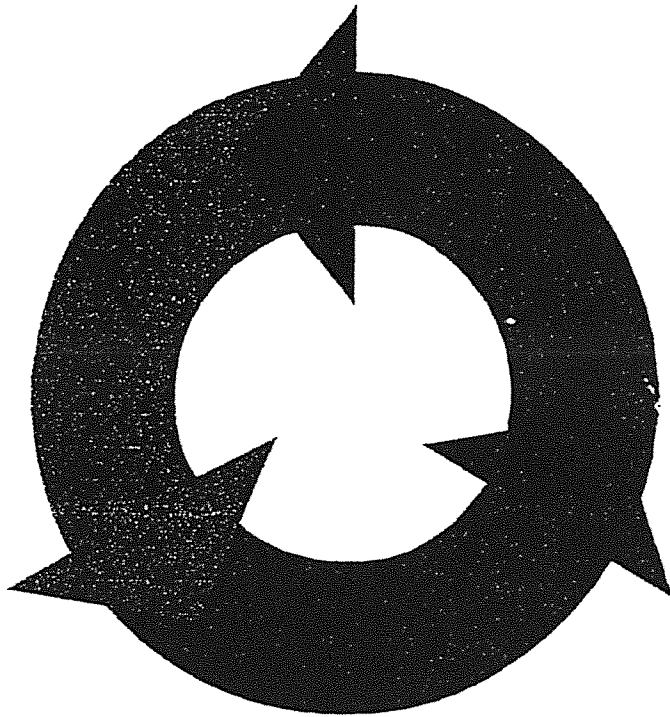


HOMEOWNER'S GUIDE
ON-SITE WASTEWATER
DISPOSAL



THE SEA RANCH ON-SITE
WASTEWATER DISPOSAL ZONE
CSA 41- ZONE 2
June 1, 1998

HOMEOWNER'S GUIDE

THE SEA RANCH ON-SITE WASTEWATER DISPOSAL ZONE CSA 41- ZONE 2

The Sea Ranch is primarily a second home community with development starting in the mid-1960s. Currently, 1570 properties on the Sea Ranch have been designated for development utilizing septic systems for sewage disposal. The implementation of stringent septic disposal regulations by the Regional Water Quality Control Board in the 1970's and 1980's led to Sonoma County Public Health initiating an approach to address certain septic problems at The Sea Ranch. Those problems generally stated are: Existing systems reaching the end of their life with no expansion area available within the building envelope; existing lots not meeting current percolation standards due to poor soil conditions; and, greater reliance upon the common area for problem resolution.

A study was undertaken by Questa Engineering in 1985 to address management of the Commons, monitoring of septic systems, and to prepare management options. The Sea Ranch Association and the County of Sonoma felt that the On-Site Wastewater Disposal Zone ("OSWDZ" or "Zone") was the most appropriate vehicle to further clean water goals. The OSWDZ was created with the concept that the Board of Supervisors, who are the Directors of County Service Area No. 6 (CSA 6), would contract with The Sea Ranch Association to run the operations. An operating agreement was signed in July of 1989 and the OSWDZ was instituted to inspect, monitor, maintain, and operate on-site wastewater disposal systems.

On July 1, 1995 the OSWDZ was designated CSA 41 and came under the direction of The Sonoma County Permit & Resources Management Department.

Utilities Committee

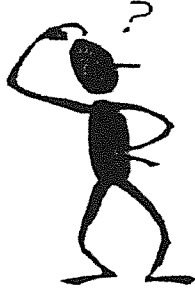
The Utilities Committee was formed and its Charter adopted by the Board of Directors on January 13, 1989. The Utilities Committee is a policy committee, and serves in an advisory capacity to The Sea Ranch Board of Directors. The Committee advises the Board of Directors on matters affecting the OSWDZ and serves as an interface between the Sonoma County Board of Supervisors and the Association members within the CSA-41.

Project Review Committee

By reason of The Sea Ranch Association's responsibility to maintain the Common area and govern its use, on June 28, 1997, Resolution 106 was adopted "Establishing Rules Regulating Owners' Use of Common Area for Subsurface Sewage Disposal and, at the same time, the Project Review Committee (PRC) was formed.

The PRC is now responsible for the review and approval of applications for underground sewage disposal systems on the Common area utilizing the decision tree adopted with Resolution 106.

For more information concerning the process for application to use Common area for an underground sewage disposal system, contact the Department of Planning & Design (707) 785-2316 or the On-Site Wastewater Disposal Zone (707) 785-2756.



WHAT IS A SEPTIC SYSTEM?

A septic system is a biological method of household sewage treatment that can be very effective when it has been carefully designed and installed and then is properly used and maintained.

Household Sewage:

The average household disposes of roughly 200 to 400 gallons of wastewater per day – 45 to 100 gallons per person. Forty percent (40%) is from the toilet (blackwater); sixty percent (60%) is from all other plumbing fixtures (greywater). Therefore, household sewage is mostly water (99.9%). The remaining 0.1% is organic matter, suspended and dissolved solids, nutrients, and bacteria.

Sewage Treatment:

The principles of sewage treatment, whether on-site or in a centralized treatment plant, are identical:

- Primary Treatment = Removal of Solids
- Secondary Treatment = Digestion of organic compounds by microorganisms; and destruction of disease-causing organisms (pathogens).

The modern septic system operates by removing solids in the septic tank portion of the system. Wastewater is retained long enough in the tank so that large-solid particles settle to the bottom. Very small particles gradually join together (flocculate) and also settle out, as they become bigger. The solids that accumulate at the bottom of the tank are called “sludge.” Oils, grease, and other lighter than water materials that are put into the system float to the surface to form a “scum” layer.

Microorganisms that digest organic compounds are either aerobic or anaerobic. Aerobic organisms need oxygen to function, while anaerobic creatures live in the absence of oxygen. The environment inside a septic tank lacks oxygen. Thus, any digestion of the sludge and scum (up to 50% of solids) is done by anaerobic bacteria (nearly all of which are supplied by the human body). Each of us excretes between 100 billion and 400 billion bacteria per day in our bodily wastes. These microorganisms are all that are needed for digestion that occurs in the septic tank. Septic tank treatment can remove up to 50% of the organic material and up to 30% of the nitrogen-rich compounds from domestic wastewater. However, because the environment is anaerobic, the process is slow. Given time, the anaerobic bacteria convert most of the sludge and scum into stable compounds, which are stored in the tank and must be removed periodically.

The partially treated wastewater (effluent) leaving the septic tank is discharged below the ground surface into a drainage field (leachfield). Here the water receives secondary treatment by natural processes in the soil.

These processes are physical, chemical, and biological. The soil structure filters out remaining solids. Soil particles, particularly clay, chemically attract, grab, and retain (absorb) sewage nutrients, metals, and pathogens. In addition, aerobic microorganisms living in the soil digest organic matter in tank effluent.

PARTS OF A SEPTIC SYSTEM

1. Tank

The septic tank must be made of a durable, watertight material to keep wastewater in and groundwater out. Precast concrete tanks are the type most commonly used. Plastic (polyethylene) and fiberglass tanks are also available. The plastic and fiberglass tanks are light and easier to maneuver, but must be carefully anchored so that they don't tilt once installed. If partially below the water table, the tank may literally float, and thus shift in the ground. Plastic can become deformed and require replacement. The result could be broken pipe connections and an altered pitch of the tank and pipes.

Tank sizes differ and the volume needed is generally based on the number of bedrooms in a dwelling. A modern septic system usually,

- a.) has a two-compartment tank, with a baffle separating the compartments (inlet and outlet),
- b.) has an inlet and outlet tee to facilitate the separation of liquid effluent from solids,
- c.) has two concrete lids or manholes (access risers), for inspecting and servicing the tank, and
- d.) holds from 810 to 1500 gallons of liquid and solids.

