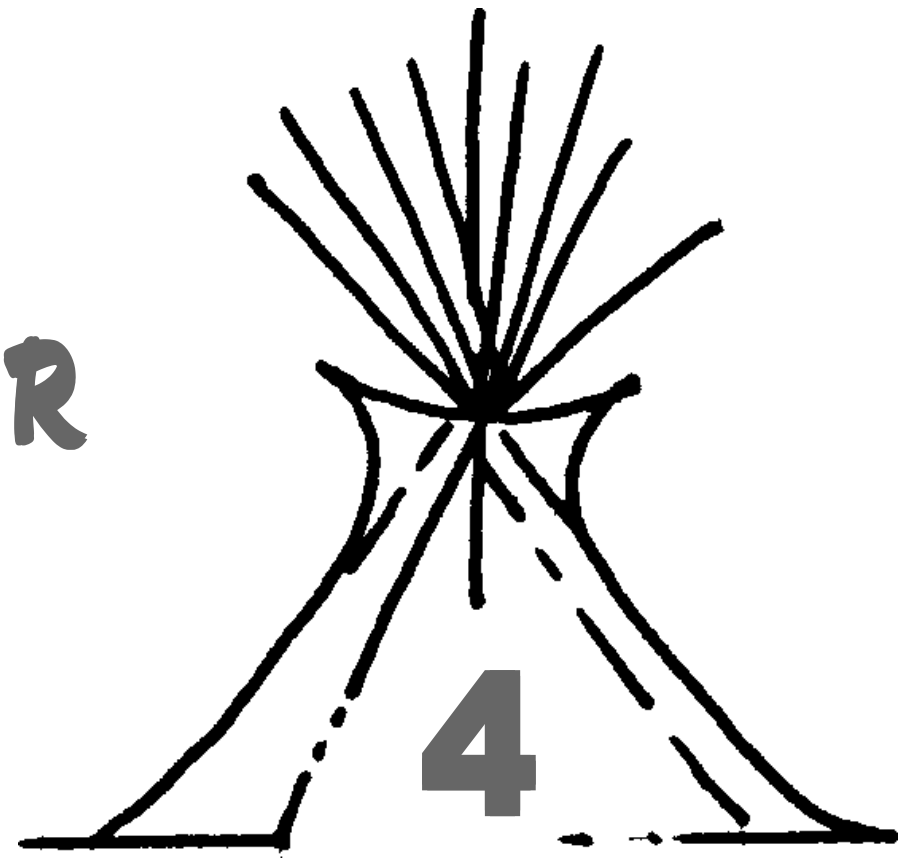
HOUSEHOLD WASTEWATER

Septic Systems and Other Waste Treatment



Your waste water can affect the health of your family, your community and the environment.

This fact sheet will help you look at your septic or other waste treatment system and see risks before they become problems. It tells how to safely get rid of household wastewater. Tribal and local laws, however, may require stronger or other requirements. For example, some systems, such as cesspools, may be banned in your area. Contact your Tribal Health Service, or a septic system contractor for advice.

1. Septic System Design and Location: *Find out how much your septic tank holds, where it is located and what kind of soil is in your drainfield.*

2. Septic System Care: *How to pump your septic tank, protect your drainfield and watch for signs of trouble.*

3. What Goes into Your Septic or Sewage System: *How to reduce the amount of water, solids and harmful chemicals that go into your septic or community wastewater treatment system.*

Connected to the Earth

We must all become caretakers of the Earth.

—Haida Gwaii, Traditional Circle of Elders

Your septic system can affect community health

Wastewater treatment systems protect your health and the environment. Water from sinks, toilets, washing machines and showers carries dirt, soap, food, grease and bodily wastes "down the drain" and out of your house (figure 4.1). It also carries disease-causing bacteria, viruses and other contaminants. The nutrients like nitrogen, phosphorus and organic wastes that it carries promote weed growth and lower oxygen levels in surface water. This harms fishing and recreational use of rivers and lakes.

Wastewater treatment systems are supposed to remove or break down these contaminants before they enter groundwater (the source of the drinking water in your well) or nearby lakes, streams or wetlands. Unfortunately, it's easy to let wastewater be out-of-sight and out-of-mind until problems occur. Knowing a little about your septic system and taking a few simple steps can prevent serious problems. It's a worthwhile investment to keep your system working well. Replacing a failed system can cost thousands of dollars.

Where is your wastewater treated?

Do you have a septic system or other system to treat wastewater?

This fact sheet is mainly for homeowners or renters who have septic systems buried in their yards. Most septic systems are composed of a tank and a drainfield (also known as a soil absorption field, leach field, or tile field). Whatever kind of wastewater treatment system you have, you need to keep it up and use it safely. It may be a holding tank or a septic tank followed by a mound, sand filter, or some other treatment system. The following pages explain how many of these systems work.

Are you hooked up to a city or community sewer system?

Even if you don't have a septic tank, there are still ways you can reduce damage your wastewater can do to your community and the environment. Conserving water and being careful about what you put down the drain are easy ways to help. Using your community sewage treatment system with care saves taxpayers' dollars and protects your water resources.

How most septic systems work

First, wastewater flows through a sewer pipe out of your house and into the septic tank: usually a concrete box or cylinder (figure 4.2). Fiberglass and polyethylene tanks are also used. The watertight tank keeps sewage from leaking out and groundwater from seeping in.

Lighter solids in the wastewater like grease, hair and soap float to the top of the tank and form a scum. Heavier things settle to the bottom and form sludge. Bacteria in the tank break down some of the sludge into simple nutrients, gas and water. The solids that remain have to be pumped out.

A ***baffle*** or a ***sanitary tee pipe*** at the tank inlet slows the incoming water to keep the sludge from getting stirred up. Another one at the tank's outlet keeps solids from leaving the tank. ***Inspection pipes*** at the top of the tank make it possible to look at the inlet and outlet pipes, baffles and tee pipes.

