

# *How to Care For Your Domestic Septic Tank System*

*...With Tips on Conserving Water*



*This booklet contains information on care and maintenance for a system that uses a septic tank for primary wastewater treatment. Many on-site wastewater treatment systems use other methods of treatment, such as aerobic treatment units (ATUs). If your system uses an ATU, please contact the LCRA OSSF office to obtain a copy of our ATU care booklet.*

## Domestic Septic Tank Systems

Years ago, a common method of rural wastewater disposal was to discharge into a large pit in the ground called a cesspool, which was usually covered by concrete or tin. The method is now illegal and has been replaced by more environmentally-friendly systems. Abandoned cesspools should be filled with soil free of large rocks or construction debris.

The septic tank system is one of the most common methods of wastewater disposal today. Septic tank systems meeting current construction standards cost thousands of dollars. It is important to keep several things in mind in order to protect your investment and your health.

1. *Be careful about what goes into the system.*
2. *Maintain the system properly to extend its life*
3. *Conserve water to prevent system overload.*
4. *Have the system properly installed to avoid creating health hazards and to comply with state laws.*

Persons whose households are served by water wells and septic tank systems benefit from water conservation measures in two important ways:

1. *Conserving water reduces the total demand on the aquifer.*
2. *Conserving water extends the life of your disposal area.*

### ***How does it work?***

Wastewaters entering the system can include human and kitchen wastes as well as laundry and bath water. These wastewaters are collected in a watertight tank, which can vary in capacity, depending on the number of people it is designed to serve. A tank with two compartments or two tanks used in a series, are required under current regulations.

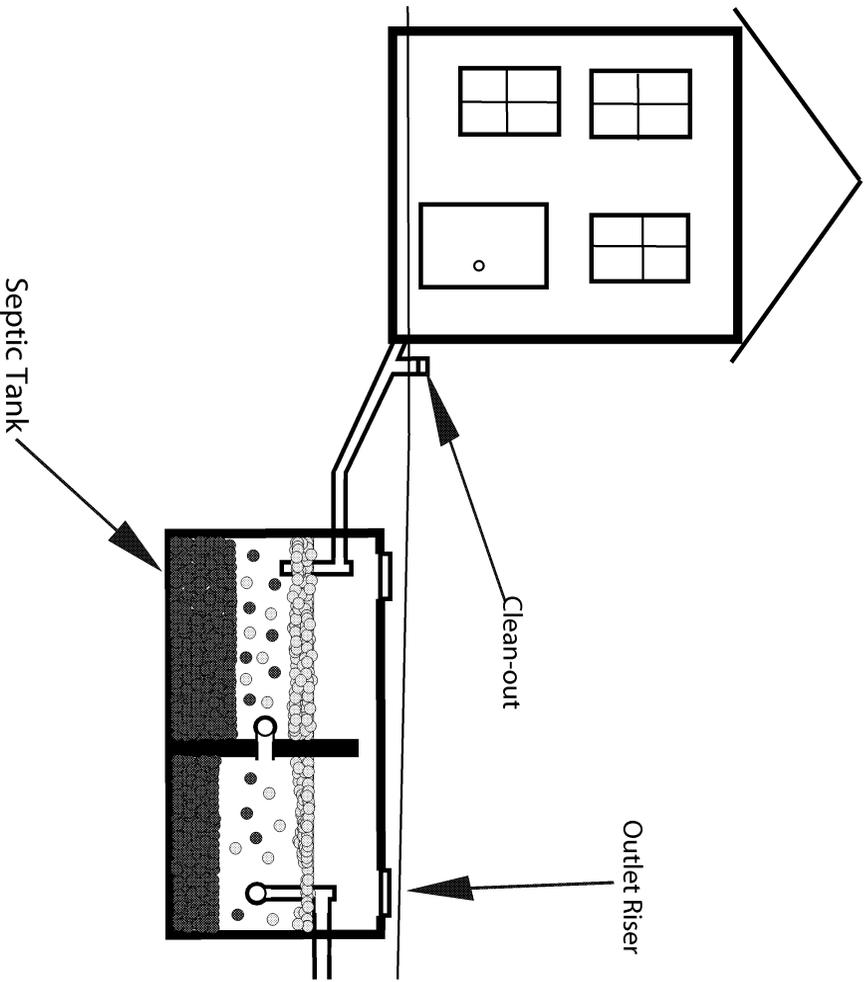
Heavier solid material entering the tank will sink to the bottom. This is called sludge. The materials that remain near the top of the tank are called scum. Scum is composed of paper, hair, fats, greases, vegetable molds and gases formed during the process of sludge digestion. Naturally occurring bacteria act to digest the solids.

