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Public Health
Seattle & King County

# On-site Sewage System Homeowner's Manual

# — Gravity System —

(THIS MANUAL INCLUDES SYSTEM SPECIFICATIONS AND INFORMATION SPECIFICALLY FOR THE SEWAGE SYSTEM AT THE ADDRESS BELOW)

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Provided by

_____

Designer of the On-site Sewage System serving the address above

Developed by Public Health — Seattle & King County

April 1999

(Produced with funding from the Public Involvement And Education Project, financed by proceeds from the Washington State Water Quality Account and administered by the Puget Sound Water Quality Action Team.)

Address:_____ Parcel Number:_____

Dear Property Owner:

Please take some time to read through this manual. Familiarity with its contents is essential for proper operation and maintenance of your on-site sewage ("septic") system (**OSS**). This manual is for your use, and maintenance persons also will need the manual for reference, in order to correctly service and adjust your OSS. Proper operation and maintenance will assure the maximum life span from your OSS, potentially saving you thousands of dollars. **Waiting until the OSS malfunctions before informing yourself about its operation can be very costly**. As outlined in this manual (See OSS CARE), state and county board of health regulations include a number of requirements that OSS owners must fulfill. Your habits and life style must accommodate the limitations of the OSS serving your property, as described in this manual. Keep the manual with your important papers.

# OVERVIEW

This brief OVERVIEW is intended to provide a general orientation concerning your OSS and guide you to some key sections of this manual. We strongly suggest that you also refer to the **Table of Contents on page 6** and review the entire manual.

A GRAVITY OSS serves your property. This manual will help you understand your gravity system and keep it operating safely at the lowest possible cost. **The key to proper operation of any OSS is to provide conditions under which sewage that has been clarified in a septic tank (called "effluent") is kept in an environment where air can contact the effluent**. This allows beneficial bacteria to consume the harmful components of the effluent, such as disease–causing bacteria, and allows other harmful components, such as viruses, to be retained in relatively dry soils until they are decomposed. The gravity drainfield is a relatively simple mechanism for doing this, but it relies heavily on maintaining site conditions that keep your soils dry and undisturbed, as will be discussed later it this manual.

## YOUR AS-BUILT DRAWING

"As-built" is short for "as it is built". An *as-built drawing* is a scaled drawing showing the location of all OSS components (e.g., septic tank, pump tank, reserve area, etc.) in relation to buildings and property boundaries. You should become familiar with this drawing and the location of your OSS components. The drawing is included in this manual (see APPENDIX B).

## SYSTEM MAINTENANCE

Information that follows will outline maintenance procedures (see PERIODIC MAINTENANCE) and special precautions (see DOs AND DON'Ts and OSS CARE) you should take to maximize OSS effectiveness and life expectancy. Some of these are legally required (see OSS CARE). Maintaining an OSS requires more than just pumping the septic tank. Since you, the owner, are responsible for the operation and maintenance of your OSS, it is in your best interest to understand how your gravity system functions and the maintenance it requires. **Waiting to educate yourself about your OSS until the system backs up or sewage surfaces in your yard will virtually guarantee that the system will require an expensive repair. Repair or replacement of a gravity drainfield commonly costs in excess of $1,500.**

## SYSTEM MALFUNCTIONS

*The purpose of any individual OSS is to treat and dispose of all wastewater* being produced by a household or business. Part of the treatment process is the removal of harmful microorganisms from the wastewater before they can contaminate ground or surface waters. Many of the microorganisms in sewage are known to cause human diseases such as hepatitis, shigellosis, poliomyelitis, cholera, typhoid, bacillary dysentery, amoebic dysentery, and various parasitic worm infestations. **Untreated sewage is definitely capable of spreading disease**.

***If an OSS malfunctions, wastewater will often leak to the ground's surface before being adequately treated. These conditions pose a serious health concern. If this happens you should:***

1. Avoid contact with the sewage.
2. Contact the County Health Department for more specific information (see IMPORTANT NAMES AND PHONE NUMBERS).
3. Call the appropriate service company, generally your system maintainer (see IMPORTANT NAMES AND PHONE NUMBERS ).
4. Begin immediately to severely limit water use (see WATER CONSERVATION).
5. Contain the surfacing sewage and do not allow pets or children near it.