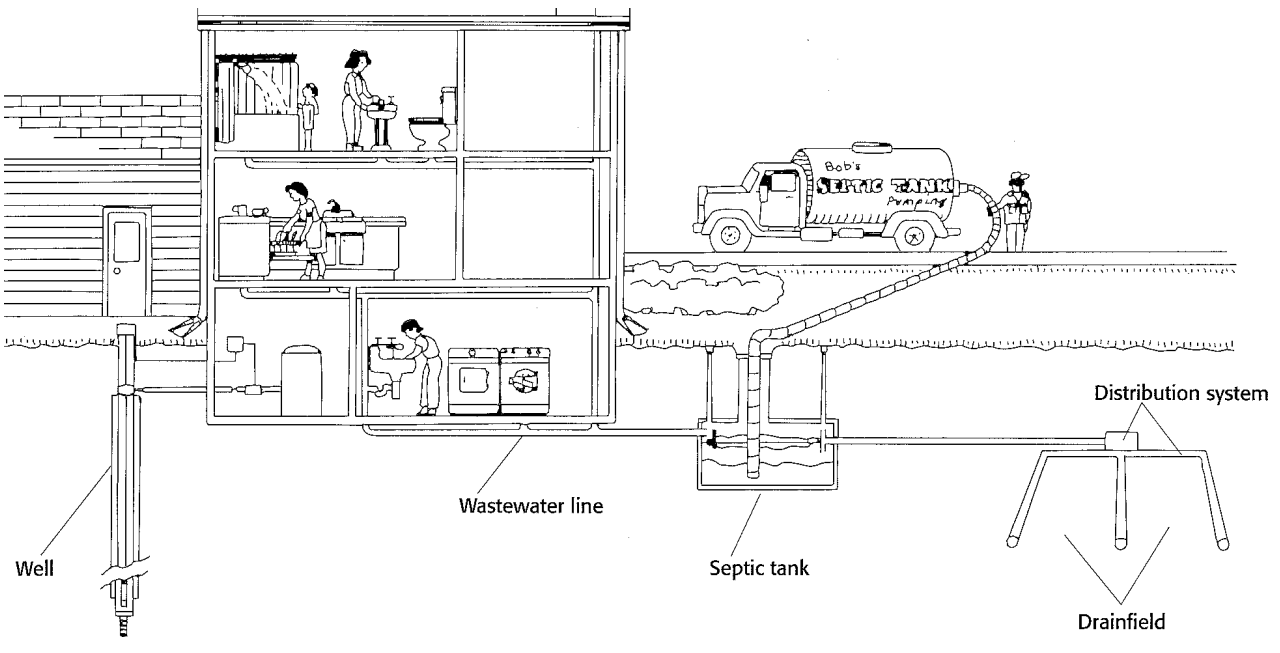


Figure 4.1 Household wastewater carries dirt, soap, food, grease and bodily wastes out of your house to an on-site septic or municipal wastewater treatment system.

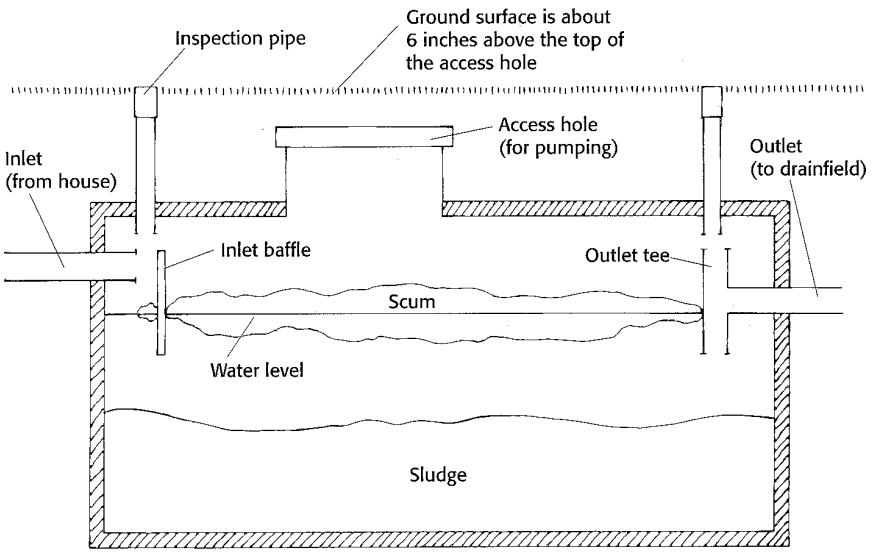


Figure 4.2 The parts of a septic tank

Most septic systems have three parts:

- The **septic tank** separates, stores and begins to treat solid wastes (sludge and scum).
- The **distribution system** disperses the liquid waste over a large area of soil.
- The soil in the **drainfield** or **soil absorption field** absorbs the liquid waste and treats it by natural physical, chemical, and biological processes.

Next, the liquid waste (***effluent***) flows out of the tank through a distribution system and into the drainfield (figure 4.3). The distribution system is a series of perforated plastic pipes or concrete galleys laid in the ground, usually in gravel-filled trenches. Effluent goes into the pipes either by gravity or by a pump. As it moves slowly out of the trench it is absorbed into the soil. An ***effluent filter*** at the tank outlet is helpful, because particles carried out of the septic tank can clog the drainfield.

The soil in your drainfield is very important. It must be of the right type, and deep enough to treat wastewater before it gets into the groundwater. It filters out larger particles and disease carrying ***pathogens***, which eventually die off in the soil. Under the right conditions, "good" ***soil microbes*** and natural chemical processes break down or remove most of the contaminants in the liquid. Hazardous chemicals like solvents and fuels should be kept out of your wastewater treatment system. They can contaminate the sludge in your septic tank, kill the bacteria that breaks down your wastes, and contaminate groundwater.

Some soils absorb and treat wastewater better than others. Well-drained, medium-textured soils like loam are best. Coarse gravel or sandy soils allow wastewater to flow too quickly. Fine clay or compacted soils make it move too slowly. ***Aerobic soil microbes*** need oxygen to break down wastes quickly. If the air spaces between soil particles are filled with water, the lack of oxygen slows down the microbes in breaking down wastes.