Minimum tank size increases with the number of bedrooms. If a garbage disposal is going to be used, a 50% increase in tank size is recommended. Garbage disposals increase the quantity of solids in the wastewater by approximately one-third.

To function properly, a tank must be watertight. Waste cannot drain directly from the tank into ground and groundwater must not seep in.

Wastewater flows by gravity from the various plumbing fixtures in a home into the septic tank. The septic tank provides a place to hold the waste and begin the treatment process. Septic tanks are designed to partially digest the waste in domestic wastewater. Liquid and solid waste flow from your house to the inlet portion of your tank through a sanitary tee. The inlet should be about three inches above the liquid level in order to prevent solids from clogging the pipe and causing a backup into the house. The clarified water (effluent) from the inlet compartment then flows over to the outlet compartment. The liquid (effluent) in the outlet side of the tank should be free from any solid waste (sludge or scum). The effluent is then pumped or gravity fed to the leachfield.

The primary measure of septic tank effectiveness is the ability to prevent solids from entering the leachfield. It is solid overflow that clogs soil pores and causes septic systems to fail.

2. Diversion Valve

Many of the systems on The Sea Ranch have two complete leachfields ("dual leachfield") with a diversion valve. This manual valve diverts the effluent to one leachfield allowing the other to rest. As the effluent is applied to the soil in a leachfield, bacteria utilize the oxygen in the surrounding soil. The bacteria take up the organic compounds, a biomat is formed, pathogenic bacteria and viruses are trapped and deactivated and the oxygen in the surrounding soil is depleted. When the leachfield diversion valve is switched, the oxygen in the resting field is replenished and the biomat breaks down – effecting a rejuvenation of the leachfield capacity. To allow the proper function of a dual leachfield it is strongly recommended that the diversion valve be switched annually at a minimum and preferably semi-annually - allowing fields to be rotated during the wet weather months.

3. Pump

When a system design requires a pump it is generally contained within a second tank into which effluent flows from the septic tank. When a preset level in the pumping chamber is reached, the pump goes on and lifts the wastewater to the leachfield.

4. Leachfield

From the septic tank or pump chamber, the wastewater is distributed via a non-perforated pipe into the leachfield for further treatment. In the past, the main objective of the leachfield was to dispose of the water – keeping all septic tank effluent underground with little regard to the possible degradation in groundwater quality was the goal. Because of State and Federal mandates, it is now critical to consider the ultimate fate of the sewage. This shift in emphasis to treatment has resulted in the following:

- A. More cautious consideration of groundwater depth and movement;
- B. Increased scrutiny of soil texture and strict percolation testing; and
- C. The consideration of aerobic treatment afforded by the trenches has become increasingly important.

Most leachfields consist of perforated pipe and gravel that distributes the septic tank effluent into the surrounding soil. Perforated plastic pipe that is laid over gravel or sand distributes the wastewater through its length where it gradually percolates into the soil. Further biological treatment and filtering occur in unsaturated soils, and the water is eventually returned to the groundwater table.

Gravity systems (standard systems) are designed for serial distribution. Many of these systems are in fact "designed" to fail serially – as one leachline clogs, the effluent will flow into the next leachline, etc., until the last line clogs and the entire field is due for replacement. Although these systems are designed in this manner, a well-maintained serial distribution system can last for many years. Depending on the system, individual lines can be replaced as becomes necessary ("partial leachfield replacement").

Pressure Distribution systems utilize a pump and provide for even utilization of the entire field, in turn allowing for a dosing-resting cycle so that re-oxygenation and rejuvenation of the leachfield can occur. In other words, such systems are pressurized and designed to "dose" the leachfield, wetting the entire leaching area at one time. The field should then have time to dry out and aerate before the next dose is applied. For this reason, it is important to maintain the dosing volume specified in the system design.

Mounds are used in areas where restrictions such as high water table, poor soil, and shallow bedrock prohibit the use of trenches. Fill material is placed on the existing soil surface and a pipe distribution system much like the trench system is laid down. The fill assures adequate cleansing of the wastewater before it reaches the existing soil. Mound systems need to have a pump, as would any leachfield that is above the level of the septic tank.

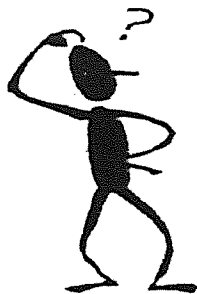
Non-Standard systems such as pressure distribution and mound systems are designed to overcome problems with poor soil, high water table and/or bedrock. However, these systems require intensive homeowner maintenance in comparison to standard systems. Consequently, the County of Sonoma has established a stringent monitoring program which consists of the following:

1. "Self-Monitoring" performed by the homeowner one time per year using the Self-Monitoring form provided by the Zone office; and
2. A scheduled annual inspection performed by the Field Inspector.

In addition, you (or a licensed contractor that has experience with non-standard systems) should “purge” your system once a year. These systems feature a small diameter piping system containing small openings through which the wastewater is dispersed. The suspended solids in wastewater can plug these holes. For more information on purging your system, please contact the Zone office.

In all cases an adequate area of soil surface is needed so that daily flow of septic tank effluent is absorbed effectively and purified. Again, many of the practices for proper use and maintenance are aimed at ensuring aerobic, unsaturated conditions in the leachfields, which will prevent clogging of the soil

Care should be taken never to drive over the leachfield before, during, or after construction. To do so may compact soil and crack and/or tilt the pipes, which will seriously limit the effectiveness of the system. Construction should be done only when the soil is dry, as excavation equipment can “smear” the soil during digging. Smearing seals pores and greatly retards water movement from the trench into the surrounding soil.



HOW DO I TAKE CARE OF MY SEPTIC SYSTEM?

PROPER USE AND MAINTENANCE OF SEPTIC SYSTEMS

Maintenance is the single most important consideration in making sure a septic system will work well over a long period of time. Too often homeowners forget that whatever goes down the drain or toilet ultimately either finds its way into the soil or remains in the septic tank until it is pumped out. Use common sense and you should have few problems with your septic system.

The most important step in maintaining a septic system is to have the tank pumped regularly. How often a particular tank needs to be pumped depends largely on the size of the tank, the number of people in the household, and the kinds of appliances used. If the house is on a rental program and has heavy occupancy, please be aware that it may need to be pumped more often than most.

The Zone will inspect your septic system every three years for standard systems and annually for non-standard systems. You will be advised at the time of inspection if your tank is in need of pumping. *Do not have your tank pumped just prior to your inspection.* as the inspection process requires a full liquid level.

TIPS FOR OPTIMUM PERFORMANCE

Water Usage

Less water going into the septic tank means less turbulence in the tank, better settling of solids, and cleaner tank effluent. The results are less frequent tank pumping, a longer lasting leachfield, and better sewage treatment.

- Repair leaky fixtures. Check your toilet by dropping food dye in the toilet tank and see if it shows up in the bowl without flushing.
- Consider low flow toilets, showerheads, and water faucets. Even properly functioning toilets rank as the number one water user, standard toilets use 3.5 to 7 gallons per flush. Low flow appliances and devices can reduce water usage by 25-30%
- Use dishwasher only when full.
- Avoid house over-occupancy.
- Reroute drainage such as run-off from the roof, hot tubs, and yard drainage away from septic system area to avoid over-saturation.
- Plug bathtub before starting water.
- Plug sink while washing or shaving.
- Distribute laundry chores and other heavy water uses so that the system has time to work between doses.

A too-often-for-too-long saturated condition in a leachfield eventually results in a clogged leachfield that may have to be replaced. **It is critical to maintain unsaturated conditions within and beneath the leachfield.**

Disposal Practices

Just as important as how much water goes into your system is *what* goes into your system. Again, remember that all phases of onsite wastewater treatment rely on a mixture of biological organisms to clean and purify the wastewater – a community of bugs is working for you, so do not dispose of products that will kill off these hard working bugs.