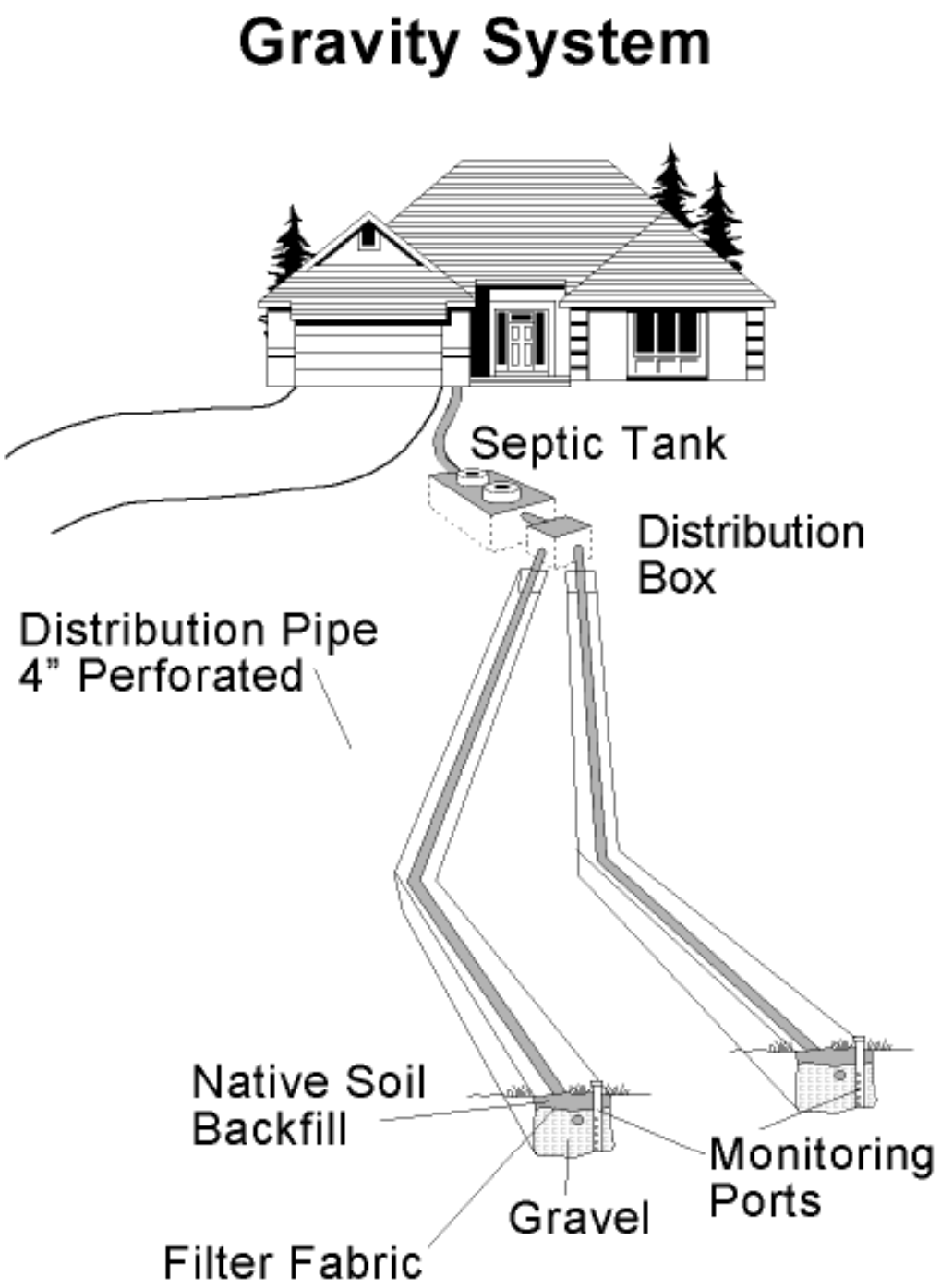
NOTE: *If sewage backs up into the house*, contact the Health Department for details concerning appropriate ways to cleanup and sanitize the contaminated area. The brochure *Guidelines For Cleaning Indoor Sewage Spills* may be obtained by calling the Health Department, at (206) 296-4932.