Anaerobic soil microbes (those that live without oxygen) digest wastes slowly and give off the putrid, smelly gases that you notice in a failing septic system. When soils are poorly drained, groundwater levels are high, surface runoff saturates the drainfield, or when you use more water, anaerobic microbes thrive.

To safely treat your wastewater, it needs to be well dispersed over the drainfield. In a gravity-fed distribution system, the pipes are often laid out in a fork-shaped pattern, joined by a distribution box (figure 4.3). Leveling devices on the distribution box help the wastewater flow evenly to every trench. Even so, certain trenches or low points in the distribution system often receive more wastewater than others.

A ***dosing*** or ***enhanced-flow*** system uses a pump or siphon to distribute the liquid. It periodically pumps an amount of liquid to wet the entire drainfield area and then lets the soil drain. Letting the soil dry out (***aerate***) from time to time allows aerobic microorganisms to digest the wastes better.

In a ***pressure distribution system***, liquid effluent is pumped directly through small-diameter pipes, not sent through a distribution box. It is evenly distributed throughout the entire drainfield, which provides better treatment and helps the system last longer.

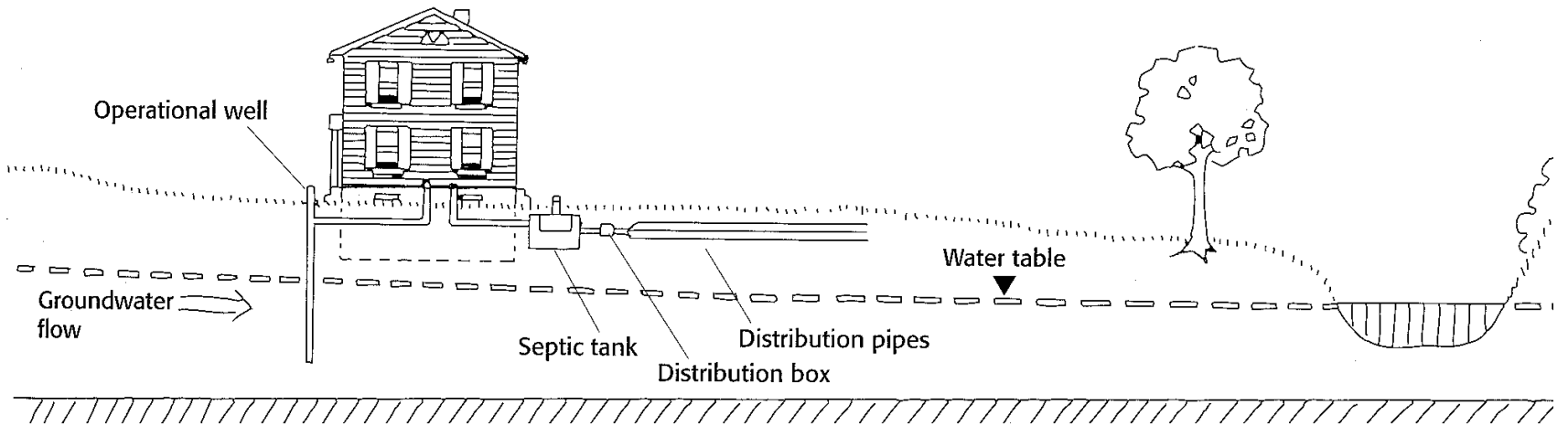


Figure 4.3 A septic system with a septic tank and distribution system.

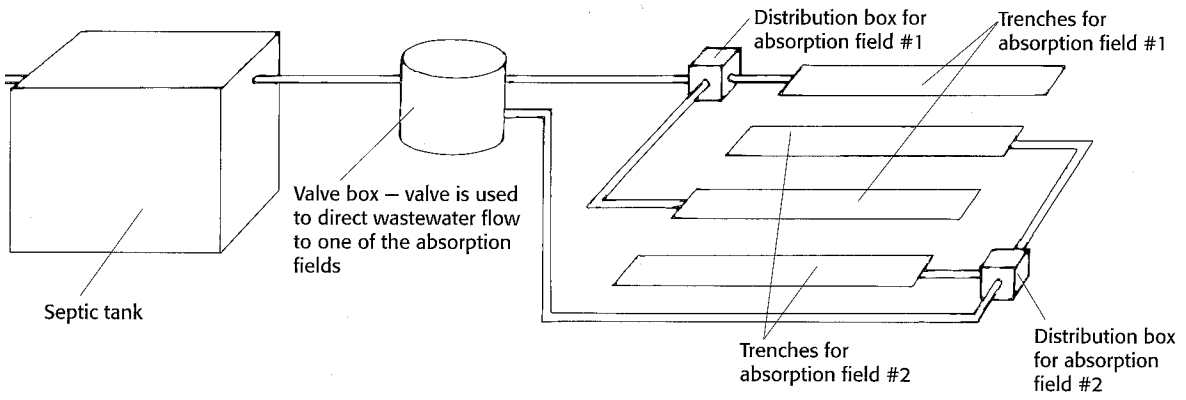


Figure 4.4 Septic system with alternating trenches

Alternating trenches are another way to let the soil aerate (figure 4.4). By adjusting the outlet levels or using a plug or valve in the distribution box, alternating trenches let effluent flow into some of the trenches while other trenches rest for about six months. In a ***serial distribution system***, the trenches are used in order: When the first trench overloads, the wastewater flows into the next trench downslope.

Seepage pits and ***cesspools*** are perforated tanks or pits lined with concrete blocks or bricks that wastewater can seep through, into the ground. They are usually less effective than other systems because they are located closer to the water table than trenches and they don't usually have enough soil surface area to properly treat the wastewater. Another problem with cesspools (without a septic tank for pretreatment) is that sludge can build up in the pit. Cesspools are banned in some states.

Alternative systems

If soil or site conditions aren't right for a conventional drainfield, there are alternatives. A ***mound system*** uses a mound of deeper soil so that the wastewater has more time for treatment before reaching groundwater (figure 4.5). A ***sand filter*** uses layers of sand and gravel to treat wastewater before it is distributed into the soil. Other types of filters use small foam pieces or peat to filter wastewater.

