adequately treat sewage based on 150 gallons per day per bedroom. This estimate assumes that two people will occupy each bedroom. Both the buyer and seller benefit from knowing this.

Buyers need to know if the functioning system is large enough to adequately handle the new family's wastes. A family of six moving into a two bedroom house may soon overload the tank and eventually clog the absorption field. A potential homeowner who is aware of an undersized system can plan to expand or replace the system or buy a different house.

If the seller is aware of the size of the system, the real estate agent and the potential buyer should be informed. A buyer cannot sue after the sale on the

basis of a defective system if he or she has been informed that the system is not adequate for the new family.

Evaluating the System

A well and septic system evaluation should be conducted as soon as the property is placed on the market so that any necessary repairs can be made. The evaluation definitely needs to be done before the sale is completed.

At a minimum, an evaluation should examine:

- The location, age, size and original design of both the water and septic systems.
- The type of septic tank; concrete, plastic or steel.
- The accuracy and availability of the Construction Permit and the Certificate of Occupancy.
- The soil conditions, drainage, seasonal high water table level and flooding possibilities on the site where the septic system is located.
- The condition of the plumbing fixtures and their layout. This determines whether structural changes have been made to the plumbing that would increase flow to the septic system above capacity. System components that could affect the system — water softeners draining to the septic tank or the presence of footing drains — should also be identified.
- The date that the septic tank was last pumped and a record of previous pumpings.
- The sludge (solid material) level in the septic tank if it has not been recently pumped and the condition of the baffles.
- The state of the absorption field — look for evidence of wastewater reaching the soil surface, soggy areas and/or standing water, or clogging of the soil and gravel beneath the field (this usually requires digging up a small portion of the field).

- The possible presence of biological contaminants in the well water.

Because considerable skill is needed to evaluate well water quality and a septic system, the inspection should be done by a professional engineer or building inspector. There will be a charge for this service, but it is worth the expense if it avoids lawsuits or the deal falling through at the last minute.

Special Notes

Even a professional inspection may fail to identify septic system deficiencies or problems if the house is vacant at the time it is done. Thus, the buyer needs to make certain the evaluation was done when the system was being used normally for the previous 30 to 60 days. If the house is vacant or the seller's family was small, the buyer may want to negotiate that final acceptance of the house is conditional upon 30 to 60 days of normal use by the new family. In addition, inspections during the winter when there is snow on the ground or the soil above the absorption field is frozen can result in serious errors.

For More Information About Your Water and Septic System...

Check other fact sheets in the series.

- SS-1 — *What to Do if Your Septic System Fails*
- SS-2 — *Maintaining Your Septic System*
- SS-3 — *How to Conserve Water in Your Home and Yard*
- SS-5 — *Your Septic System: Considerations When Building or Remodeling a Home*

plus Extension publication...

- FS-1 — *Your Septic System*

This publication was developed by Cornell Cooperative Extension as part of an educational project supported by a grant from the Water Resources Institute at Cornell University with funds provided by the New York State Legislature through the New York State Department of Agriculture and Markets.

Adapted by Jo Ellen Saumier, Cornell Cooperative Extension of Rockland County, from a Michigan State University Cooperative Extension Service bulletin.

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Worksheet**

- 1 Find and mark the location of the well and septic system (you may want to map this information in the space provided in Cooperative Extension publication FS-1 — *Your Septic System*.
- 2 When was the septic tank last pumped? _____
- 3 Is there any standing water, soggy ground or smelly liquid near the absorption field? No Yes
- 4 Are there any areas over the drain field that appear highly compacted (i.e., roads or evidence of continued vehicle travel)? No Yes
- 5 Have any major additions been made to the house after the present septic system was installed? No Yes
- 6 Does the ground slope toward the septic tank or absorption field? No Yes
- 7 Do neighbors indicate frequent problems with their septic systems or have they noticed problems with this system? No Yes
- 8 Does the grass over the drain field appear much greener than the surrounding area, even during dry weather? No Yes
- 9 Do toilets flush slowly and does water drain slowly from sinks and tubs, or do either "gurgle"? No Yes
- 10 Does a water test indicate biological contamination of the well water? No Yes
- 11 Is the septic system (tank and absorption field) less than 100 feet from the well or 100 feet from a lake, stream or pond or meet local codes which may be stricter? No Yes

If your answer to any of these questions is **YES**, the system may not be functioning properly. Consult a local health department representative or other professional for help.

****This worksheet and consultation with a local health department representative will help you make some preliminary judgments about the system you are evaluating, but is not as good as an on-site professional evaluation.**



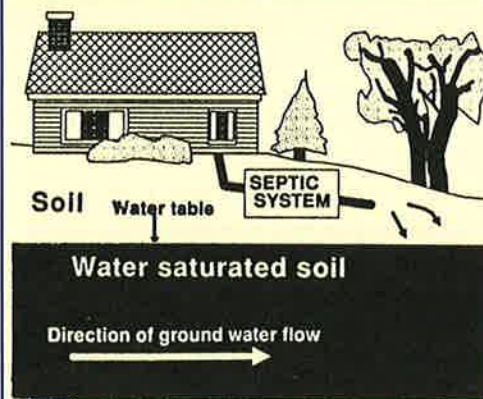
Your Septic System: Considerations When Building or Remodeling a Home

A newly built or remodeled home is more than a kitchen, living room, bathrooms and bedrooms. Along with providing comfort and shelter for your family, it is a functioning unit that protects their health. In the excitement of planning the appearance of your future living space, it is easy to overlook practicalities like the disposal of your family's wastes. This fact sheet is designed to help you understand what is included in a household septic system, the types available and the process of installing one. While it may not have the appeal of the rest of the project, you will safeguard your family's health, maintain the value of your property, protect the environment and save money by doing it correctly the first time. These tips are best used in conjunction with Extension publication FS-1 — *Your Septic System*.