See HOW MUCH WATER CAN YOUR OSS HANDLE, and PERIODIC MAINTENANCE for more information related to OSS malfunctions.

## THE GRAVITY OSS

A typical gravity system has four main parts:

1. The septic tank with its outlet baffle filter (see SEPTIC TANK PUMPING and TANK BAFFLES),
2. The distribution/inspection box, at the inflow end of the drainfield,
3. The gravity drainfield itself and the surrounding native soils ( see DRAINFIELD AND SITE INSPECTION),
4. The area for a replacement drainfield, the "reserve area" (see THE RESERVE AREA).




Virtually all OSSs use a septic tank to separate the oils and solid components of sewage from the wastewater. The oils and solids are retained in the tank, while the wastewater "effluent" flows into a drainfield or more complex wastewater treatment device. In a

gravity OSS, the effluent flows through a distribution/inspection box into a drainfield by gravity, without the use of pumps or other machinery. The drainfield has a network of 4 inch diameter pipes laid in 2-3 foot wide gravel-filled trenches (or 2 foot wide plastic chambers) placed near the surface in the site's native soils. The purpose of the drainfield is to purify effluent before it comes into contact with groundwater. Treatment of the effluent occurs as it comes into contact with air while slowly moving through natural, relatively dry soil below the gravel-filled trenches.

**Relatively dry, unsaturated soil is an essential part of any OSS.** This natural, unsaturated soil provides oxygen required for beneficial soil bacteria to treat and purify the wastewater, reducing harmful bacteria. It is important to understand that once soil becomes saturated it loses most of its treatment capacity. It is generally felt that a minimum of approximately three feet of total useable soil depth (unsaturated, permeable soil) beneath the drainfield is required for adequate sewage treatment.

## THE RESERVE AREA

Every new drainfield is required to have a designated replacement (reserve) area. This reserve area must be protected for future use when the existing drainfield needs an addition or replacement. When, hopefully after many years of operation, your drainfield needs to be replaced, the reserve area should be ready to accommodate a new drainfield installation. If you damage the reserve area it will not be usable as a drainfield site. Soil-disturbing activities such as paving, grading, excavating, construction, or compaction must not occur in and around this dedicated area or in designated setback areas. *It is imperative that you maintain and protect the reserve area like your house depended on it, because it does*! The location of your reserve area is shown on your system's as-built drawing (see APPENDIX B).

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# OSS DOS AND DON'TS

## *DOs*

1. Become familiar with your OSS's operation by reading this manual.

2. Practice water conservation measures. (See **WATER CONSERVATION and HOW MUCH WATER CAN YOUR OSS HANDLE?**)

3. Compost food wastes rather than grinding them through the garbage disposal and into the drainfield system (see **GARBAGE DISPOSALS**).

4. Divert all surface drainage and roof drains away from the drainfield and septic tank (see **ACTIVITIES NEAR THE SYSTEM** and **LANDSCAPING AND SOIL PROTECTION**).

5. Maintain your system by having it checked by a periodically, and by protecting the system from physical damage (see **OWNER RESPONSIBILITIES** and **PERIODIC MAINTENANCE**).

6. Know where all septic system components are located. (see **APPENDIX B**, AS-BUILT DRAWING).

7. Space your laundry loads throughout the week to avoid periodic OSS overloading (see **HOW MUCH WATER CAN YOUR OSS HANDLE?**).

8. Perform regular inspections around the drainfield looking for wet soils and other signs of problems (see **DRAINFIELD AND SITE INSPECTION**).

9. Watch an educational video, e.g., Understanding *and Maintaining Your On-site Sewage Treatment and Disposal System*, available from the Health Department. For details; phone (206) 296-4932 (see **IMPORTANT NAMES AND PHONE NUMBERS**).

10. Plant a drought resistant grass or other shallow-rooted ground cover to prevent erosion of the drainfield surface (see **LANDSCAPING AND SOIL PROTECTION**).

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# *DON'Ts*

1. Don't dig into or around the drainfield or its reserve area (see **LANDSCAPING AND SOIL PROTECTION**).

2. Don't raise or lower the level of the ground on, or within about 30 feet from, the drainfield or its reserve area (see **LANDSCAPING AND SOIL PROTECTION**).