- Don't use your toilet as a trash can. Never put any bulky wastes such as disposable diapers, sanitary napkins, paper towels, coffee grounds, hair, cooking oil, or anything plastic – cigarette filters, tampon applicators, or condoms – into a septic system. Any of these may plug up the inlet or the outlet and are very slow to decompose, if they breakdown at all.
- Grease from cooking, if dumped down the drain, will solidify on route to the septic tank and thus could clog the system.
- Beware of Chemicals! They kill septic system bacteria.
 1. Never dispose of these chemicals in a septic system: gasoline, motor oil, antifreeze, paints, varnishes, paint thinners, medicines herbicides, photographic chemicals.
 2. Drain cleaners are caustic products that can damage plumbing. Drain cleaners are chemicals that generate heat when exposed to air. Try pouring boiling water down the drain to dissolve clogs.
 3. Toilet bowl cleaners are either caustic or acids. Try mild detergent or baking soda.
 4. Disinfectants won't help much in the toilet and certainly not in the tank.

Additives

While many products on the market claim to help septic systems work better, the truth is there is no magic potion to cure an ailing system. Some proprietary products that claim to "clean" septic tanks contain chemicals that may cause the scum and sludge to be discharged from the tank to the leachfield. In essence, they change a simple maintenance item (regular pumping of tank) into a major system failure (clogged leachfield).

There are two types of septic system additives: biological (bacteria, enzymes and yeast) and chemical. At best, an additive is benign; it provides no benefit and it costs you some money. At worst, it can damage concrete and clog the soil; and products that contain solvents can contaminate the groundwater. The general consensus among septic system experts is that septic system additives are unnecessary, possibly harmful, and should not be used. The naturally occurring bacterial population in your tank does not need to be augmented for proper

operation of your system. The best results come from a balanced and well-maintained system that is not overloaded or abused.

As a general rule, only three things should go into the septic tank: human wastes, toilet paper and waste from bathing fixtures and kitchen sinks.

Physical Care

Unless specifically designed for vehicle traffic, no portion of your septic system should be driven on. If your tank is in an area subject to traffic, install a barricade to prevent damage to the tank and/or risers.

Traffic is generally prohibited from leachfields to prevent compaction of the soil and to minimize the breaking and collapsing of leachfield pipes. Soil compaction can severely limit the transfer of oxygen and therefore hasten the development of anaerobic conditions. Remember we want aerobic conditions in the leachfield.

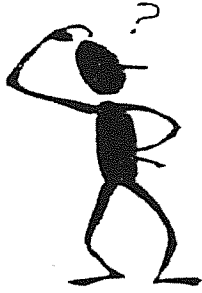
Similarly, leachfields should not be paved in any manner.

Tenants

If you rent your property, please make your tenants aware that your property is served by a septic system. Please post the enclosed "Do's & Don't" list in the kitchen and/or bathrooms.

You have a considerable investment in your septic system, don't take a chance on needing an expensive leachfield replacement.

Another reason to properly operate and maintain a septic system is the potential for health problems from polluted water. A failing system could contaminate groundwater, and consequently nearby wells. Such water pollution also could reach nearby streams; and thus spread throughout a community. Inadequately treated sewage contains nutrient levels (nitrogen from urine and feces; phosphorus from soaps and detergents) which could be too high for the natural environment to handle. This type of sewage also contains pathogens, viruses, heavy metals, and chemicals from products improperly disposed of in septic systems.



WHAT ARE COMMON SEPTIC SYSTEM PROBLEMS?

COMMON SEPTIC SYSTEM PROBLEMS

Plantings

Roots in and around your septic system can cause serious problems. Roots can clog pipes, break apart tanks, infiltrate the gravel in your leachfield and render a system completely inoperable. If roots are observed infiltrating your tank during an inspection, you will be required to have them removed as soon as possible. If your leachfield is slow to accept the applied hydraulic loading during an inspection, you may be required to excavate certain areas of your leachfield to investigate possible root intrusion. If you act promptly and remove the roots, there is a high probability you will be able to salvage your system and keep it operational.

Homeowners often ask for recommendations regarding landscaping choices. The Sea Ranch Office of Planning and Design can help you with your choices. However, keep in mind that typically, your system is about 12 to 18 inches below the surface and that plants with invasive or deep roots must be kept from the leachfield area.

Plumbing Back-Up

If plumbing back-up occurs suddenly, chances are it is not a problem with your septic system, but a blockage between your household plumbing and your tank. You should have a sanitary clean-out so that a plumber has access to your household service line to clear the blockage. Disposal of non-degradable paper products can clog the inlet to the tank. Tree roots can also infiltrate the household service line.

A sudden plumbing back-up can occur if the septic system relies on a pump, and either the pump has failed or there has been interruption in electrical power. If you suspect you have a pump problem, contact a septic system contractor (plumber or electrician) immediately.

If your plumbing is running slowly, and if this has either been a gradual process or occurs seasonally, then the problem may be associated with your septic system. In our experience, a key culprit is roots. Again, contact a septic system contractor for root removal and when possible, the Association Planning and Design Department for permission to remove invasive trees and hedges in the vicinity of your system.

If your plumbing works great in the summer, but is sluggish in the winter, you may have a serious problem of groundwater intrusion into your system (i.e., your leachfield is flooded with groundwater). The Zone will work with you to help understand the seasonal disposal limits of your system. If your system has to be replaced, we will assist you with the necessary contacts and permits within the County of Sonoma Permit & Resource Management Department.

Odors

Odors emanating from a septic system can be indicative of a saturated field. During normal use of an unsaturated system, the gases in the septic tank will pass with the wastewater into the soil and be absorbed. If a field is saturated, the gases tend to migrate up the plumbing vents and your neighbors will notice a "septic odor." A carbon filter is available for installation on the roof vent to scrub these unpleasant odors. During the routine inspection, the Zone Field Inspector will note if there is significant odor associated with a particular system, and if the system appears to be saturated and not functioning properly, the homeowner will be notified.

Surfacing Effluent

Effluent ponding in a leachfield, breaking out down hill from a system or flooding out the top of the tank is a serious concern and addressed immediately. If these conditions are observed during inspection, the homeowner and the County of Sonoma Permit & Resource Management Department will be notified immediately. If a report comes into the Zone office regarding suspected surfacing effluent, the Field Inspector will immediately investigate and, if effluent is detected, the homeowner and County will be notified.

Please limit exposure to suspected untreated effluent. Keep children and/or pets away from the area and contact the Zone office immediately.

Blackout – Brownout

The lights have gone out, you are scrambling around for candles and the last thing on your mind is your septic system. If you have a gravity system, your sewage disposal needs will be met for the duration of the power outage. If your system incorporates a pump, the pump will not function until the return of power. To prevent sewage from backing up in your plumbing, your household must minimize all wastewater generation. Typically, a system has 200 to 300 gallons of emergency storage just for this occurrence and since your electrical appliances (washing machine, dishwasher and electrical hot water heater) won't be working, the household will naturally be using less water. When power returns, you may hear an alarm sound because the alarm has been triggered by the high water conditions in the tank. After the pump lowers the effluent level, the alarm buzzer should stop.

During a prolonged period of low voltage (brownout), septic system pumps and panels can be damaged. This happens when during the brownout, the pump continues to try and come on. If this happens, you may want to turn the pump off until complete power is restored. **Again, it is essential to reduce water usage and get the pump back in operation as soon as possible.**

Alarms

There are several reasons why the alarm on your septic system might sound. All are important, and no alarm should be ignored.

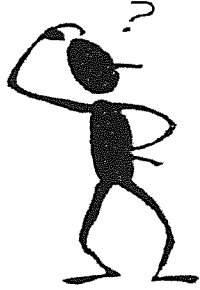
1. There may be a pump failure or an interruption of power to the pump.
2. There may be an electrical short in the alarm electrical system.
3. There may be a float failure.

