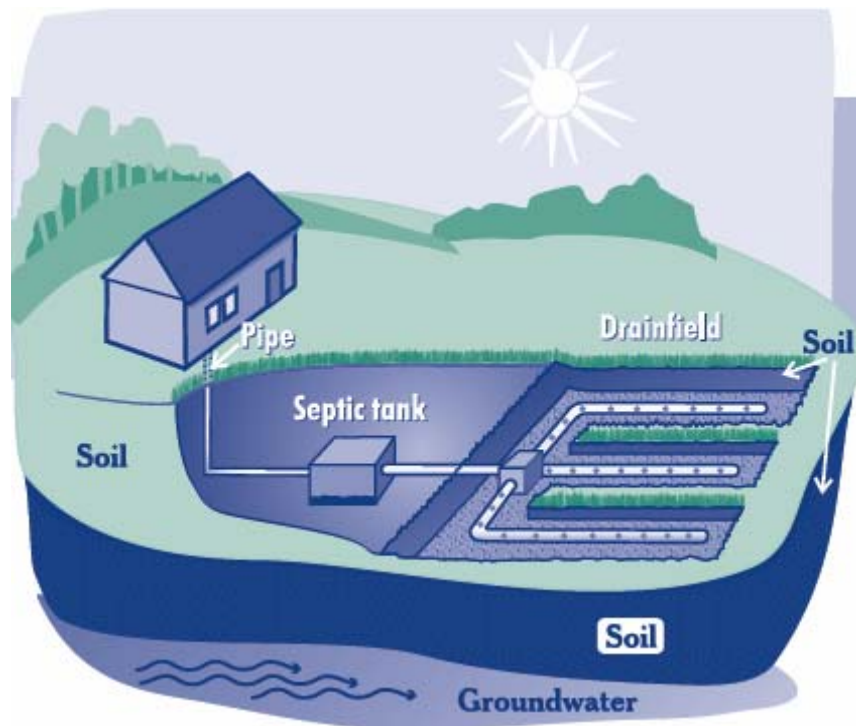


HOMEOWNER'S GUIDE TO ONSITE WASTEWATER DISPOSAL SYSTEMS



GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT AUBURN LAKE TRAILS ONSITE WASTEWATER ZONE MANAGEMENT PROGRAM

June 2005

HOMEOWNER'S GUIDE TO SEPTIC SYSTEM MAINTENANCE

Did you know that as a homeowner you're responsible for maintaining and repairing your septic system? Did you know that maintaining your septic system protects your investment in your home? Did you know that you need to periodically pump out your septic tank? If properly designed, constructed and maintained, your septic system can provide long-term, effective treatment of household wastewater and can avoid the need for a very expensive centralized sewer system. If your septic system isn't maintained, you might need to replace it, costing you thousands of dollars. A malfunctioning system can contaminate groundwater and surface water. And if you sell your home, your septic system must be in good working order. This guide will help you care for your septic system. It will help you understand how your system works and what steps you can take as a homeowner to ensure your system will work properly.

BRIEF HISTORY OF THE ALT WASTE DISPOSAL MANAGEMENT ZONE

Many people who move here are from areas that are served by sewers and are unfamiliar with the operation and maintenance of individual onsite wastewater disposal systems (septic systems). Water District employees are frequently asked about the Management "Zone" and why their septic systems require monitoring. So here is a brief history of the "Zone".

Several investors envisioned a land development project in the foothills of the Sierra Nevada Mountains near Cool, California in the 1960's bordering the proposed Auburn Lake. The developer, Trans-Land Company filed the first map of Auburn Lake Trails in 1970. From the beginning, this 2,800 acre ± community was designed as a multi-recreational, low density, gated community with a golf course, pool, an equestrian area and numerous horse trails. Initially, the Auburn Lake Trails development included 1850 lots; the wastewater from these proposed homes were to be disposed of by onsite septic tanks and leachlines.