3. Don't cover the drainfield or the area around it with impermeable materials (e.g., clay soils, plastic sheets, concrete blocks, or paved walkways) (see **LANDSCAPING AND SOIL PROTECTION**).

4. Don't disturb or compact the soil over the drainfield or in the area within 30 feet down slope from the drainfield (see **ACTIVITIES NEAR THE SYSTEM**)**.**

5. Don't remove or damage the inspection ports in the drainfield **(see DRAINFIELD AND SITE INSPECTION**).

6. Don't plant plants other than shallow rooted ones on or near the drainfield (see **LANDSCAPING AND SOIL PROTECTION**)

7. Don't do more than one or two loads of laundry on any one day (see **HOW MUCH WATER CAN YOUR OSS HANDLE?**).

8. Don't use a garbage disposal (see **GARBAGE DISPOSAL**).

9. Don't drive on or within about 30 feet from the drainfield (see **ACTIVITIES NEAR THE SYSTEM**)**.**

10. Don't dispose of any inappropriate materials, such as cooking grease or oil wastes, paint products, or hazardous chemicals down the drains (see **WHAT CAN AND CANNOT GO DOWN THE DRAIN**).

11. Don't use septic system additives. They are rarely, if ever, useful (see **ADDITIVES**).

12. Don't build any structure over the tank or on, or within about 30 feet from, the drainfield (see **ACTIVITIES NEAR THE SYSTEM**).

13. Don't drain a hot tub (or large amounts of water in general) into your OSS (see **HOW MUCH WATER CAN YOUR OSS HANDLE?**).

14. Don’t clean paintbrushes (used for either oil-based or water-based paint) into sinks or other drains that lead to the OSS (see **WHAT CAN AND CANNOT GO DOWN THE DRAIN**).

15. Don't install a sprinkler system on or within about 10 feet from the drainfield and the tank (see **ACTIVITIES NEAR THE SYSTEM**). Also, make sure that your sprinkler system is equipped with approved back-flow prevention device.

# SPECIFICATIONS FOR MECHANICAL COMPONENTS

Installation Permit No._____ Parcel No._____

Designer:_____

Master Installer:_____

## SPECIFICATIONS

1. Septic Tank
   a. Manufacturer:_____ Model # _____
   b. Supplier:_____
   c. Size (gallons):_____

2. Effluent Filter Baffle Installed ☐Yes ☐No
   a. Manufacturer: _____ Model # _____
   b. Supplier: _____
   c. Access for Service is via:_____

# IMPORTANT NAMES AND PHONE NUMBERS

(1) **System Designer**

**Name: _____Company: _____**

**Address: _____Phone: (_____)_____**

The designer is responsible for the design of your OSS and providing you with this manual. This individual oversaw the installation, testing, and final soil cover placement, and completed the as-built drawings of your system. The designer can answer specific questions regarding your systems operation and performance. Some design firms may provide OSS monitoring and maintenance services as well.

(2) **System Installer**

**Name: _____Company: _____**

**Address: _____Phone: (_____)_____**

The installer is the person or company that built your system, using the designer's specifications and design drawings. Installers are certified to repair existing systems as well as construct new systems. County regulations, based on years of experience, require almost all repair work to be done by a county-certified installer.

NOTE: **Any repairs to your OSS will require a repair permit from the Health Department See # (4), below. For simple repairs, the permitting process has been greatly streamlined.**

**(3) System Maintainer**

**Note that Gravity OSSs are not required to be monitored by a professional system maintainer. The property owner may monitor the system or hire a system maintainer to do so.**

**Name: _____Company: _____**

**Address: _____Phone: (_____)_____**

A system maintainer is a person certified to conduct operation and performance monitoring, problem diagnosis, and preventive maintenance of OSS. A list of maintainers can be obtained by calling the Eastgate office of the health department at (206) 296 4932.