If it is determined the alarm is caused by the necessity for repairs; these repairs must be done immediately to prevent back-up or further damage to your system.

If there has been a brownout/blackout, and your system goes into alarm, as the power is restored, depending on your alarm system, after you have confirmed that your pump is operating, you can do one of the following:

1. Flip your alarm switch to off and then back on again. This should reset the alarm; or
2. Turn the alarm off until the pump has had the opportunity to pump to a normal level. Then, turn the alarm system back on; or
3. Some alarms require the main house electrical system be turned off and then on again before it will reset. With this type of alarm system, you should turn the alarm off until the pump has had the opportunity to pump to a normal level, then it will be necessary for you to go to your main breaker and turn your power off and then back on again. This should reset your alarm allowing you to turn the alarm system back on without activating it.

If none of the above solve the problem or you would just rather not tamper with switches, etc., do not hesitate to call the On-site Wastewater Disposal Zone at 785-2756. We will be more than happy to come out and take care of your alarm for you or advise you as to whether your pump is operating properly. On weekends, if you call the Security Department, they will come out and turn the alarm off. The Zone is notified by Security the next working day, and we then will come out to check and reset your alarm system.



WHAT HAPPENS DURING AN INSPECTION?

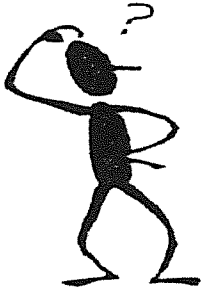
INSPECTION OF YOUR SEPTIC SYSTEM BY THE ZONE

All septic systems will be inspected approximately once every three years, with the exception of alternative (non-standard) systems that require special monitoring. The time of year for your inspection has been determined by physical location and groundwater conditions. You will be notified approximately 30 days in advance as to the date and time of your inspection. You will be required to provide full physical access to your septic tank (please refer to section on excavation v. access risers, below). It is not required that you be present for the inspection. However, it is recommended so that you can provide the Field Inspector any history as to the maintenance or repair of your system. Again, do not have your septic tank pumped just prior to your inspection.

The inspection process consists of:

1. A general site review of your system to confirm the location of the septic tank, leachfield, and other pertinent features of your system. The area will be checked for any obvious signs of existing system problems.
2. If your system has dual leachfields, the Field Inspector will check the diversion valve to see that it is functional and determine which leachfield is in service.
3. If your septic tank and pump are equipped with risers their general condition will be checked and any defects noted for correction.
4. Once your septic tank is open, the Field Inspector will observe and probe the structural condition of the tank to look for any obvious signs

- of cracking or any other structural defects. The inlet and outlet tees will be checked to assure they are in satisfactory condition.
5. The liquid level and the depth of the sludge and scum layer will be measured on both sides of your tank.
 6. The Field Inspector will perform a hydraulic load test on the septic tank and leachfield. This requires surcharging your tank with approximately 750 gallons of water, observing and timing the rise of water in the tank and subsequently the draining process. Based upon the water level readings during the test, a hydraulic performance rating will be assigned to the system. This test is performed only on standard gravity fed systems.
 7. If your system has a pump, it will be checked for any solids carryover. The float controls will be checked as well as the electrical junction box, and then a pump test will be performed. During this test, the Field Inspector will add sufficient water to the pump basin to activate the pump "on" control and observe the performance of the system over a single pumping cycle. The volume of water will be measured to determine if the pump is delivering the correct dose, and the piping system will be checked for leaks. As the water level is drawn down, the pump basin will be checked for any signs of groundwater infiltration or other structural defects.
 8. Additional investigative work may include water quality samples or dye testing. Soil auguring may also be performed from time-to-time.



WHAT HAPPENS AFTER AN INSPECTION?

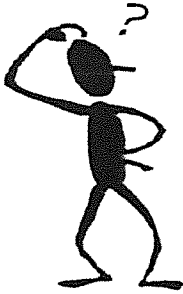
ADMINISTRATIVE PROCESS AFTER AN INSPECTION

1. If no preventative maintenance or repairs are required on your septic system, you will receive a copy of your inspection report and operating permit in the mail. The operating permit will show an expiration date indicating the month and year of your next scheduled inspection. The Zone office records the original permit with Sonoma County. Your copy is for your home records.
2. If upon arriving to perform your inspection, the Field Inspector discovers repairs must be done prior to completion of the inspection (i.e., pump inoperable), the Zone will attempt to contact you by telephone, notify the contractor you have hired to make your septic tank accessible, or contact you by mail. You will be advised what repairs are needed and a list of local contractors will be provided to you upon request. Your inspection will be held for a limited time on a “standby” basis until any required repairs have been completed. **Please note that it is the homeowner’s responsibility to notify the Zone when repairs have been completed.** The Zone will then finish your inspection and send you a copy of your inspection report and operating permit.
3. If repairs or preventative maintenance are required after the Field Inspector has completed your inspection, you will receive a copy of your inspection report and a **restricted/interim** operating permit valid for approximately 30 to 120 days. Prior to the lapse of this interim permit, you must have the repairs completed and notify the Zone office in writing. Most local contractors have worked with the Zone and are aware that they must send the Zone written proof of their repair, but please remind your contractor to do so. Once your interim permit has lapsed, and proof of repair has been received, a regular

operating permit will be issued and recorded with the County Recorder.

4. If, anything other than normal maintenance and/or repair is required, or there is a problem with structural integrity and/or leachfield failure, the County of Sonoma Permit & Resource Management Department must be notified. The homeowner will also be required to make application to the County for a "Private Sewage Disposal Repair Permit."
5. In some cases, the Zone will issue another interim permit even after required repairs have been completed to observe whether repairs were adequate.

For ordinary maintenance and repairs (pumping, riser installation, tee replacements), directed by the Zone, a Private Sewage Disposal Repair Permit ("Repair Permit") is not required.



WHAT ARE THOSE GREEN LIDS?

EXCAVATION V. ACCESS RISER INSTALLATION

As a homeowner, you have two choices in providing proper access to your septic tank for inspection:

1. You may choose to excavate the tank for each inspection, using the following procedure:
 - a.) Excavate both the inlet and outlet side of the tank;
 - b.) Remove the concrete lids covering each side;
 - c.) If your system has a pump, remove the pump chamber lid also;

- d.) Place plywood over the openings and weigh it down to prevent intrusion by children and/or animals.