The California Regional Water Quality Control Board adopted Waste Discharge Requirements Order No. 72-2 and named GDPUD, Trans-Land Company (later known as Transamerica Development Company, TADCO) and Auburn Lake Trails Property Owners' Association as parties, responsible for compliance with this Order. At that time, WDR's were very basic and required the discharger to not cause pollution or nuisance and required all discharges to be confined underground. There were also requirements for surface water monitoring to establish base line water quality. In the early 1970's, the State required that a public entity manage the onsite septic systems in all developments with 100 lots or more on septic systems. GDPUD agreed to be the public entity responsible for management. During that time, onsite septic systems were considered a temporary disposal option as it

was thought that a centralized sewer system would be installed once there was the population density to support it.

Problems with installing onsite sewage disposal systems reached a critical stage by 1979. There were many lots that were unbuildable and the developer initiated the formation of a sewer assessment district to build a centralized sewer system at considerable expense to each property owner. A five year legal dispute ensued between the property owners and the developer over wastewater disposal and other issues, which was eventually settled in 1984. The Auburn Lake Trails Property Owners Association won the lawsuit and after months of negotiation, all parties agreed to discontinue the proceedings of Sewer Assessment District No. 1.

As a result of the legal settlement, the density of the Subdivision was reduced to 1,100 total lots. Lots were combined and exchanged and some lot owners accepted cash settlements for "non-septicable" lots. As part of the legal settlement, Georgetown Divide Public Utility District (District) became the regulatory agency responsible for wastewater disposal within the Subdivision, and the owner of the Community Disposal System (CDS). New Waste Discharge Requirements (Order No. 84-126) were adopted by the State on October 26, 1984. The Auburn Lake Trails On-Site Wastewater Disposal Zone (OSWDZ or Zone) was formed on March 19, 1985. The Zone designation was a new designation pursuant to the Behr Bill. The purpose of the Zone is to preserve and protect the environment and public health through an approved management program for individual and small community waste disposal systems in lieu of an area-wide sewage collection, treatment, and disposal system. As set forth in the Resolution 84-6 the District "shall investigate, test, design, operate, monitor, inspect and if necessary, maintain and repair the On-Site Wastewater Disposal Systems within the Zone at the individual homeowner's expense" The Auburn Lake Trails Zone was one of the first of its type in the State and served as a model for other OSWDZ in the State and in the nation.

In March 2002, the Waste Discharge Requirements were updated to current standards and required substantial changes in the way GDPUD monitored waste discharge in the subdivision. Additional monitoring programs and a more comprehensive inspection program were implemented to ensure proper disposal of wastewater in Auburn Lake Trails. An effective management program requires a partnership between the District and ALT proper owners to properly manage and maintain your septic systems. This approach can protect public health, the environment, your property values and avoid the high cost of a centralized sewer system.

INSPECTIONS

What Does an Inspection Include?

- Locating the system.
- Uncovering access holes.
- Flushing the toilets.
- Checking for signs of back up.
- Measuring scum and sludge layers.
- Identifying any leaks.
- Inspecting mechanical components.
- Pumping the tank if necessary.

Inspection Schedule:

Every septic system must be inspected annually according to the Waste Discharge Requirements. The District will send a postcard to each homeowner reminding the homeowner of an upcoming inspection. The new WDRs also require that both compartments of your septic tank be checked and pumped when the sludge/scum depth is 25% or more.

Prior to Your Inspection:

To facilitate inspection and to avoid the expense of rescheduling and re-inspection please comply with the following:

- ACCESS** - **All elements must be accessible - clear all debris/soil from septic tank risers, trim all landscaping, move any obstruction** (i.e., bird bath, monuments, etc.). District inspector must have access to alarms, panels, monitoring risers, pumps, diversion valves, etc. Remove any padlocks from panels or lids.
- DOGS** - During the inspection, please confine all dogs or aggressive pets.
- GATES** - All gates must be unlocked prior to inspection.

Generally the owner's presence is not required for inspection.

What to Expect at Your Routine Wastewater Inspection:

On the day of your inspection, a District inspector will first identify his/her presence on your property and then get to work. The inspector must locate all components of the wastewater disposal system (septic tank access ports, diversion valve, leachfield(s), pumps, effluent filters, panels, alarms and monitoring risers.). Prior to starting the inspection, he/she will survey the property for signs of ponded water, unusual plant growth and note any septic odors. The inspector will then open the septic tank. Upon opening the tank the static level is noted and measured from a fixed point, and scum and sludge levels are measured. Based on these measurements and the quality of the effluent, a determination regarding pumping is made. The inspector will also note the condition of the tank and if sanitary tees are in place.