The tank liquid level will fill to the outlet, which is on the opposite side of the tank from the inlet. As a given volume of wastewater enters the tank, an equal

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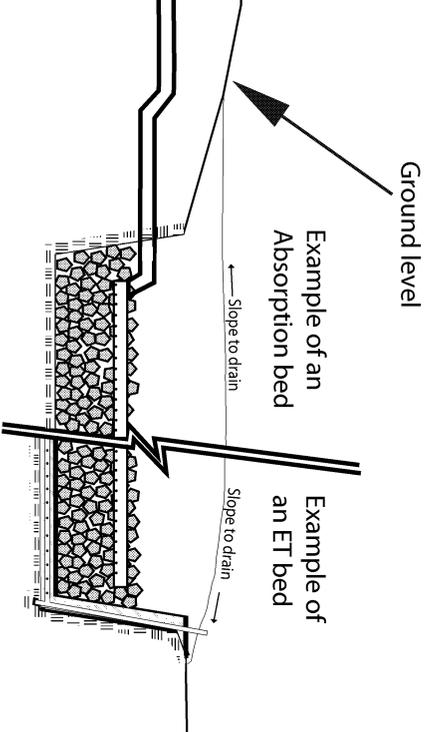
volume exits through the outlet. This liquid, known as effluent, is then routed into either a soil absorption drainfield or evapotranspiration (ET) fields.

Soil absorption drainfields primarily use absorption for effluent disposal. Some disposal is accomplished by evaporation and plant uptake, also known as transpiration. Evapotranspiration fields, on the other hand, are lined completely along the walls and bottom with watertight barriers and use only evaporation and transpiration for disposal.



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**Fig.1 Cross Section of  
House, Septic Tank and  
Drainfield**



## *Proper Care of Your Septic Tank System*

### General Precautions

A septic tank system should not be treated as if it were a city sewer, where large amounts of water are allowed to go down the drain.

Water conservation helps prevent overloading in the drain field. Overloading could shorten the septic system's life and require expensive repairs. Leaky faucets and running commodes should be repaired. Toilet tanks can be checked for leaks by adding several drops of food coloring to the tank water. If there is a leak, color will appear in the bowl without flushing.

Garbage disposals should be used sparingly or not at all to avoid rapid buildup of sludge or scum. This buildup may cause clogging of the soil, which hampers absorption and creates a greater biological waste load that can threaten groundwater and surface waters.

Toilet paper substitutes should not be flushed into a septic tank. Paper towels, newspaper, wrapping paper and rags do not decompose in the tank and are likely to lead to clogging of the plumbing and disposal system. Other items that should not be put into the septic tank include: disposable diapers, sanitary napkins, tampons, grease, coffee grounds and cigarette butts.

Keep a diagram or map showing the location of the septic tank and disposal system in a convenient location. An accompanying chart should contain brief instructions as to the inspection and maintenance required. Also, keep a receipt from the last septic tank cleaning as a convenient record.

### Pumping Out Septic Tanks

Septic tanks should be pumped before too great a volume of sewage solids accumulate. If either the deposited sludge or floating scum layer approaches too closely to the bottom of the outlet device, particles will be scoured into the drainfield. If this condition is allowed to continue, the solids will eventually clog the absorption system and cause it to malfunction. Construction of a new absorption system is usually required in such a case. Pumping is the recommended way to clean a septic tank efficiently.

### Chemicals

Chemicals should not be used for cleaning septic tanks. Some products that

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claim to “clean” septic tanks contain sodium hydroxide or potassium hydroxide as the active agent, which act as caustic lye, or drain cleaner. Such compounds may result in sludge bulking and a large increase in alkalinity. This may interfere with the natural digestion occurring in the tank. The resulting effluent may severely damage soil structure and cause accelerated clogging, even though there may be some immediate, temporary relief.

Some 1,200 products, many containing enzymes, can be purchased for use in septic tanks. In controlled tests, none have been proven beneficial. Frequently, the harmful effects of ordinary household chemicals are overemphasized. Small amounts of chlorine bleaches, soaps, detergents and drain cleaners as normally used in the household will have no appreciable adverse effect on the system.