With the right climate and soil conditions, other alternative systems such as *evapotranspiration* systems, *constructed wetlands*, *spray irrigation*, *lagoons*, or *mechanically aerated* systems are approved in some areas. For resources about these, please see "For More Information" at the end of this fact sheet.

Aerobic treatment units operate much like a municipal sewage treatment plant. Wastewater is mixed with air to help bacterial break down of organic wastes and pathogens. In a septic tank's anaerobic (oxygen-deprived) conditions, the breakdown of wastes is relatively slow. Faster working aerobic units are more expensive and require more maintenance than traditional septic tanks, but they provide good treatment for homesites whose soil type, depth, or area won't work for a conventional system. The liquid waste from an aerobic unit can be drained into a soil absorption system or treated with chlorine, ozone or other disinfectant and discharged on the surface if tribal and local regulations permit.

Holding tanks can be used in temporary situations such as when you are awaiting a new system hookup or at a summer home. Unlike a septic tank, a holding tank has no outlet and must be pumped frequently to take the wastewater to a treatment facility.

Toilets don't always have to flush away large amounts of water. Composting toilets use microbes to break down wastes. They work well only if the right temperature, moisture level, oxygen level, and nutrient mixture is maintained. Other waterless toilets include incinerating toilets, recirculating oil-flush toilets, and chemical disinfecting toilets.

Water carrying human body waste from toilets is called ***blackwater***. Wastewater from sinks, tubs and washing machines is called ***greywater***. Greywater can be treated in a household wastewater system sized to handle about half the volume of a standard wastewater system.

There is controversy over the safe use and disposal of greywater. Health regulations differ on *if* and *how* greywater can be used. Many states prohibit surface disposal of greywater but permit its use in *subsurface* irrigation systems for watering plants. However, *caution is advised*, because greywater may contain infectious bacteria and viruses (for example, from soiled diapers or clothing worn by someone with an infectious disease) as well as detergents, bleaches and salts that can harm plants and soils. ***Direct contact with greywater must be prevented.***

In areas with limited water resources and during dry periods, you have to use less water. Do everything you can to conserve water, and reuse ***clear water*** as much as possible where its use is not restricted (for example, using shower warm-up water to flush toilets).

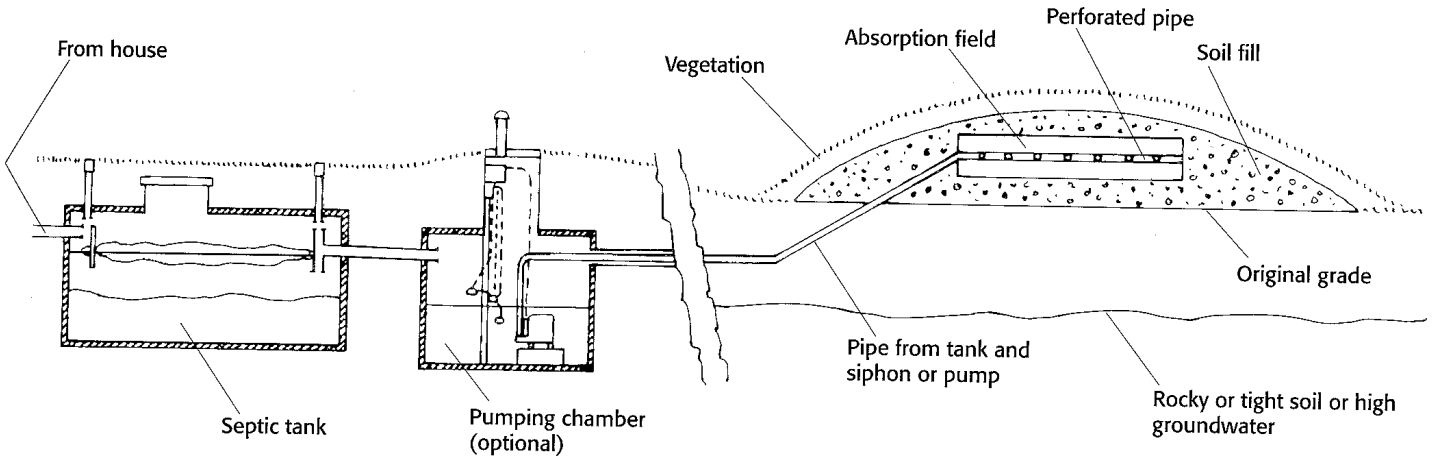


Figure 4.5 Alternative mound septic system.

PART 1 • Septic System Design and Location

Base Tank Size on Peak Use

Your septic tank and drainfield should be big enough to treat all the wastewater from your house, even at times of peak use. The system must be designed for the maximum occupancy of your home.

The amount of wastewater flowing out of a house is about 100 to 200 gallons per bedroom per day, times the number of bedrooms in the home. Each state has its own rules for calculating wastewater flow and sizing treatment systems. Installing low-flow toilets and water-saving faucets will reduce the size of the system needed.

How much wastewater can your system handle?

The septic tank should be large enough to hold two days' worth of wastewater. (Two days is long enough to allow solids to settle out.) Typically, a new three-bedroom home is equipped with a 1,000 gallon tank. A two-compartment tank or a second tank in series can improve sludge and scum removal and help prevent drainfield clogging.