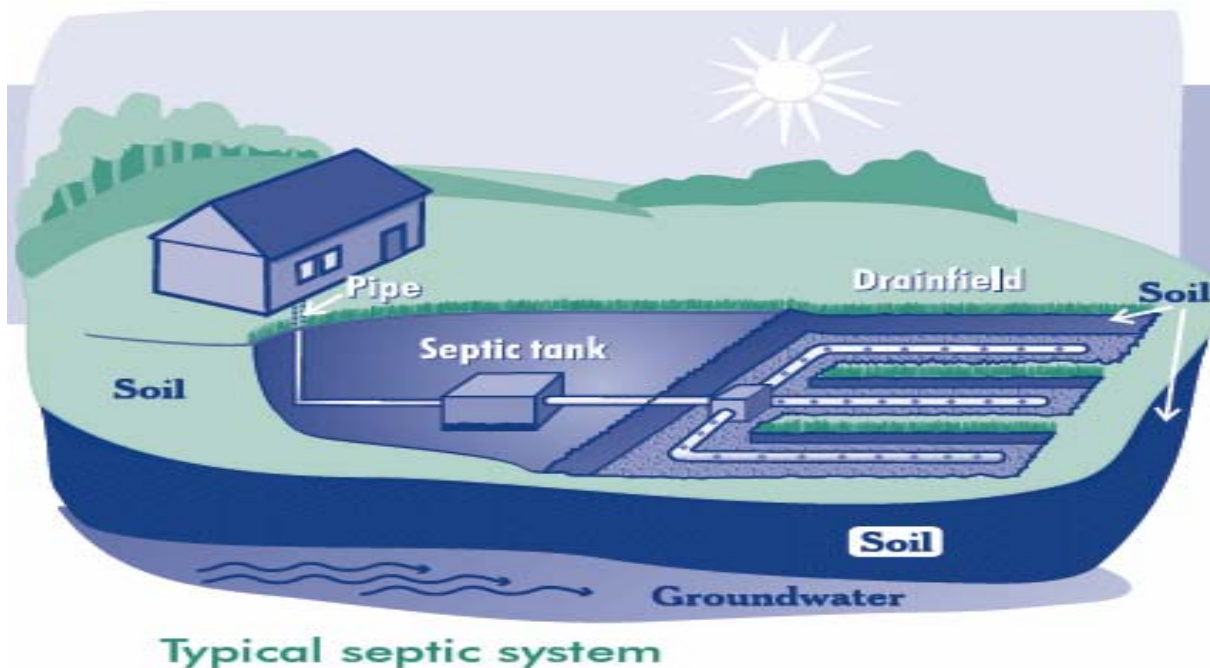
At this point the inspection varies depending on the type of system you have.

After the Inspection:

After the inspection is completed, the District will notify the property owner with a door hanger and/or a letter depending on the extent of the repairs needed. The WDRs dictate a specific time frame (30 days) for compliance with the repair order or the District is required to complete the necessary repairs and bill the homeowner for all expenses.

YOUR SEPTIC SYSTEM

All properties in Auburn Lake Trails use some type of onsite wastewater disposal system for the treatment and disposal of domestic wastewater. Disposal systems currently utilized in the Subdivision are the conventional leachfield, Mound, Pressure Dosed, Intermittent Sand Filter, and a small number of other alternative wastewater disposal systems.