Or,

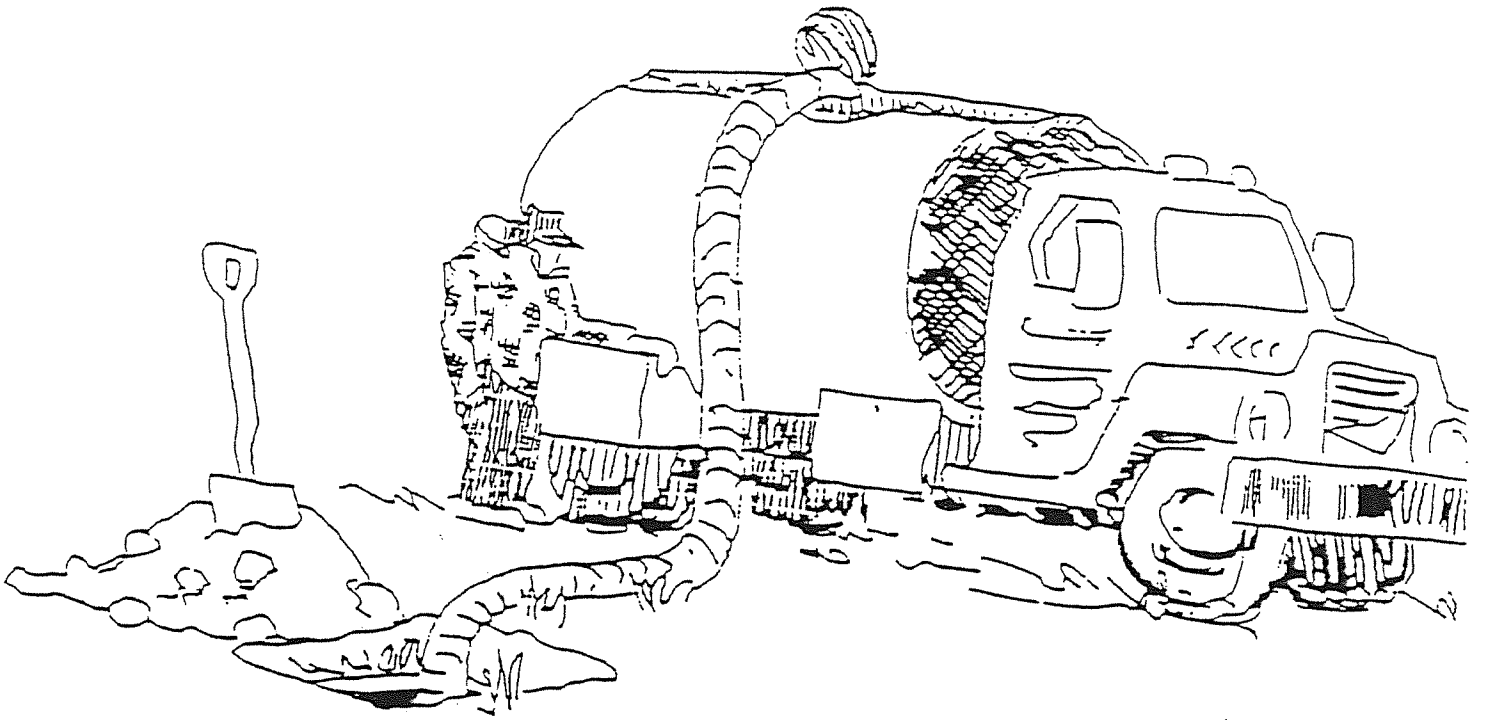
2. Install approved access risers (those green lids) over both the inlet and outlet side of your tank and, if your system has a pump, over your pump chamber too.

Where septic tanks have been installed only 1 to 2 feet below grade, or the homeowner considers risers to have a major negative visual impact, excavation may be the preferred choice. Many local contractors and septic services can locate and excavate your tank if it is not possible for you to do so.

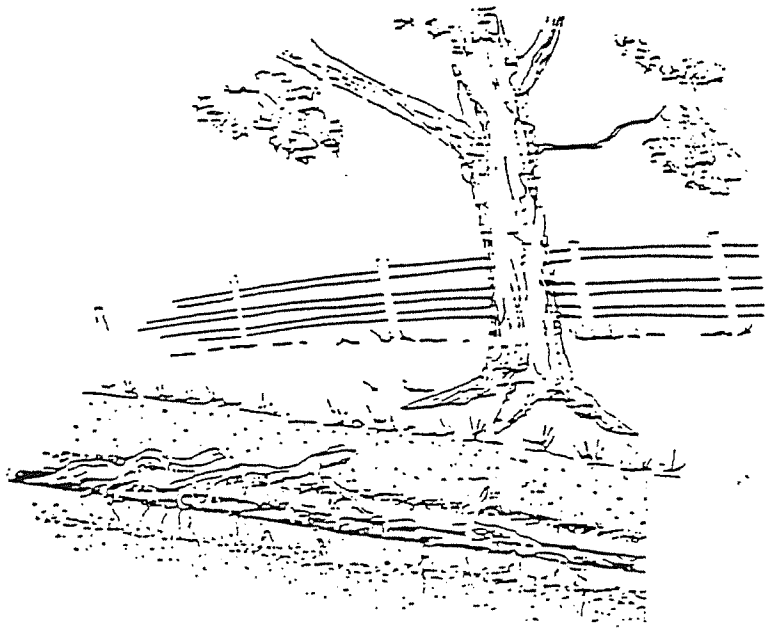
If approved access risers are your choice, many local contractors and septic services can install risers for you or you may choose to install them yourself. It is important that after the risers have been installed; you notify the Zone office **before backfilling** in order for the Field Inspector to verify the installation has occurred according the manufacturers specifications and that all seals are watertight. The concrete lids to your septic tank are removed and discarded. Proper disposal practices need to be followed as these lids are contaminated. Unless lids are disposed of immediately, they should be sanitized with a 1:5 bleach solution.

DO'S & DON'TS For a Septic System

- DO Practice water conservation.
- DO Wash clothing and dishes only when you have a full load.
- DO Limit the use of your garbage disposal.
- DO Limit the use of water if the power goes out and your system incorporates a pump.
- DO Purge your non-standard system once a year.
- DO Switch your diversion valve a minimum of once a year if your system incorporates a dual leachfield.
- DO Contact The Sea Ranch On-Site Wastewater Disposal Zone at 785-2756 or a septic system maintenance person if problems develop.
- DON'T Dispose of the following into the septic system:
Paper towels, sanitary napkins, tampons, disposable diapers, condoms, cigarettes, coffee grounds, cat litter, eggshells, or grease.
- DON'T Use septic tank additives.
- DON'T Drain hot tubs or spas into your septic system or on your leachfield.
- DON'T Plant trees in the leachfield area.
- DON'T Dispose of toxic chemicals in the septic system.
- DON'T Drive on your septic system.



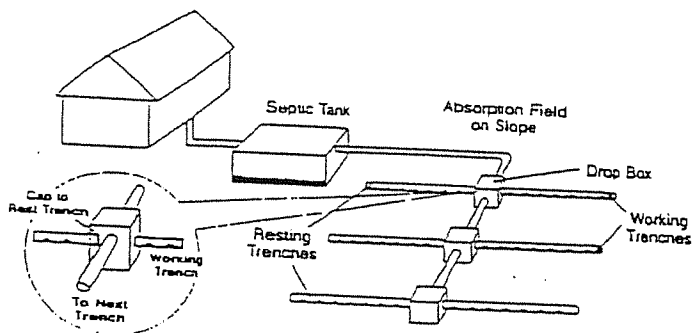
The most important step in maintaining a septic system is to have the tank pumped regularly. BOTH SIDES SHOULD BE PUMPED!



Do not plant trees on your leachfield area!

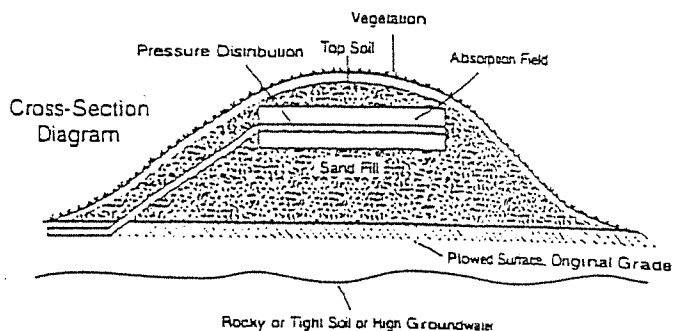
Septic Tank With Serial Distribution

Starting with the highest, each trench fills completely, then overflows through one drop box to the next. The effluent floods all soil surfaces. The drop box enables inspection of the system and control of discharge into each trench. Capping the pipe outlets in the upper trench forces resting. Serial distribution automatically loads upper trenches and minimizes the loading on lower trenches. Used on gently to steeply sloped sites.