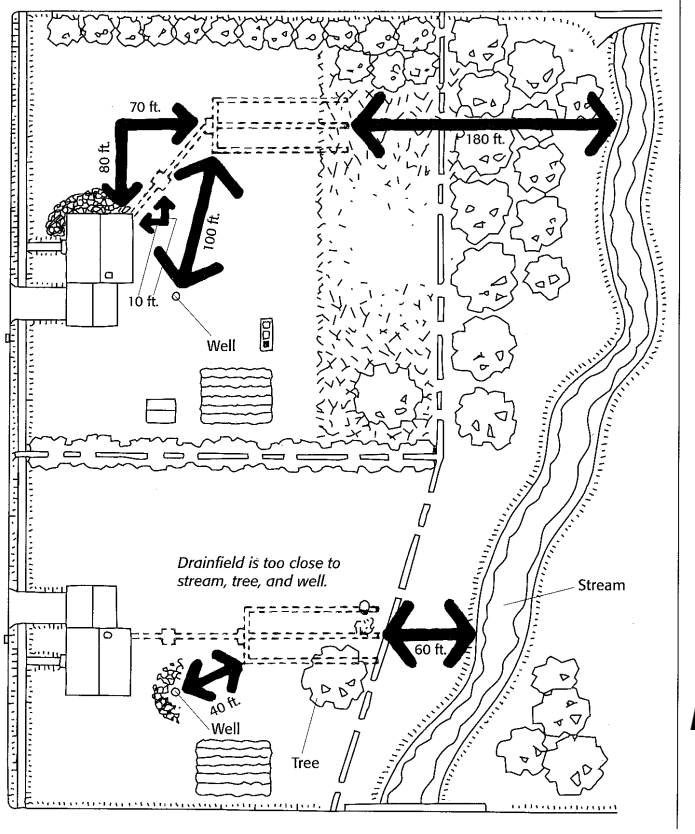
The length of drainfield trenches is based on how much wastewater will be put in the system and how much water a unit area of soil can treat. The better the soil type or longer the trenches, the higher the system's capacity for wastewater treatment. Your home contractor, septic system installer, local health department, or environmental agency may have information on file about your septic system age, design, and location.

If you use more water in your home than your system is designed to hold, your wastewater may not be properly treated or your system may fail. Conserving water and more frequent pumping may extend the life of the system. If you add a bathroom, bedroom, or more water-using appliances (like a water softener) you may need to expand your wastewater treatment system. When people use vacation cottages as permanent dwellings the existing system may not be big enough. Additional occupants, especially teenagers, living in a house may overload the system's capacity.

How close is too close?

To prevent contamination of your drinking water and the environment, the drainfield must be at least 100 feet from any wetland, shoreline, stream bed, or well (see figure 4.6). Tribal and local regulations on separation distances may vary. The more the distance, the less your risk of contaminating the water supply. Your well is better protected if your system is downhill from it. (If you don't know where your system is located, see Part 2 of this fact sheet.)

Test your well water for nitrates and bacteria more often if your system is closer to your well than recommended. For information on certified laboratory testing, contact your Tribal Health Department or local Extension office, or look under "laboratories" or "water" in the yellow pages. Fact sheet 3 tells more about well protection.



4.6 Homesite map showing location of septic system.

Is your septic tank capacity adequate?

Water use in the United States ranges from 50 to 100 gallons per day (gpd) per person. Estimate the wastewater load from your household using the equation below. Your septic tank should be able to hold two days' worth of wastewater.

____ (people in household) x 75 gpd (average) =
____ x 2 (days) = ____ gal. capacity needed.

What is your septic tank capacity? ____ gallons
(If you don't know, ask your tank installer or pumper.)

Is your tank size adequate for your present household size? Yes No

Calculate the wastewater load from your home if each bedroom were occupied by two people:

___ bedrooms x 150 gpd = ____ gpd x 2 days =

____ gallons capacity needed.

This is the recommended tank size for your home if each bedroom were occupied by two people.

Would your septic tank capacity be adequate if each bedroom were occupied by two people? Yes No

How old is your system?

Septic systems should last 15 to 40 years or longer, depending on how well they were designed and maintained. If your tank is steel, it will rust and need replacement. The older your system, the more likely it doesn't meet the latest standards. Even newer systems can fail if they are in poor soil, undersized, or not properly installed or maintained. Signs of failure are listed in Part 2 of this fact sheet.

Effluent filters and gas baffles

Solids that do not settle out in the tank can be carried out of the tank with liquid, clog the drainfield, and lead to early system failure. ***Effluent filters*** on the outlet capture small particles and prevent them from clogging the drainfield; it is important to periodically clean the filter. Gas bubbles are produced by anaerobic bacteria slowly digesting wastes in the tank. A ***gas baffle*** deflects the bubbles and the disturbed sludge away from the outlet.

Safety devices for your system

To prevent hazardous sewage overflows, tanks and chambers should have extra storage capacity beyond everyday use. To be safe, an alarm should be installed on holding tanks or pumping chambers to warn you if the tank is nearly full. If your system depends on a pump (and not gravity), you may need to have a backup power supply available in addition to enough storage capacity in the tank.

In flood hazard areas, you should have backflow valves installed on the main distribution line to prevent wastewater from flooding back into the tank and your home.

Do Table 1 - Septic system design and location

Use the table below to begin rating your risks related to septic system design and location. For each question, mark the risk level in the right-hand column that you think fits your situation best.

Responding to risks

Try to lower your risks. Transfer any medium- and high-risk practices from table 1 to the action checklist on the back page and make plans to reduce your risks.

Table 1 - Septic system design and location

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Capacity of system	Tank is designed to handle more wastewater than required, based on the size of the home.	Tank capacity just meets load requirements, but factors indicating system overload are watched closely. Water conservation measures are taken.	Bathrooms, bedrooms, or water-using appliances are added without reexamining the capacity of the wastewater system	❒ Low ❒ Medium ❒ High
Separation distance	Drainfield is at least 100 feet from any well or surface water.	Drainfield is between 50 and 100 feet from a well or surface water.	Drainfield is less than 50 feet from a well or surface water.	❒ Low ❒ Medium ❒ High
Age of system or holding tank **Year Installed:**	System is five years old or less. _____	System is between six and twenty years old. _____	System is more than twenty years old. _____	❒ Low ❒ Medium ❒ High
Effluent filter	An effluent filter is installed and cleaned regularly.	An effluent filter is installed but not cleaned often enough.	There is no effluent filter installed on the septic tank outlet.	❒ Low ❒ Medium ❒ High
Safety devices	An alarm on the pumping chamber or holding tank alerts if the tank is full or power has been cut off to the pump.		There is no alarm to indicate tank overflow or that power has been cut off to the pump.	❒ Low ❒ High
Backflow protection	A backflow valve is installed to prevent backup during floods.	No backflow valve is installed to prevent backup during floods.	Grass clippings, leaves and other yard wastes are left on driveways, streets and other paved areas to be carried off by stormwater. Yard waste is burned on-site.	❒ Low ❒ Medium ❒ High

PART 2 • Septic System Care

Do you know exactly where your system is located?