Septic Tank

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 a domestic wastewater. A typical tank has a volume of 1000 to 1500 gallons, has a baffle separating the tank into two chambers (inlet and outlet), has an inlet and outlet tee (or effluent screen) to facilitate the separation of liquid effluent from solids and has two manholes for inspecting and servicing the tank. To function properly, a tank **must** be watertight. Waste cannot drain directly from the tank into the ground (cesspool) and groundwater must not seep in. Septic tanks for new installations are made of durable, non-corrosive materials such as concrete or polyethylene

For an onsite system to function effectively, the septic tank must retain the majority of the solid material contained in wastewater. Septic tank size is generally at least three times the daily design wastewater flow rate. This means that the average cup of water that goes down the drain will spend three days in the septic tank before it flows or is pumped out to the leachfields. During this three-day retention time the following happens: solid material settles out as sludge, floatable material forms a scum layer, and in the middle a clear liquid zone develops. This liquid zone of partially clarified sewage still contains significant amounts of organic constituents and harmful bacteria and viruses. While in the tank, the liquid and solid materials undergo anaerobic (without oxygen) biological digestion. This digestion process reduces the volume of sludge and scum (up to 50% of the solids are digested), produces gases (methane, carbon dioxide, hydrogen sulfide) and affects the metabolism of organic constituents from the clarified liquid zone. The tees, baffles and screens are important to prevent short-circuiting and promote the retention of solids (septage) in the tank. The relatively clear water between the scum and sludge zones is the treated wastewater that is then disposed in the leachfields. Septic tank treatment can remove up to 50% of the organic material and up to 30% of the nitrogen-rich compounds from domestic wastewater.

For a septic tank system to succeed in separating solids from liquid waste, a licensed septic tank pumper must pump the accumulated solids periodically. The frequency of pumping varies by use and practices of each household. Most homeowners can expect to pump their system every three to five years. Failure to pump will result in the accumulation of sludge that will start to impinge on the volume in the septic tank that in turn allows less settling time and therefore the effluent will carry more solids into the leachfield. This will not cause immediate leachfield failure, but such neglect could significantly shorten the effective life of the leachfield.

When the tank is pumped, it is important to ensure that all of the solids are removed. If your system includes an effluent screen or filter, the pumping contractor should clean the screen/filter, inspect it for damage and reinstall it.

Inefficient separation of solid material and liquid in a septic tank can result from: broken or missing tees, broken baffles, excessive accumulation of solids, infrequent pumping and hydraulic overuse of the system. Many of the guidelines are aimed at ensuring maximum solids retention in the septic tank. If the septic tank portion of the treatment process does not remove the solids, they will be included with the liquid stream that flows to the leachfield. Excessive solids in the leachfield clog pipes, gravel and soil surfaces that then lead to premature failure of the leachfield portion of the onsite system.

Wastewater Leachfields

From the septic tank or pump vault, the wastewater is distributed via a tightline into leachfield trenches that further treat and then dispose of the wastewater. In the past, the main objective of the leachfield was to dispose of the water -- keeping all the sewage (septic tank effluent) underground with little regard to the possible degradation in groundwater quality. Because of State and Federal mandates, it is now critical to consider the ultimate fate of the sewage.

Basically all leachfields consist of perforated pipe and gravel that distributes the septic tank effluent into the surrounding soil. The leachfields are sized based on the soil absorptive capacity and the anticipated wastewater design flow rate. The effluent either flows by gravity or is pumped into the pipes, flows from the pipes through perforations, drains into the gravel and is absorbed into the surrounding soil. As opposed to the treatment in the septic tank, the trenches rely on aerobic bacteria to decompose the majority of the pollutants in the effluent. Again, many of the guidelines are aimed at ensuring aerobic, unsaturated conditions in the leachfields that will prevent clogging of the soil.

Some of the engineered systems installed in Auburn Lake Trails have two complete leachfields with a diversion valve. This manual or automated valve diverts the effluent to one leachfield allowing the other to rest. As the waste is applied to the soil in a leachfield, the aerobic bacteria utilize the oxygen in the surrounding soil. The bacteria take up 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.

Even distribution of wastewater is critical for effective utilization of the leachfield capacity and to prevent localized overloading and clogging. Pressure distribution systems provide for efficient, even utilization of the entire leachfield and allow for a dosing-resting cycle so that re-oxygenation and therefore revitalization of the leachfield can occur.

Finally, it is critical to maintain aerated, unsaturated and uncompacted soil within and beneath the leachfields and your 100% replacement area. That's why it is important to protect the disposal area from erosion, building, grading and horses.