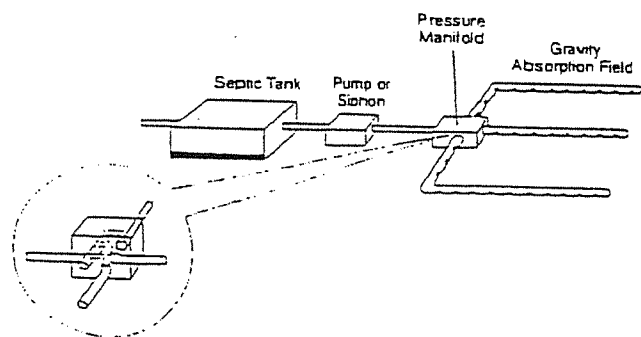
Septic Tank & Mound System

Pumps dose effluent into a gravel bed or trenches on top of a bed of sand. Sandy soil carefully placed above the plowed ground surface treats the effluent before it moves into the natural soil. The system extends onsite system use in areas with high groundwater, high bedrock, or tighter clay soils. Regular inspection of the pumps and controls and flushing of the distribution network are needed.



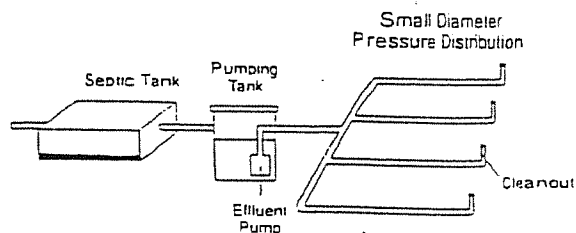
Pressure Dosed Distribution

A pump or siphon doses a pressure distribution manifold that disperses the effluent evenly to each trench. Dosing prolongs system life by flooding a larger area and by forcing the exchange of air in the soil. Dosed systems are more common for larger flows. The pressure manifold can include valves or plugs that permit more control over trench loading or trench resting. Annual inspection is suggested.

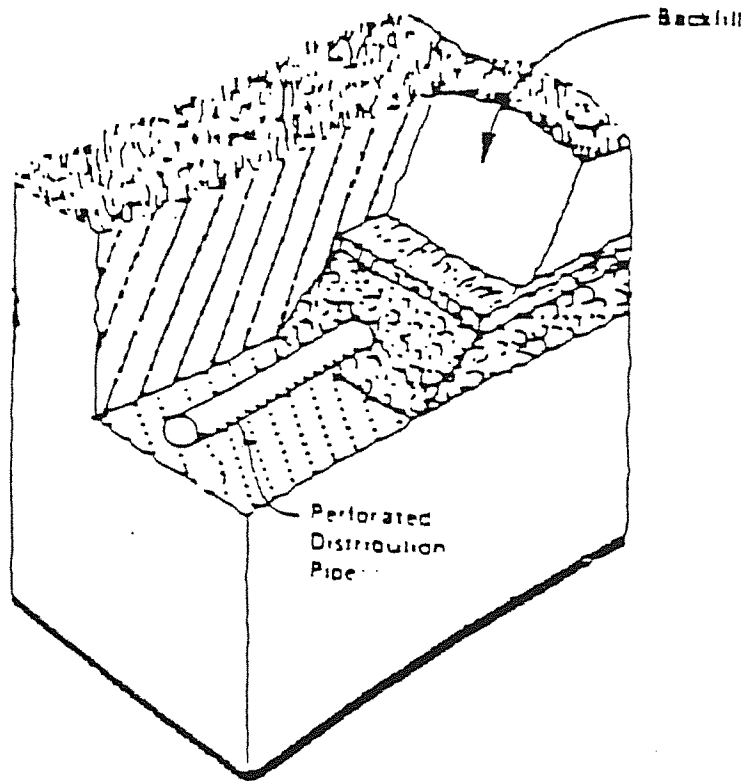


Shallow Trench Low-Pressure Pipe Distribution

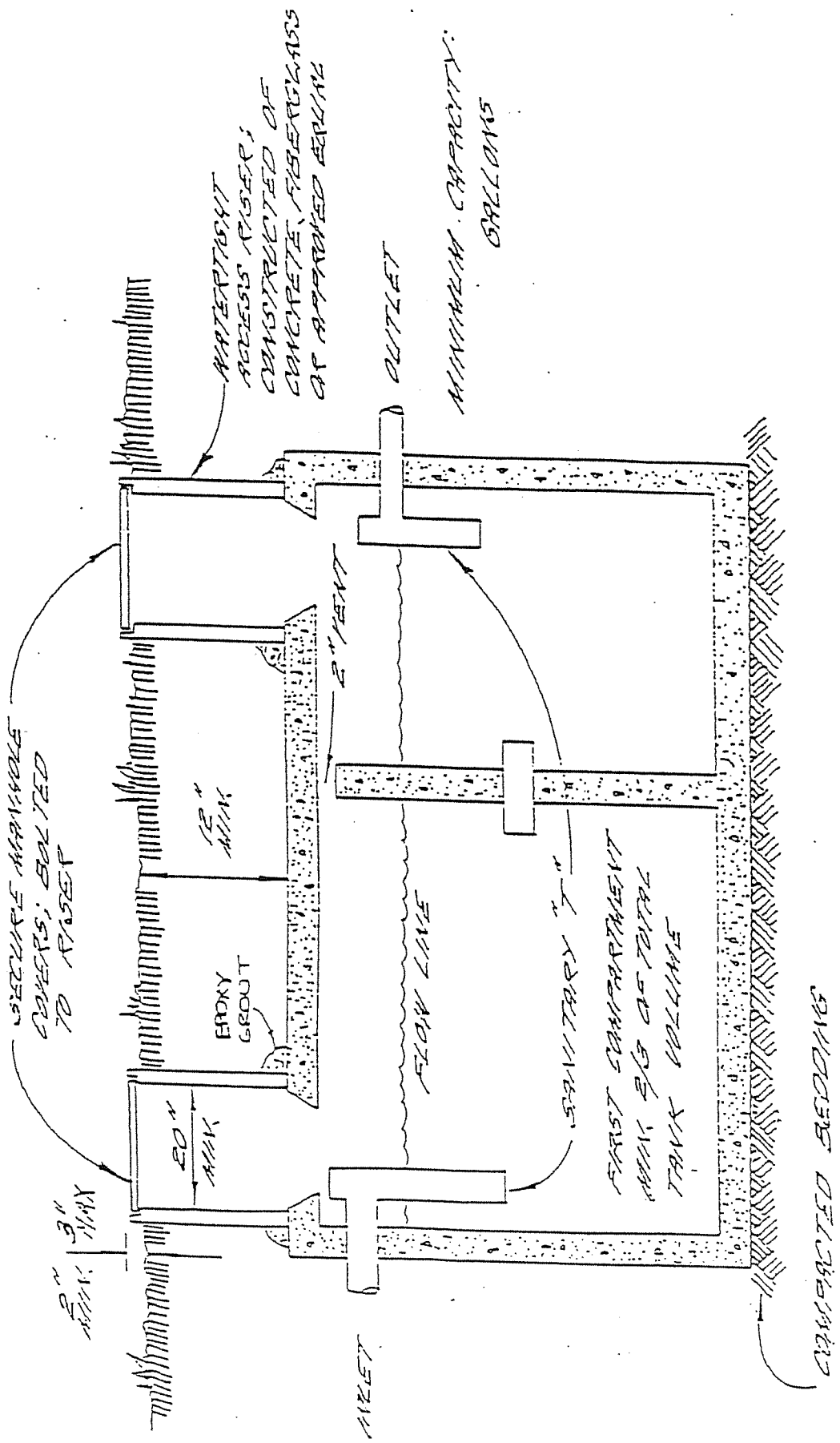
Small diameter pipe, located at a more shallow depth than a conventional system, receives pumped effluent. Effluent moves under pressure through small holes in the pipe and soaks the entire trench network area. Even dosing of more open and aerobic soil horizons improves treatment. Used in areas with high groundwater or shallow soils (because it places the treatment higher in the soil profile) or on steep slopes that require hand excavation. Professional maintenance is needed to flush the lines annually.



Examples of typical septic system designs.



Typical trench-type soil absorption system. The cross section shows the layers of materials used in the construction.