To take proper care of your septic system, you have to know where it is. It's not easy to tell exactly where each part of the system is, because they are below ground. If the location of your system is not in your home records, then your home's previous owner, the county health department, or a pumper's records may have the answer.

You may be able to locate your septic tank yourself. In the basement, look for the sewer pipe leaving the house and note what direction it goes through the wall. Then go outside and probe the ground with a thin metal rod or dig into the ground 10 to 20 feet away from the house in the area where you noted the location of the sewer line. The septic tank is usually within 2 feet of the ground surface. The distribution box and drainfield are usually located downslope from the septic tank. Sometimes the wastewater is pumped to a drainfield uphill from the septic tank.

Once you've found the septic tank, sketch a simple map of your house and yard. Note the distances from the septic tank opening to at least two permanent points such as the corner of the house foundation or a specific point on the property line (see figure 4.6). As long as the distances are correct, the map doesn't have to be drawn to scale. If you know it, show the location of the drainfield. Keep the map on file along with other maintenance records and pass it on to subsequent owners of the house.

Pumping and inspection records

Keeping records of each time your septic system is pumped, inspected or repaired will help you make cost-effective maintenance decisions (see the example below). This information will also be valuable if you sell or transfer your property.

Pumping your septic tank

Regular pumping is the most important thing you can do to maintain your septic system. As more solids build up in the tank, particles are more likely to flow into the drainfield. The cost of pumping a septic tank ($100 to $250) is far less than the expense of replacing a drainfield clogged by escaping solids ($2,000 to $8,000 depending on location, site conditions and the size of the home).

KEEP A MAINTENANCE RECORD Keeping good records each time your septic system is pumped, inspected or repaired will help you make cost-effective maintenance decisions.

Date	Work done	Work performed by
May 20	Installed septic system	Installer's name, phone number

The best way to determine when to pump your tank is to have it inspected once a year. The tank needs to be pumped if (see figure 4.7):

- the sum of the solid layers (sludge plus scum) takes up more than half of the tank, or
- the top of the sludge layer is less than a foot below the outlet baffle or tee, or
- the bottom of the scum layer is within three inches of the bottom of the outlet baffle (or top of the outlet tee).

Pumping, based on the results of yearly inspections, is a way to lower your maintenance costs and maximize the system's longevity. Inspections can also alert you to problems with system parts before they cause a backup or drainfield failure.

A rule of thumb is to have a septic tank pumped by a licensed pumper every 3 to 5 years. But it depends on the size of your tank, the amount of wastewater generated in your household, the amount of solids carried in the wastewater and the age of your system.

You can get an idea of how often your tank needs to be pumped using the table at right: Find your tank size (in gallons) along the left side of the table. Go across the row for your tank size and down the column for the number of people in your home. Where the row and column intersect, you'll find the estimated number of years between pumpings.

After pumping, the tank should also be inspected by a professional for cracks and the condition of the baffles. Leaks should be repaired right away. **NEVER crawl inside or lean into a septic tank without proper ventilation and safety procedures—the gases inside the tank can be deadly!**

The distribution box should be periodically checked to be sure that the distribution pipes are properly leveled. If solids are building up in the distribution box, there may be damaged baffles, you may not be pumping often enough, or the tank may be too small. If the system has a pump, it should be checked, along with the float switch, the alarm, and the air vents to the dosing tank.

A holding tank must be pumped often because it has no outlet. Depending on the amount of wastewater and the tank capacity, you may need to pump it every month or every week. If you assume that every person in the house uses 25 to 75 gallons of water a day, four people can fill a 1,500-gallon tank in 5 to 15 days. Overflows are a sure sign that you need to pump more often.

ESTIMATED NUMBER OF YEARS BETWEEN SEPTIC TANK PUMPINGS

	Number of people in your household					
Tank size	**1**	**2**	**3**	**4**	**5**	**6**
500	5.8	2.6	1.5	1.0	0.7	0.4
1,000	12.4	5.9	3.7	2.6	2.0	1.5
1,500	18.9	9.1	5.9	4.2	3.3	2.6
2,000	25.4	12.4	8.0	5.9	4.5	3.7

Note: More frequent pumping is needed if a garbage disposal is used. Source: Karen Mancl, "Septic Tank Maintenance," Publication AEX-740, Ohio Cooperative Extension Service, 1988.

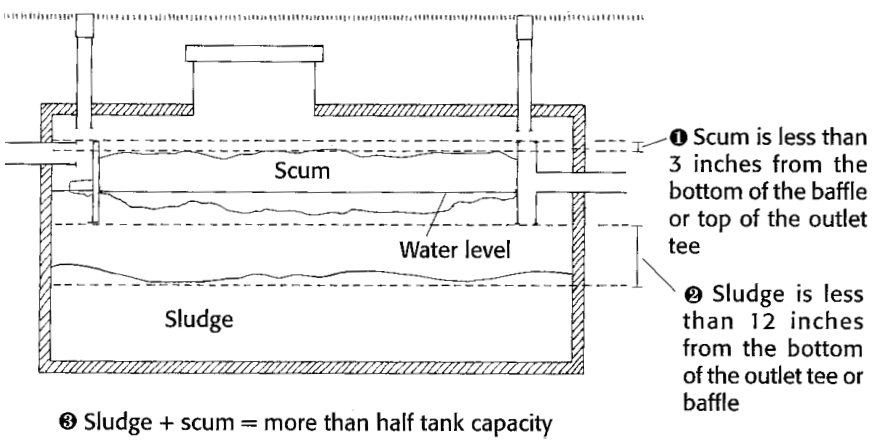


Figure 4.7 Three conditions under which a septic needs to be pumped.