Sand Filters and Mound Systems

Many areas within ALT do not contain adequate depth to groundwater and/or there isn't sufficient soil depth to effectively reduce the effluent of pathogens and/or adequately protect the groundwater. To mitigate for these conditions, a sand-filter pretreatment unit is required between the septic tank and leachfields or a mound system is used.

Community Disposal System

There are 139 lots in ALT which are too small or do not have adequate soils or soil depth for a leachfield on their property so the effluent from their septic tanks flows to a series of very large disposal fields. This Community Disposal System (CDS) is monitored weekly by District staff. The WDRs have limited the wastewater flow to the CDS so the District has instituted a comprehensive inflow/infiltration prevention program to prevent any groundwater and surface water from entering the CDS system. Additionally, every septic tank and building sewer line on the CDS is tested for watertightness routinely and at the time of sale of the home to ensure that the system remains watertight.

Maintenance

If you had a brand new Mercedes in your driveway, would you drive it 100,000 miles without changing the oil? Would you be careless about the quality of the fuel? Probably not. Like that Mercedes, your septic system is worth a pretty penny, and it will give you years of trouble free service if you maintain it.

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.

SEPTIC SYSTEM PRACTICES

Water Usage

The efficiency of a septic tank for separating solids from the clarified liquid effluent is directly related to the length of time the water is in the septic tank, which in turn depends on the household generation of sewage. The more water used, the faster it passes through the system. Conversely, the less water used, the slower it goes through the septic tank and the longer the solids have to settle out so that they are not passed on to the leachfield.

Remember that all water that goes into the septic tank must eventually be absorbed by the soil. The less water entering the system, the less there will be for the soil to absorb.

Not only is the total amount entering the septic tank critical to proper operation, but the rate at which this water enters is extremely important. For example, doing one load of laundry per day for five consecutive days is easier on the system than doing five loads on one day. The best practice is to spread water usage throughout the day and throughout the week rather than to have dramatic daily peaks. This is important both hydraulically and because the temperature of the wastewater in the tank can be raised by a sudden dramatic inflow of hot water and this can cause solids to be mixed and carried out with the effluent. In recognition of the importance of spreading your water use out through the day, the new systems are incorporating timed dosing to minimize peak loading by dosing throughout the day and allowing storage volume in the tank for daily peaks.

To reduce your water usage:

- Use water saving devices
- Repair leaky faucets and plumbing fixtures
- Replace toilets with models that use 1.6 gallons per flush or less
- Take shorter showers
- Use only a partially filled bathtub
- Run clothes washer and dishwasher when they contain a full load
- Don't let water run while brushing teeth, washing dishes, etc.
- Don't drain spas or hot tubs into your septic system

Disposal Practices

Just as important as how much water goes into your system is *what* goes into your system. Remember that all phases of onsite wastewater treatment rely on a mix 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.

As a general rule, only three things should go into the septic tank: human wastes, toilet paper and waste from toilets, bathing fixtures and kitchen sinks. A good rule is: don't use

your septic system for anything that can be disposed of some other way. The less material you put into your septic tank, the less often it will need pumping.

- Avoid using a garbage disposal unit. Excessive use of your garbage disposal can increase the solids accumulation in your septic tank by 30-50% so you will have to pump your tank more often. Compost scraps or throw them out with the trash.
- Collect grease and oil in a container near the sink rather than pouring grease down the drain. These compounds will overload the tank and clog the disposal field.
- Minimize the disposal of paper products. Non-degradable items such as disposable diapers, sanitary napkins or tampons, Kleenex, cigarettes and paper towels are especially harmful. Use a toilet paper that will dissolve quickly upon disposal.
- If possible, use liquid laundry detergent. Some powdered detergents contain clay compounds that will increase the solids accumulation in your tank.

Household Chemicals

When used in normal quantities and as recommended by the manufacturer, household-cleaning products should not have any harmful effects on your system. Excessive quantities of strong bleaches, detergents and drain cleaners will eventually kill off the essential bacteria in your tank. Moderation should be the rule.

Do not use toilet bowl cleaning tablets. These are generally chlorine based and can significantly increase the concentration of chlorine in the wastewater discharged to the septic tank which in turn, could adversely affect the biological communities present in the septic tank.