Septic tank detail with access risers.

Please feel free to drop into the Zone office located at 35600 Verdant View (behind the fire station on Annapolis Road) or give us a call at (707) 785-2756.



PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 527-1900 FAX (707) 527-1103

BULLETIN

MAINTENANCE ITEMS FOR MOUND AND PRESSURE DISTRIBUTION SYSTEMS

"Maintenance related items" currently account for most of the problems associated with mound and pressure distribution systems. The Permit and Resource Management Department encourages you to learn about your sewage disposal system and provide some simple routine maintenance items to prolong the life expectancy of your sewage disposal system. Get to know your system and how to properly maintain it. If you have questions that are not answered below, contact the Permit and Resource Management Department's Innovative Systems Specialist at (707) 527-1900.

MOUND SYSTEMS

Soil cover: During the spring, it is time to see if the winter seasonal rains have caused serious erosion to the soil cover of your mound. Older mounds were built with just six inches of soil cover over the crown of the mound; newer systems have 12-18 inches of soil cover.

With a metal probe or shovel, measure the soil cover in suspected areas of erosion. If you have less than six inches of soil cover before reaching the sand, it is time to add soil to the mound. You will most likely find that only small areas have eroded away and have caused pockets or depressions. Fill those areas using hand shovels and rakes bringing the mound back to its natural shape. Make sure that the soil you use is the same type and quality as the soil presently on the mound. Always feather the soil on the mound so that it maintains its natural crown. If the area is large, we suggest that you contact a licensed contractor that has experience with mound systems to add large amounts of soil cover (proper equipment and skill is needed). If you are unsure of what to do, call the Permit and Resource Management Department.

Keep all large animals and vehicular traffic off the mound system at all times, especially when the ground is moist. The traffic and weight will cause sever damage to the mound. Many mounds have required replacement because of traffic and animals.

Ground cover: Ground cover is intended to prevent erosion of the soil cover. It also provides the mound with a natural means of evapotranspiration of the sewage effluent from your system. The best item to plant on the mound that provides erosion control and high evapotranspiration is a mixture of perennial grasses. Grasses come in many types of mixtures and types, so you may want to consult with a landscape professional. Additionally, grass should be routinely cut and maintained. Many individuals have installed sprinkler systems around the perimeter of the mound to lightly water the ground cover. Never over-water the area of the mound system. Ice plant and ivy are not recommended ground covers for mound systems.

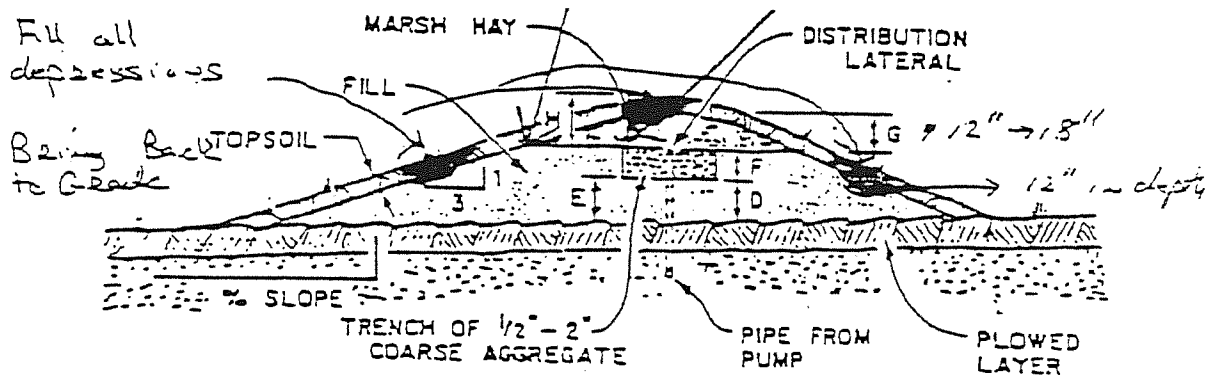
It is acceptable to plant compatible trees along the outside perimeter of the mound system. Noncompatible trees and bushes have water invasive roots and generally grow too large (willow trees, eucalyptus trees, pepper trees, etc.). These type of trees will cause permanent damage to your mound system. Again, you should consult a landscape professional. — *Bill Wimmer at TSA Planning and Design*
Many individuals have planted flowers and shrubs on their mound systems for very creative looks; consult a landscape professional. Make sure the roots are not water invasive and damaging. Note: The Chez Peye Restaurant in Sebastopol has a mound system fully landscaped in the area of the parking lot. You may wish to look at that mound for ideas.

PRESSURE DISTRIBUTION SYSTEMS

Soil cover and ground cover: The items and comments listed for mound systems are comparable for pressure distribution systems. Please review those comments. In addition, pressure distribution systems also have a tendency to settle along the trenches. When this occurs, soil must be added to bring the ground level to finished grade. This should be performed by an experienced licensed contractor because special equipment is needed. In all cases, soil should never be placed over the valve control boxes in mound or pressure distribution systems. There must be immediate access to these boxes.

MAINTENANCE ITEMS FOR MOUND AND PRESSURE DISTRIBUTION SYSTEMS

1. Check the system for broken monitoring well caps and valve control boxes. Replace when needed. Never install wooden boxes; use plastic irrigation control boxes or Christy boxes.
2. Check the alarm box features. If inoperable, it will need to be replaced. Make sure the dose counter operates whenever the pump is activated. Make sure the pump test button operates when pressed. The alarm switch should always be in the "ON" position. If the alarm activates itself, call a licensed contractor because there is a problem.
3. Check the lid of the septic tank and sump to make sure it is air and water tight. If not, the seams should be filled with a nonpermanent sealant or caulking material.
4. Septic tanks on an average are pumped at a frequency of once every five years. Make sure septic pumpers pump both chambers of the tank and also pump the sump chamber. Make sure that the inlet and outlet tees of the septic tank are in place. If not, have a licensed contractor replace the inlet and outlet tees with new sanitary tees.
5. Walk through the residence and check all faucets and fixtures for leaks or seepage. Immediately repair all leaking faucets and water closets. Leaking fixtures lead to overloading of the septic system which will cause permanent damage and malfunction of the sewage disposal system. Make sure all occupants of the residence are using good water conservation measures (limiting shower use; not overflushing the toilet; using dishwasher and washing machines only when fully loaded and only during nonpeak water usage times of the day; use low-flow shower heads and faucets; and decrease or eliminate the use of garbage disposals).





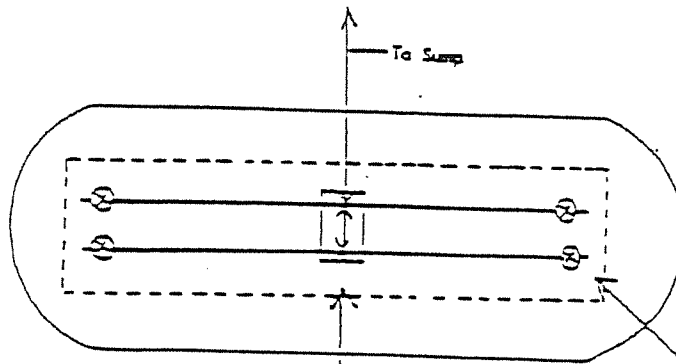
BULLETIN
TIME TO PURGE YOUR SEPTIC SYSTEM?

Mound and Pressure Distribution Systems feature a small diameter piping system with small orifices through which the wastewater is dispersed by means of a hydraulic pump. Wastewater contains suspended solids which can plug up these holes. This blockage will affect the distribution of wastewater in your septic system.