Protecting your drainfield

A septic system depends on good soil conditions for treatment and disposal of effluent. Water must be able to percolate through the soil at a reasonable rate. Some tips for drainfield care are:

- Don't drive vehicles on the drainfield. This can compact soil and damage pipes.
- Don't pave, build, pile logs or other heavy objects, or put a temporary, portable swimming pool over the drainfield. These activities compact the soil, and soil microbes need oxygen to digest wastes.
- Keep roof runoff, footer drains, sump pumps, and other surface runoff away from the drainfield. Water saturated soil is less effective at treating wastewater.
- Don't plant trees and shrubs whose deep roots can damage pipes. Grass is the best drainfield cover.
- Install an effluent filter or screen on the septic tank outlet to prevent solids from entering the drainfield.

Signs of trouble

- Foul odors in your home or yard tell you that your system is not working well.
- Slow or backed-up drains may be caused by a clog in the house pipes, septic tank, drainfield, or roof vent for your household plumbing.
- Wet, spongy ground or lush plant growth may appear near a leaky septic tank or failing drainfield.

- Repeated diarrhea or stomach flu symptoms in your family may be a sign of well water contamination from poorly treated wastewater. Have your drinking water tested annually for coliform bacteria and nitrates.
- Algae and excessive weed growth in nearby ponds or lakes can be caused by phosphorus leaching from septic systems.

Respond quickly to any problems you see. You may need to expand or change your system to avoid further problems. There are many good publications and other resources to help you. Call local contractors or visit your Tribal Health Department or an Extension office to get recommendations.

Try to base your decision on what is best for the environment and your health. Remember, what may seem to be the least expensive option may not be economical in the long run.

Do Table 2—Septic System Care

Use the table below to rate risks related to your septic system maintenance. For each question, mark the risk level in the right-hand column that your situation best.

Responding to risks

Try lower your risks. Transfer any medium- and high-risk practices to the action checklist at the back of this fact sheet. Then make plans to reduce your risks.

Table 2—Septic System Care

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Maps and records	I keep a map and good records of repairs and maintenance.	The location of my tank and date of last pumping are known but not recorded.	The location of my system is unknown. I do not keep a record of pumping and repairs.	❒ Low ❒ Medium ❒ High
Tank pumping (including holding tanks)	The septic tank is pumped on a regular basis as determined by an annual inspection, or about every three to five years. The holding tank is pumped as needed.	The septic tank is pumped, but not regularly.	The septic tank is not pumped. The holding tank overflows or leaks between pumpings.	❒ Low ❒ Medium ❒ High
Condition of tank and baffles	The tank and baffles are inspected for cracks; repairs are made promptly.		The condition of the tank and baffles is unknown.	❒ Low ❒ High
Drainfield protection	Vehicles and other heavy objects or activities are kept from the drainfield area.	Occasionally, the drainfield is compacted by heavy objects or activities.	Vehicles, livestock, heavy objects, or other disturbances are permitted in the drainfield area.	❒ Low ❒ Medium ❒ High
Diverting surface water diverted	All surface runoff is away from the drainfield	Some surface water flows into the drainfield. area.	Runoff from land,rooftops, driveways, etc. flows into the drainfield.	❒ Low ❒ Medium ❒ High
Plantings over the drainfield	Grass or other shallow- rooted plantings are over the drainfield.		Trees and shrubs are growing on or near the drainfield.	❒ Low ❒ High
Signs of trouble	Household drains flow freely. There are no sewage odors inside or outside. Soil over the drainfield is firm and dry. Well water tests negative for coliform bacteria.	Household drains run slowly. Soil over the drainfield is sometimes wet.	Household drains back up. Sewage odors can be noticed in the house or yard. Soil is wet or spongy in the drainfield area. Well water tests positive for coliform bacteria.	❒ Low ❒ Medium ❒ High

PART 3 • What Goes into Your Septic or Sewage System?

Solid wastes

Don't use your wastewater treatment system as a substitute for the trash can or a compost pile. Throw away tissues, diapers, baby wipes, sanitary napkins, tampons, condoms, cigarette butts and other solid waste with regular garbage—*not* down the toilet! These materials don't break down easily, They can clog your system and will make your tank fill up faster. Even if you are on a city sewage system, these kind of items rapidly fill up the tanks in the treatment plant.

Don't use a garbage disposal in the kitchen sink. It adds to the load on the system. Excess grease, fats, and coffee grounds can also clog your system.

Consider composting food waste (and even some paper wastes) as an alternative. Your local Cooperative Extension office can provide you with information about composting.

Household chemicals

Don't put paints, solvents, acids, drain cleaners, oils, and pesticides down any drain or toilet. These household chemicals can pass untreated through your system and contaminate the groundwater. Though generally safe when diluted, full-strength or large amounts of water-soluble cleaners or bleach can cause problems in your septic by harming the microbes that break down wastes. Fact sheet 5, "Hazardous Household Products," tells how to dispose of hazardous chemicals.

Don't bother with chemical products advertised to "sweeten" or improve your septic system. They can't replace routine pumping and may even be harmful. It isn't necessary to add yeasts, bacteria, or enzymes to your system. There are already plenty of the right microbes there. Beware of products with solvents to unclog your system. They can kill the microbes needed to digest wastes in your septic tank and drainfield, and they may contaminate your drinking water supply.

Saving water helps your septic system

Average household water use is shown in the chart at right (figure 4.8). Putting less wastewater through the septic tank allows more time for solids to settle out and less chance that solid particles will be carried over to the drainfield. Less water in the drainfield means better aeration for the soil microbes at work in the system. There are many steps you can take to reduce how much water you use. Here are a few:

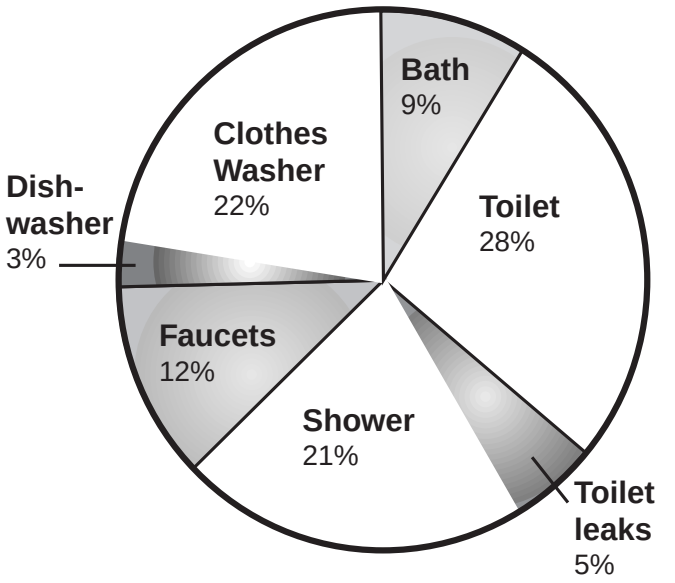


Figure 4.8 Average household water usage. Source: John Woodwell, "Water Efficiency in Your Home," 1995, Rocky Mountain Institute.