## *How to Determine Whether the Tank Needs Pumping*

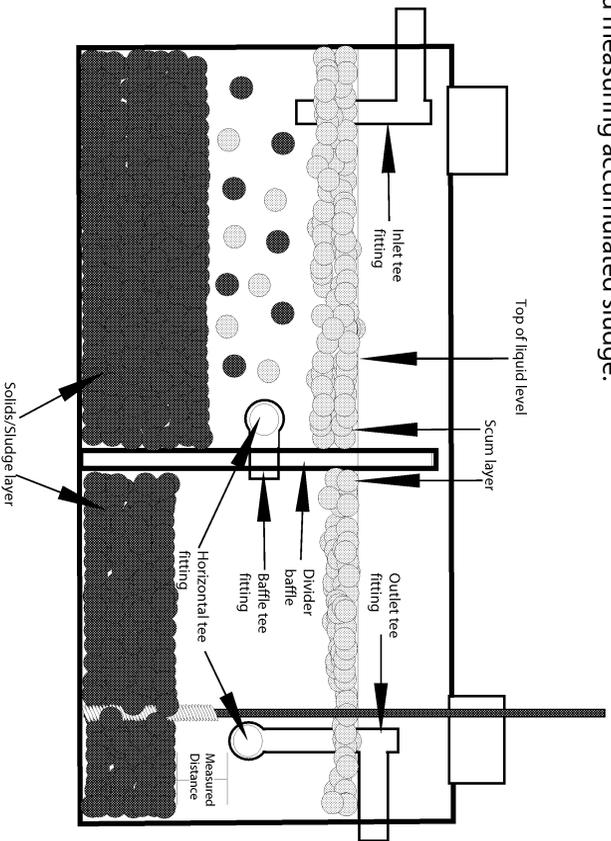
Tanks should be inspected by the owner at least once a year and cleaned when necessary. This is normally about every three to five years. The depth of sludge and the liquid depth of the tank may be measured with a six foot pole similar to a broom handle. Wrap one end with an old white towel and lower it to the bottom of the tank. The stick should be lowered beside the outlet tee, if one exists. The stick should never be lowered through the outlet tee because of commercial filters or horizontal tees at the bottom of the outlet downspout which may be in the way or damaged by the probe stick. After several minutes, remove the stick. The sludge line can be distinguished by black particles clinging to the towel. (See Figure 2)

*Important Note: to simplify maintenance and cleaning, the extension of the manholes or inspection holes of the septic tank should be at or within six inches of the ground surface. The procedures described in Figure 3 are based on the premise that the outlet “T” downspout extends into the tank to a point that is 25 to 50 percent of the total depth of the tank as recommended by the Texas Commission on Environmental Quality.*

The following method of determining whether your septic tank requires cleaning uses the example of a 1,000 gallon capacity tank with a four foot liquid depth. The first measure is the length of the downspout below the water level. This measure equals 19 inches in our example. (See Figure 3) The second measure is the total liquid depth of the 1,000 gallon tank, which is 48 inches. The third measure is that of the solids build up as indicated on the Terry cloth of the probe stick. In order to measure the downspout length, you may use a wooden yardstick or a

dowel rod with a nail hammered perpendicular to the end. Lower the stick until the nail catches the bottom of the outlet device. Pull up the yardstick or dowel rod and record this measurement.

Fig. 2. Profile of a two-compartment septic tank and measuring accumulated sludge.



### Allowable Sludge Accumulation Chart

Tank Capacity, Gallons	Tank Depth 2.5 ft.	Measured from Outlet 3 ft.	4 ft.	5 ft.	Inches of clearance between bottom of outlet device and top of sludge layer.
750	5 in.	6 in.	10 in.	13 in.	4
1000	4	4	6	8	between bottom of outlet device and top of sludge layer.
1250	—	4	4	6	4
1500	—	—	4	4	4