Toxic Chemicals

The disposal of toxic chemicals into your septic system is unlawful and detrimental to your septic system (remember those hard working bugs), the environment and to District personnel and/or septic service personnel.

Toxic chemicals that should not be disposed of into the septic system include but are not limited to the following:

- Pesticides, herbicides
- Paints, paint thinners or strippers
- Caustic cleaners and solvents
- Gasoline, motor oil, antifreeze

Please contact the District for advice prior to the disposal of chemicals from a hobby or home business.

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 the 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 tanks 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 populations in your tank do 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.

Physical Care

Unless specifically designed for vehicle loading, no portion of your onsite wastewater disposal 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. For the same reason, horses should not be allowed on the leachfield or replacement area. Soil compaction can severely limit the transfer of oxygen and therefore hasten the development of anaerobic conditions. Similarly, leachfields should not be paved or cemented over.

COMMON SEPTIC SYSTEM PROBLEMS

Plantings

Roots can cause serious problems in and around your onsite wastewater disposal system. Roots can clog pipes, break apart tanks, infiltrate the gravel in your leachfield and render a system completely inoperable. In the follow-up to your routine inspection, staff will advise you to have roots removed if we see them infiltrating into your tank. If you act promptly and remove the roots, you can avoid a sewage back-up into your home and will keep your system operational.

Customers ask for recommendations regarding landscaping choices. Please 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 a 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 sewer 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 sewer 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 an interruption in electrical power. If you suspect you have a pump problem, contact a septic system contractor. The District maintains a list of local contractors who are licensed to work on systems.

If your plumbing is running slowly (if this has been either 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 remove 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). It may be necessary to install a curtain drain above your leachfield to intercept the groundwater.

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 the neighbors will notice a “septic odor”. A carbon filter is available for installation on the roof vent to scrub these unpleasant odors. Immediately prior to and during the routine inspection, the District 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 owner will be notified. Odor associated with surfacing effluent is of serious concern to the District.

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, the 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) would not 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.

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. If the pump is not functioning, sewage will fill a septic tank or sump basin until the alarm sounds.
2. There may be an electrical short in the alarm electrical system. There may be a float failure.
3. There may be a problem with the electrical panel that controls the pump and alarm system.

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 to the District and will be addressed immediately. If these conditions are observed during inspection, the property owner will be notified immediately to make any necessary repairs. If a report comes into the District regarding suspected surfacing effluent, the District Inspector will investigate promptly. Surfacing effluent can be a serious potential health hazard so please limit your exposure to suspected untreated effluent. Keep pets and children from contact and please contact the District as soon as possible.

Mosquitoes

Basically, your septic tank can be an excellent breeding ground for mosquitoes, but the little devils have to find their way in and out of your tank. If your tank has PVC risers with bolted fiberglass lids with neoprene gasket, you can be assured that this provides a positive seal against mosquito entry. To further protect against mosquito entry, please ensure that all of your plumbing vents on your house are covered with screening to prevent mosquitoes entering and then leaving your system.

Please remember that anything that holds water can be a breeding ground for mosquitoes: buckets, planters, ponds, rain gutters can all be a source of standing water.

Do's & Don'ts

for your Onsite Wastewater Disposal System



Do Practice water conservation -- the amount of wastewater that this Onsite Wastewater Disposal System (Septic System) can handle is limited.

Do Wash clothing and dishes only when you have a full load.

Do Contact GDPUD if an alarm sounds or other problems develop.

Do Connect all plumbing to the septic tank -- surface discharge of greywater is prohibited.

Don't Flush unnecessarily

Don't Dispose of the following into the septic system:
Paper towels, sanitary napkins, tampons, disposable diapers, dental floss, condoms, cigarettes, coffee grounds, cat litter, grease, and oil.

Don't Use water if the power goes out and your system incorporates a pump.

Don't Use septic tank additives.

Don't Drain hot tubs or spas into your septic system.

Don't Plant trees in the leachfield area.

Don't Dispose of toxic chemicals in the septic system.

If problems with the system develop, call: GDPUD at 333-4356.