Water-saving Tips:

- Install low-flow toilets. They reduce water used by as much as half. Water-saving shower heads and faucets also help. (Low-flow fixtures are *required* in some localities.)
- Take shorter showers.
- Repair leaky faucets and toilets immediately.
- Don't run water longer than necessary; for example, turn the water off while brushing your teeth or shaving.
- Wait until you have a full load before running the dishwasher or washing machine. Scrape, but don't pre-rinse dishes before loading them into the dishwasher.
- Adjust water softener settings to reduce the amount of water needed for backwashing and regeneration.
- Spread out laundry and other major water-using chores over the week or day.

Do Table 3 - What goes into your septic system?

Use the table below to rate risks relating to your septic system use. For each question, mark the risk level in the right-hand column that fits your situation best.

Responding to risks

Try to lower your risks. Record your medium- and high-risk practices in the action checklist on the back page of this fact sheet. Then make plans to reduce your risks.

TAKE ACTION

Household wastewater systems are easy to ignore: out of sight, out of mind. But your system affects the health of your family, your neighborhood and the environment, so what you do or don't do makes a big difference.

Go back over all of the tables to make sure that you copied high and medium risks to the action checklist. In the action checklist, write the improvements you plan to make for each risk. Use this fact sheet and other resources to decide what actions you are likely to complete. Set a target date to keep you on schedule. You don't have to do everything at once, but try to eliminate the most serious risks as soon as you can. It helps to tackle the least expensive projects first.

Table 3 - What goes into your septic system?

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Solid wastes	There is no garbage disposal in the kitchen. No grease or coffee grounds are put down the drain. Only toilet tissue is put in the toilet.	There is moderate use of a garbage disposal and some solids are disposed of down the drain.	There is heavy use of a garbage disposal and many solids are disposed of down the drain. Many paper products or plastics are flushed down the toilet.	❒ Low ❒ Medium ❒ High
Cleaners, solvents, and other chemicals (also applies to holding tanks)	There is careful use of household chemicals (paints, cleaning products). No solvents, fuels, or other hazardous chemicals are poured down the drain.	There is occasional disposal of hazardous household chemicals in the wastewater system.	There is heavy use of strong cleaning products that end up in wastewater. Hazardous chemicals are disposed of in the wastewater system.	❒ Low ❒ Medium ❒ High
Water conservation	Only water-conserving fixtures and practices are used. Drips and leaks are fixed immediately.	Some water-conserving steps are taken (such as using low-flow shower heads or fully loading washing machines and dishwashers).	Standard high-volume bathroom fixtures are used (toilets, showers). No effort is made to conserve water. Leaks are not repaired.	❒ Low ❒ Medium ❒ High
Water usage	Laundry and other major water uses are spread out over the week.		Several water-using appliances and fixtures are in use in a short period of time.	❒ Low ❒ High

ACTION CHECKLIST: Household Wastewater

Write all high and medium risks below.	What can you do to reduce the risk?	Set a target date for action.
Sample: Low area over drainfield is always wet.	Have drainfield inspected for blockages, and clean as needed. Divert runoff water	One week from today: May 2

For More Information

No matter where you live, people who work in agencies such as Cooperative Extension, health departments, and environmental resource departments can help. Pumpers, contractors, and laboratories are other sources of information. The National Small Flows Clearinghouse (NSFC) has publications on septic system design and maintenance, and on alternative systems. To request their catalog, contact them at NSFC, West Virginia University, P.O. Box 6064, Morgantown, WV 26506-6064, or call (800) 624-8301. Some of the publications available from NSFC are:

- *Your Septic System: A Reference Guide for Homeowners*, WWBRPE17. This brochure describes a conventional septic system and how it should be cared for to achieve optimal results.
- *The Care and Feeding of Your Septic Tank System*, WWBRPE18. This brochure describes septic tanks and drainfields and provides guidelines to prolong their usefulness.
- *So...Now You Own a Septic Tan*k, WWBRPE20. This document describes how a septic tank system works and how to keep it functioning properly.
- *Preventing Pollution Through Efficient Water Use*, WWBRPE26. This brochure describes efficient water use and its role in preventing pollution.
- *Homeowner's Septic Tank System Guide and Record Keeping Folder*, WWBLPE30. The National Onsite Wastewater Recycling Association developed this folder to provide septic system owners with simple operation and maintenance guidelines to ensure their system will work properly.

Water testing

Contact your Tribal Health Department, Cooperative Extension staff, or private testing laboratories.

Groundwater and geology

Contact the office of your state or U.S. Geological Survey, or your local soil and water conservation district.

Drinking water quality standards

Call the U.S. Environmental Protection Agency's Safe Drinking Water Hotline toll-free at (800) 426-4791. The hotline is open from 8:30 A.M. to 5:00 P.M., eastern standard time, Monday through Friday. Or contact the agency that sets water quality standards in your state (often the department of health)

Water Conservation

Many local water utilities have booklets of water conservation tips available. Publications are also available from the American Water Works Association; call (303) 794-7711 for more information. The U.S. Environmental Protection Agency has publications as well, such as document number EPA/841/B-95/002, *Cleaner Water Through Conservation;* to order contact the National Center for Environmental Publications and Information, P.O. Box 42419, Cincinnati, OH 45242-2419; fax (513) 489-8695.

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To obtain additional fact sheets in the *Connected to the Earth* series, contact your local Extension office or call Montana State University's Extension housing program at (406) 994-3451.