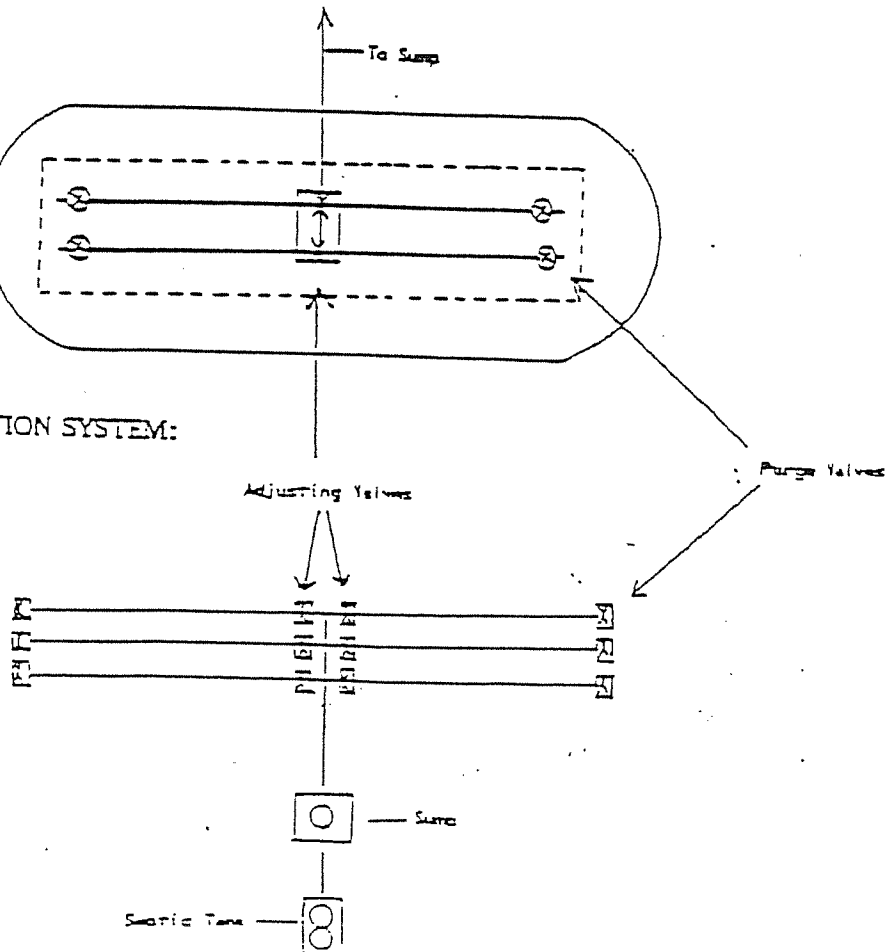
To counter this, the Mound and Pressure Distribution Systems have purge valves placed at the end of the laterals that provide easy access to clean or purge the laterals manually. The Permit and Resource Management Department recommends that you purge your septic system once a year. If you have a large establishment (like a restaurant or commercial establishment), you should purge the system once every six months.

To purge the septic system, follow these instructions or call a licensed contractor that has experience with Innovative Systems. This procedure goes very quickly with two people. Determine where the purge valves are located. Consult the plans that your engineer drew or the contractor used to construct the system. Generally, the configurations are as follows:

MOUND SYSTEM:



PRESSURE DISTRIBUTION SYSTEM:



Directions:

- 1) Make sure you have gloves on and appropriate protective clothing. Wastewater is unsanitary, and contains many dangerous pathogens which can be harmful to man and animals.
- 2) Open the Valve Box Cover and expose the Purge Valve. Do not touch the Adjusting Valve. If you cannot determine the difference, call a professional.
- 3) Open one purge valve then go to the alarm box and press the "Pump On" or "Pump Activation Switch". This manually activates the pump and wastewater should now flow through the distribution system pushing the suspended solids out of the lateral through the purge valve. You may have to keep the switch depressed for awhile. Let the wastewater flow through the purge valve for 30 seconds.
- 4) Close the valve and go perform the same function to each of the remaining purge valves. **MAKE SURE THAT THE PURGE VALVES ARE CLOSED WHEN YOU ARE COMPLETED!!**
- 5) If wastewater does not go through the laterals, you most likely have a blocked line. Call a professional for assistance.

Note: The first 25-30 mound systems installed in Sonoma County were not equipped with purge or adjusting valves. It is the recommendation of the Permit and Resource Management Department that you contact a licensed contractor and have these valves installed properly. Also note that the older alarm boxes are not equipped with a pump activation switch. The only way to activate the pump is to open the sump and place the float in the on position. Only a licensed contractor should go into the sump and perform this service. A pump activation switch can be placed on the alarm box, call your licensed contractor.

MISCELLANEOUS MAINTENANCE ITEMS

Vegetation Maintenance: Keep the vegetation cut and groomed. Cutting the grass will facilitate evapotranspiration of wastewater through the system. Do not plant Ice Plant, Ivy, or place plastic over the ground cover of any mound, pressure distribution system, or other type of septic system. This type of vegetation cover does not allow evapotranspiration of the ground and actually hinders the proper operation of the system. If you have Ice Plant, Ivy or plastic over your system, please remove it.

Irrigation: The best vegetation for Mounds or Pressure Distribution Systems is native grasses or weeds. Landscaping the area with lustrous grasses that require routine watering will adversely impact the function and life expectancy of the system. Irrigate any vegetation sparsely. Do not saturate the mound or septic system area. Your system needs to dry out. If you do landscape the area, use shallow rooted, drought resistant plants and bushes. It is best to landscape around the perimeter of the system.



COUNTY OF SONOMA PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 527-1900 FAX (707) 527-1103

Bulletin

"How to self-monitor your Nonstandard Septic System"

The following guide will advise you on what information to record and how to interpret the data for the Nonstandard Septic System serving your property. Use this paper as an aid when recording any data. Blank self-monitoring forms will be sent to you to fill out with the needed information. Be sure to mail them back promptly (including a rough sketch of the system on the reverse of the report) to have your inspection properly documented to qualify for an extended operational permit. For more detailed or comprehensive information on the Monitoring Program or if you have any further questions, comments or suggestions please feel free to contact the Nonstandard Systems Monitoring Specialist at the telephone number indicated on the bottom of the Self-monitoring Form. **785-2756 - ZONE OFFICE**

- 1) **Site Address:** Actual street address of the system location.
- 2) **System Type:** Circle the appropriate type of septic system.
- 3) **Site ID Number:** Noted on the Operational Permit document.
- 4) **Inspection Type:** Circle the type of inspection (i.e. "self").
- 5) **Owner's Name and Mailing Address:** Necessary only if different from the actual site address of the system.
- 6) **Monitoring Well Number and Depth To Water:** As seen on the plot plan of the septic system, the various monitoring wells should be comprised of 3" or 4" diameter plastic piping with a lid or cap located near the ground surface. Do not mistake the boxes over the purge and/or adjusting valves for the monitoring wells. There should be at least one well upslope of the system, one or two in or around the system, and one or two below the area of the system. Sketch the layout of the system on the back of the form (including the location of all required monitoring wells) and then record the depth to water (in inches) as measured from the surface of the ground; you can mark "dry" if no water is observed in the well(s).
- 7) **Alarm Box Condition:** Please describe current condition of box.

Dose Meter Reading and Date: Note the number shown on the dose counter and the date the reading was obtained.

Previous Meter Reading and Date: Enter the number from the previous self-monitoring report and the date of that report.

To calculate the amount of water that has been discharged to the system over this time period, subtract the lower dose number from the higher and write the result in the space for "# of doses". Then, determine the number of days between readings and place this number in the space for "# of days". Now, divide the two to determine the number of doses per day and place this number in the noted space. Next, multiply it by the number of gallons per dose for your particular system (use the quantity in gallons per dose as noted on the design plan) to determine the total amount in gallons per day of water the system has pumped during the time period noted.

- 8) **Condition of System:** Please note any problems (alarms going off, stuck floats, odors, etc.) with and/or any repairs made to the system since the last report.
- 9) **Inspection By:** Please sign and date the report.