For gravity systems King County regulations require that the following periodic monitoring be performed:

- 6 months after the approval of the installation of the system (This first monitoring may be done by either yourself, your, OSS designer or system maintainer.),and
- Annually **at least the septic tank must receive a maintenance check if the building is equipped with a garbage disposal. The OSS owner or a system maintainer may do this monitoring.**
- **Every three years the entire OSS must be monitored by the owner or a county-certified OSS pumper or maintainer.**

**The System Maintainer or Pumper is to complete an OSS operation and performance inspection report, on forms provided by the health officer, and provide a copy to the OSS owner at the time of inspection.** A sample monitoring form is attached to this manual (see APPENDIX A). System maintainers also may do simple "limited repairs" (such as repair to a broken pipe, lid, or pump) to the OSS. Only an OSS installer may do more complex repairs.

(4) **Health Department (Seattle/King County Department of Public Health**

The Eastgate district office handles most OSS related activity within King County.

**Address: 14350 SE Eastgate Way, Bellevue, 98007 Phone:(206) 296-4932**

The Health Department is the educational and regulatory agency for all activities related to your OSS. It can provide you with answers to general questions and printed information. It also keeps records on file of your system's design, installation and as-built drawing. Staff can provide lists of OSS maintainers, designers, installers, and pumpers certified to practice in King County. The Health Department issues permits for the installation and repair of all OSS's and can answer any questions regarding repair procedures and requirements.

(5) **OSS Pumpers**

These businesses must be certified by the health department to pump sewage tanks in King County. They can do routine or emergency pumping of your septic tank and can do tank inspection. They are not permitted to repair septic systems or do overall OSS inspection of OSS other than gravity systems unless they also have a valid installer or maintainer's certificate from the health department

(6) **Plumbers**

They may troubleshoot and repair any plumbing problems inside your home. They are not allowed to do repairs to your OSS unless they have a valid OSS installer's certificate.

# OSS CARE

## OWNER RESPONSIBILITIES

**For gravity systems, OSS regulations require that periodic OSS monitoring is performed. (See System Maintainer in IMPORTANT NAMES AND PHONE NUMBERS for information on who may do this monitoring and the required frequency.):**

**As stated in Title 13 of the Code of the King County Board of Health, the OSS owner is responsible for the continuous proper operation and maintenance of the OSS, and must:**

1. For residential systems with no garbage disposal, determine the level of solids and scum in the septic tank at least once every three (3) years. If a garbage disposal is installed, or the OSS serves a business, make this determination once every year.
2. Employ an approved pumper to remove the septage from the septic tank when the level of solids and scum indicates that removal is necessary. (See PERIODIC MAINTENANCE for instructions regarding how this is determined.)
3. Have regular preventive maintenance/system performance monitoring inspections conducted and any indicated service performed by an approved person.
4. Operate and maintain the OSS in accordance with Title 13, with pertinent alternative system guidelines issued by the Washington Department of Health (DOH) and with this OSS owner's manual. Title13 requirements and DOH requirements are summarized in this manual.
5. Protect the OSS area, including the reserve area, from:
   a. Cover by structures or impervious material;
   b. Surface drainage;
   c. Soil compaction, for example, by vehicular traffic or livestock; and
   d. Damage by soil removal and grade alteration.
6. Maintain the flow of sewage to the OSS at or below the approved design limits for both quantity and waste strength.
7. Direct drains, such as footing or roof drains, and surface water away from the area where the OSS is located.

**The owner must not allow**:

1. Use or introduction of strong bases, strong acids or organic solvents into the OSS for the purpose of system cleaning.
2. Use of a sewage system additive unless it is specifically approved by the DOH, and
3. Use of an OSS to dispose of waste components atypical of residential wastewater, for example, but not limited to, petroleum products, paints (including latex), solvents, or pesticides.

### The following is practical advice concerning how to extend the operating life of your OSS and meet the requirements listed above.

## ACTIVITIES NEAR THE SYSTEM

You should not build on, excavate, pave, drive over, or allow livestock on any parts of the system, including the reserve area. Particularly critical to a drainfield on a sloping site is the area within 30 feet down slope from the drainfield. This is the area where most of the treated wastewater will travel as it is absorbed into the native soils. For drainfields on relatively flat, level sites it is important not to compact the soils or alter the site within 30 feet in any direction from the drainfield. It is very important that this area remain undisturbed. Homeowners should protect the drainfield and surrounding area and inspect it on a regular basis. Wet spots on or near the drainfield are potential indicators of advanced problems or OSS.