Septic Systems

Typically, a waste disposal system consists of an underground watertight receptacle called a septic tank, a distribution or diversion box and a soil absorption or drainage field. Wastewater leaves the home through an underground pipe and enters the septic tank where the separation of solids occurs. The heavy solids settle to the bottom of the tank and lighter solids and grease float to the surface and form a scum. The remaining partially treated wastewater flows out of the tank to the distribution box that divides the flow, sending it to perforated pipes that distribute the liquid in the drain field. As it partially treated wastewater filters through the coarse gravel in the drain field and the underlying soil, the wastewater is treated by the organisms in the soil and by physical and chemical reactions. Eventually the treated wastewater reaches the groundwater.

Because the soil is the critical factor in the cleansing of the wastewater, it determines the type of system that can be installed. In areas where soils are not suitable for a soil absorption field, alternatives may be used. They include the mound system, evapo-transpiration systems, on-site aeration, lagoons, and sand filters. In extreme conditions, chemical or incineration systems may be used.



Siting

Before you break ground on your new home check the lot for a suitable site for the septic system; even better check before you buy the lot. The health department has requirements regarding septic system placement, especially if you and/or your neighbors will be depending on well water for drinking. Checking the minimum distances that have been established in your county to see if you have room for a well and a septic system can save you time, heartache and money.

If you plan to change an existing home you need to consider how the alterations will affect the waste disposal process. Your system was built to fit the needs of a family living in the structure. Adding bathrooms, bedrooms, garbage disposals or other water using appliances will increase the flow. Taking

this into account before you add on can save future problems. In addition, it is important to know where your septic system is so you do not dig it up as you excavate for the new foundation. Be sure that your planned addition or a separate building, patio, or paved area such as a sidewalk or driveway will not be located over your septic tank or absorption field.

If you are building in the watershed of a public water supply system, the regulations of the New York State Department of Health must be followed. If the watershed area supplies water to New York City, the approval of the Department of Water Resources of the City of New York also must be obtained.

Codes and Permits

New York State Public Health Law 308 authorizes local boards of health to enact ordinances and regulations for the installation and operation of septic systems as long as they are as strict as the New York Sanitary Code. Localities may have their own regulations that are more stringent than state regulations. Before making any final decisions when building or remodeling, contact the local sanitarian in the county or area health department to find out what regulations you must meet.

At that time, you can begin the permit process. This includes soil tests, a design with specifications based on the soil conditions and anticipated use and an inspection(s) during construction.

Percolation Test

The health department sanitarian will recommend a system based on the results of a percolation test. For the "perk" test, several holes are dug, presoaked with water, refilled and the number of minutes it takes an inch of

water to soak into the soil is measured. Generally between 3 and 60 minutes is necessary for a soil absorption system.

Design and Installation

Septic systems are designed to handle the normal, daily flow of wastes a family produces. The 1990 revision of the New York State Department of Health's Public Health Law, section 75-A.6(1), set new minimum tank capacities and minimum liquid surface area requirements.

Minimum Septic Tank Capacities

Number of Bedrooms	Minimum Capacity (gallons)	Minimum Liquid Surface Area (sq. ft.)
1, 2, 3	1,000	27
4	1,250	34
5	1,500	40
6	1,750	47

For seven or more bedrooms, calculate tank capacity by adding 250 gallons and seven square feet of surface area for each additional bedroom. Rooms convertible to a bedroom, such as an attic or den, must be counted as a bedroom.

Although these minimum capacities will safely handle the family's wastes, the larger sizes do offer some advantages. They allow for better separation of scum and solids resulting in fewer solids entering the absorption field which, in turn, prolongs the life of your system. They also require less frequent pumping and allow for future expansion of the home. In the long run, they are more cost-effective.

Your septic system needs to be considered when you remodel because you may be altering the flow of wastes. According to the sizing requirements previously discussed, the addition of a bedroom or room that could be converted to a bedroom necessitates an

increase in your system's size. Failure to add capacity at the time of remodeling may cause a delay and unanticipated expense if you try to sell your house without an up-to-date Certificate of Occupancy. You do not want to find out that your closing will be held up until the new septic system is installed.

Garbage grinders or disposals are not recommended for use with septic systems because they increase the necessity of pumping. If a garbage disposal is planned in a new home or remodeling project in spite of the recommendation, the disposal is considered to be another bedroom.

Most septic tanks are made of concrete and more recently plastic and will last a long time especially if the baffles are made of concrete or plastic. Some metal tanks are still being used, but they do not have as long a life expectancy because the metal above the liquid level eventually rusts. Although steel septic tanks still can be legally installed in New York State, they are not recommended.

The contractor you hire to build or remodel your house may or may not be the one you use to install the septic system. *Be certain that you have a written agreement with the installer that stipulates that final payment will not be made until the system has received approval from the health department.*

Once your waste disposal system is in use it will need regular care and maintenance. While it is fresh in your mind, draw a diagram showing the location of the house, the tank's inspection ports, the piping and the absorption field. Extension publication FS-1 — *Your Septic System*, that is a part of this series, will help you do so. It is also designed to keep the records for your system together.

For More Information About Your Water and Septic System...

Check other fact sheets in the series.

- **SS-1** — *What to Do if Your Septic System Fails*
- **SS-2** — *Maintaining Your Septic System: Special Considerations for Shoreline Property Owners*
- **SS-3** — *How to Conserve Water in Your Home and Yard*
- **SS-4** — *Your Septic System: What You Need to Know When Buying or Selling a Home*

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