

SOLANO COUNTY
DEPARTMENT OF RESOURCE MANAGEMENT
Environmental Health Division
Technical Services Section



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***ON SITE SEWAGE DISPOSAL SYSTEM
OPERATION AND MAINTENANCE***

OPERATION AND MAINTENANCE

STANDARD (GRAVITY) SEWAGE DISPOSAL SYSTEMS

Standard on-site sewage disposal systems rely on gravity to move the sewage effluent throughout the system. Such systems normally consist of three parts: a septic tank, distribution manifold, and a leachfield or absorption field.

The primary purpose of a septic tank is to separate solids in the waste stream from the liquid fraction. Septic tanks are designed to slow the velocity of the wastewater flow to allow solid matter to settle to the bottom of the tank, where it slowly decomposes. The septic tank also allows grease and oils to float to the surface. This leaves a relatively clarified effluent in the middle of the septic tank between the grease/oils and solids.

This clarified liquid portion of the waste stream flows out of the tank and into the distribution manifold. The distribution manifold is composed of solid pipe and distribution boxes. The purpose of the distribution manifold is to move the clarified sewage effluent from the septic tank and distribute it equally throughout the leach field.

A leach field (absorption trench) most typically consists of a series of subsurface trenches filled with gravel and perforated pipe, or chambers that allow effluent to pass into the native soil. As the effluent moves through tiny pores in the soil it is cleaned by filtration and microbial action or decomposition.

Soil absorption systems are usually designed to provide full treatment of wastewater before it reaches groundwater. They are environmentally safe and inexpensive. They recycle water and nutrients, and they are made from available materials. Provided they are properly located, designed, constructed, and used, on-site sewage disposal systems should serve the wastewater needs of a dwelling for several decades with little maintenance. Only periodic removal of solids from the septic tank, and annual cleaning of the effluent filter, if one is provided in the septic tank, is necessary.

ALTERNATIVE SYSTEMS

Alternative systems use pressurized lines to distribute the effluent across a pretreatment device and/or a disposal area. They are intended to mitigate specific site constraints that render a standard system unusable on the site. Because of their engineering, the level of maintenance is greater than that for a standard system.

The operation and maintenance required will depend on the type of system and its level of complexity. The property owner may wish to hire a contractor to perform any or all of the operation and maintenance functions. The designer of the system will provide an operation and maintenance schedule for the system. Such a schedule will include information on how to operate and maintain all system components.

Pumps: At least one or more pumps will be involved in an alternative system. The dose counter and elapsed time meter for each pump, if present, are located in the controlbox. The number of doses and elapsed time the pump has run since the last reading will need to be recorded to determine whether the system is functioning within the prescribed parameters. A method of digitally recording this data may be provided instead of actual counters. Some control panels record the information for downloading off a web site. It is important to know which type of control panel you have and how it functions. The screen protecting the pump located in the dosing tank will need to be removed and cleaned annually. The floats that operate the pump(s) and high water alarm must be checked on an annual basis to ensure that they are functioning.

Pressurized Distribution Lines: At least once each year the pressurized distribution lines will need to be cleaned by flushing and have their hydraulics checked. Flushing the line removes any build up of bacteriological growth and debris, assuring that the small orifices in the lines are not being plugged. This is accomplished by shutting down all the distribution lines, except the one to be flushed, by closing the adjusting valves supplying the lines. The adjusting valves are typically located in access boxes below ground at the beginning of each line, but may be in one large access box at the beginning of the system. The terminal end of the perforated distribution line is located in another access box. This end will either have a purge valve, or removable cap. The purge valve should be opened or cap removed on this one line. The pump is then run to push effluent at high speed through the one line. After the line is flushed, the adjusting valve is closed, the terminal cap secured or purge valve closed, and the procedure is repeated on the next line. This process is repeated until all lines are flushed. After flushing, all supply valves are then opened so that the whole disposal field is once again utilized.

After flushing of the system is completed, all the valves are opened and a hydraulic squirt test is performed on all lines simultaneously. Typically, in the cap at the terminal end of the distribution lines there is a screw plugging a hole that must be removed to conduct this test. If a purge valve is used, a screw-in cap with the proper size hole drilled into it is required and must be installed to conduct this test. Once all the test orifice holes are open, the pump is run and the adjusting valves supplying the individual lines adjusted to assure that each line is receiving an equal amount of liquid effluent. Precautions must be taken during this step to assure that the sewage is not sprayed on people, food, etc. Contractors may use a clear plastic tube to contain the sewage spray. Once the system is balanced, the screws can be replaced, or the flushing valves closed, and the lids secured to the access boxes.

Differences in the design of the alternative systems may require deviations from the above procedures.

Performance wells: Performance wells are used to observe ground water levels and detect possible problems with the system. Performance wells located around a system are used for groundwater detection and to determine bacteriological or chemical contamination. Performance wells located in the system are used to observe ponding of sewage effluent, and the formation of biological mats. The information obtained can be

used to determine if the alternative system is functioning properly and determine a preventive maintenance or repair strategy.

All counter readings, performance well observations, and maintenance performed on the system must be supplied to the Environmental Health Services Division upon request or at least once each calendar year.

A LONG AND HEALTHY LIFE FOR YOUR SEPTIC SYSTEM

While proper siting, design and construction are important factors in ensuring a long onsite sewage disposal system life, there are several measures that property owners should take as well to prevent premature sewage system failure:

- (a) Minimize the amount of solids disposed of into an on-site sewage disposal system.
 - (1) Limit use of kitchen garbage disposals.
 - (2) Do not dispose of non-biodegradable substances such as coffee grounds, cat box litter, cigarette butts, and sanitary napkins into the septic tank.
- (b) Minimize the amount of grease, oils, and other fats disposed of into the septic tank. These substances may accumulate in pipes causing blockages or carry over into the leachfield where they may clog the drain rock and/or soil pores.
- (c) Do not flush chemicals such as paints, varnishes, thinners, waste oils, pesticides, and fertilizers into the septic tank. Chemicals can kill the bacteria that decompose wastes and damage the soil structure in the leachfield. Also, water softener backwash should not be disposed of into the system as the high salt content can damage the soil in the leachfield.
- (d) Reduce wastewater generated in the home.
 - (1) Use low flow fixtures and any other methods of water conservation.
 - (2) Stagger laundry and dishwasher use so as not to overload the system.
 - (3) Routinely check and promptly repair plumbing fixtures that may overload the system through leakage. Leaking toilets are often causes of sewage disposal system failures.
- (e) Prevent saturation of the leachfield area.
 - (1) Divert water from downspouts and run-off away from the leachfield.
 - (2) Limit irrigation over the leachfield. Do not over water lawns in the area of the leachfield.
- (f) Avoid compaction of soils in the leachfield area.
 - (1) Do not permit any vehicular traffic or heavy equipment over the leachfield.
 - (2) Avoid locating livestock or large animal enclosures over the leachfield.

- (g) Do not plant trees or shrubs that develop extensive, invasive root systems or require heavy irrigation in the vicinity of the leachfield.
- (h) Periodically have the solids removed by a permitted septic tank pumper from the septic tank. Under normal use, septic tanks should have the sludge removed every 5 to 7 years. Both compartments should be pumped clean.
- (i) Keep a diagram of your septic system with your home ownership records.