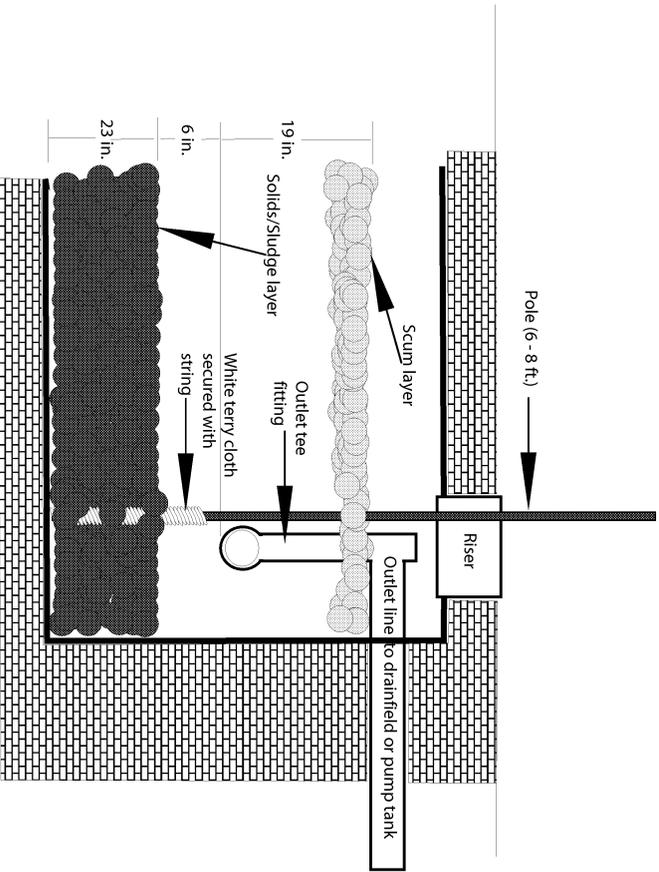
Note: Tanks smaller than listed will require more frequent cleaning.

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You are now ready to determine whether your tank requires cleaning by following these simple calculations:

**Step 1:** Add the downspout length of 19 inches to the height of the solids buildup, which in our example is 23 inches. The sum equals 42 inches.

**Figure 3.** Detailed view of levels to be measured.



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- Step 2:** Subtract the sum of 42 inches from the total liquid depth, which equals 48 inches. The measurement determined equals six inches. (See Figure 3)
- Step 3:** Consult the Allowable Sludge Accumulation Chart (pg. 8) and determine the minimum distance between the top of the sludge and bottom of the outlet device according to the dimensions of your tank. In our example, the 1,000 gallon tank with the four foot depth would require pumping out because the six inch distance between the solids level and the outlet device is the minimum allowed on the chart.

Most septic tanks can be inspected by the homeowner but must be cleaned by a professional. Since January 1, 1985, professional tank cleaners/pumpers must be licensed. Before hiring a tank cleaner/pumper company, require the representative to show his or her license, which is issued by the Texas Commission on Environmental Quality. A licensed firm will leave a small residual of sludge in the tank to start the new sewage treatment process. The pumped material will contain disease causing organisms and must be disposed of properly by the tank cleaner. Sewage may contain organisms that can cause illnesses such as dysentery, typhoid, paratyphoid and infectious hepatitis. Ponded sewage may serve as a breeding place for mosquitoes and some other insects. Be sure that the tank cleaner does not spill any sewage sludge on the property. If there is an accidental spill, require the company to clean it up and disinfect the spill area.

### Evapotranspiration and

#### Absorption Drainfield Care

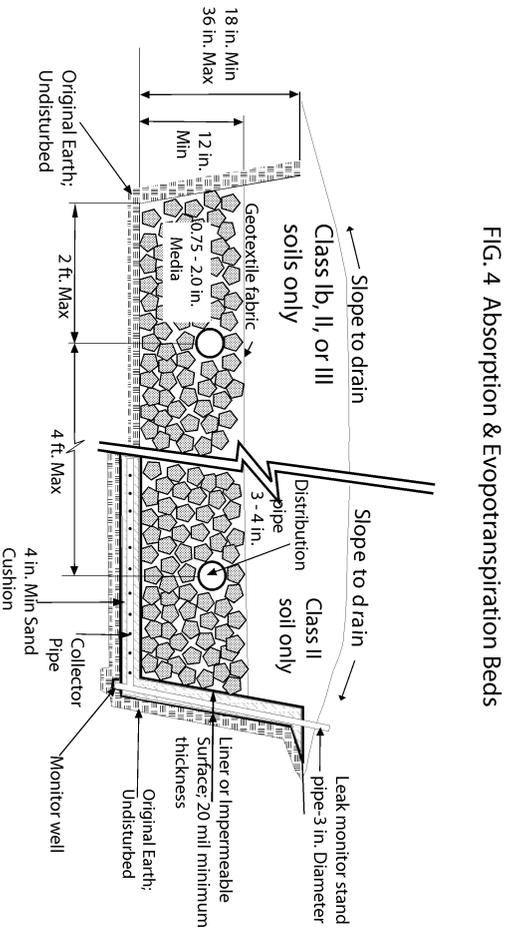
Drainfields should be slightly mounded with sandy loam so that the center of the field is about four to six inches above the normal ground elevation. This will provide drainage away from the field. A small berm or swale on the uphill side may be necessary to facilitate drainage away from the field. Providing rain gutters along the rooftop, adjacent to the field, can assist in redirecting large amounts of water. Neither type of field should be covered with impervious material or used for vehicular traffic or parking.

Drainfield surfaces, especially evapotranspiration fields, should be covered with perennial grasses to take advantage of transpiration. Evergreen bushes can be planted in the bed to assist in water uptake. If grasses that have dormant periods are planted, over seeding with winter grasses is advised. Vegetable gardens with plants that bear vegetables above ground are acceptable over drainfield areas. Plants bearing vegetables below ground are not recommended for gardening over

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drainfield areas.

Evapotranspiration drainfields, which should be divided into two or more zones, should be monitored as needed to prevent over-saturation of any one field. It is important that a healthy vegetative cover be maintained over evapotranspiration drainfields, and the beds be installed in a location with maximum sunlight.



## Water-saving tips

### *Inside the home*

1. Repair leaking faucets and commodes.
2. Use faucet aerators to reduce water consumption.
3. Keep a container of drinking water in the refrigerator instead of running the faucet until water turns cool.
4. Run dishwasher and washing machine with full loads.
5. Check all water line connections for leaks to avoid freezing pipes in the winter.
6. Insulate all hot-water pipes to avoid wasting water while you wait for the heated water.
7. Replace older appliances with new water-efficient appliances such as low-flow shower heads (3 gallons per minute or less) and efficient commodes (1.6 gallons or less per flush).
8. Take shorter showers (for each minute you cut, you can save at least 2 gallons).
9. Turn off water when shaving or brushing teeth
10. Follow these additional tips to save more water:
  - Avoid flushing commode unnecessarily.
  - Don't pre-rinse dishes.
  - Reuse clean household water.
  - Install an instant water heater on your kitchen sink.
  - Program water softener to run the minimum amount of regenerations, and turn off softeners when on vacation.

## *Water-saving tips*

### *Outside the Home*

1. Check your sprinkler system for leaks and misdirected heads at least once every season.
2. Run sprinklers between dusk and dawn to reduce loss to evaporation.
3. Use soaker hoses with hose timers in shrub beds.
4. Be sure to have at least 4 to 6 inches of composted soil under turf and in planting beds.
5. Choose native and well-adapted plants.
6. Mow high and keep your mower blades sharp to reduce summer stress on turf.
7. Consider contouring your land to increase infiltration by rainwater.
8. Check your pool and pool pump equipment for leaks.
9. Sweep driveways and sidewalks rather than hosing them.
10. Use a spray nozzle and bucket when washing your car, and if possible wash your car in a location where rinse water can run onto the lawn or landscape.

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**Amounts of Water Used by Home Appliances**

Automatic dishwasher \_\_\_\_\_ 15 gallons per load  
 Conventional commode \_\_\_\_\_ 3.5-6 gallons per flush  
 Washing machine \_\_\_\_\_ 32-59 gallons per load  
 Conventional shower heads \_\_\_\_\_ 5-10 gallons per min.  
 Outside garden hose \_\_\_\_\_ up to 200 gallons per hour

**Amounts of Water Lost with Leaks**

Slow Drip \_\_\_\_\_ 450 to 600 gallons per month  
 1/16" Faucet Leak \_\_\_\_\_ 3000 gallons per month

**Examples of Water Saving Devices**

<b>Device</b>	<b>Water savings per person</b>	<b>Water savings per home**</b>
1.6 gallon commode	8.0 gpd*	11,680 gallons/year
3 faucet aerators	.5 gpd	730 gallons/year
2 low-flow shower heads	10.0 gpd	14,600 gallons/year
<i>*gallons per day</i>		
<i>**family of four</i>		



## **About LCRA**

LCRA is a conservation and reclamation district created by the Texas Legislature in 1934. LCRA provides energy, water and community services to the people of Texas. It cannot levy taxes, but funds its operations with income from the sale of electricity, water and other services.

LCRA generates electricity and sells it wholesale to city-owned utilities and cooperatives that serve more than 1.1 million people in Texas. LCRA also builds and operates transmission projects through a nonprofit corporation, manages and protects the lower Colorado River, provides water and wastewater utilities, owns and operates parks, and offers economic and community development assistance to communities.



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