## LANDSCAPING AND SOIL PROTECTION

Grass or vegetation with shallow non-penetrating roots is the best cover for your drainfield. The grass should be of a shallow rooted but drought resistance type. Perennial rye mixed 50/50 with tall or fine fescue, "Northwest Mix", is a readily available good choice. New blends, which include these grasses along with clover and other broadleaf plants, will stay greener in the summer without watering and fertilizer. *Eco-lawn* and *Fleur de Lawn* are two available brands.

Since the native, natural soil is required for completing the treatment process it must not be disturbed or altered. Digging through it or compacting it, e.g., by driving over it, destroys the structure of the soil and greatly reduces its ability to provide sewage treatment. Anyone who has dug a hole and then tried to refill it has witnessed the destruction of soil structure. That is why there rarely seems to be enough dirt left to refill the hole.

Sprinkler systems should not be installed in or within about 10 feet from the OSS for three reasons: (1) damage to the drainfield by digging into it to install the sprinkler; (2) the additional water load to the drainfield, and (3) the crossing of sewer and water lines is generally not permitted due to the potential for contaminating drinking water with sewage.

With lawn care equipment, such as riding lawn mowers or tractors, be careful not to travel on the drainfield, or the downslope area when the soil is saturated, as during wet wintertime. Winter landscape work on the drainfield should be avoided to minimize frost penetration or compaction.

Any landscaping you choose to do must not adversely alter or disturb the drainfield or the soils around it. You should not place fill soils over the drainfield or the ground around it. This will block airflow into the drainfield and greatly reduce its effectiveness and shorten its operating life. Placing concrete or asphalt sections or plastic sheets over the drainfield also reduces the supply of oxygen to the soil necessary for the sewage treatment process.

Placing a vegetable garden over the drainfield is not recommended.

**IMPORTANT:**
**Do not allow any surface runoff to be directed onto or around the drainfield or reserve area. Equally important, do not allow any construction or ground compaction in the reserve area or within 30 feet down slope from the drainfield.**

## ADDITIVES

**The Health Department recommends against the use of septic tank additives of any type**. Septic tank additives will not reduce the need for septic tank pumping. Some additives may actually cause solids to be carried out of the septic tank and into the drainfield. This will begin plugging the drainfield bed, gradually causing it to fail. Other additives may pass into the soil and pollute the groundwater**.** In Washington State persons may not use, sell, or distribute any septic system additive unless the Washington State Department of Health (DOH) has evaluated the additive for safety. DOH approval indicates only that an additive is not known to be harmful, not that it is known to be useful. DOH evaluation of additives does not include investigation of the validity of performance claims by manufacturers. Manufacturers' use of the word "approved" is prohibited, but a product may be advertised as "complying with Washington laws regarding harm to public health and water quality."

## WHAT CAN AND CANNOT GO DOWN THE DRAIN

Your OSS is for treatment of typical kitchen, bathroom, and laundry wastewater and should not be used as a disposal site for other types of waste. Any materials that do not readily biodegrade within the septic tank should not be flushed down a toilet or poured down a drain. This would include sanitary napkins, tampons, coffee grounds, grease or oils of any kind" hair, "disposable" diapers, cigarette butts, paper towels, paper napkins, newspaper, all paints (**latex paint is very bad for filter baffles and the drainfield**), solvents, degreasers, pesticides, caustic drain cleaners or ovencleaners, or any toxins. Large quantities of

disinfectants (e.g., bleach) should also be kept out of your septic tank. Normally spaced clothes washing or household cleaning chores should not pose a threat to your system.

Prolonged, routine use of some types of prescription drugs, such as chemotherapy drugs or antibiotics, may be harmful to your system. If you suspect that drugs are disrupting your OSS it is best to have your system maintainer arrange for sample collection and testing of the system effluent. S/he can check your OSS and determine whether problems are occurring. Early detection will prevent permanent harm. There is also evidence that the repeated, frequent purging associated with the eating disorder bulimia can damage an OSS by making the sewage very acidic, killing bacteria required for normal OSS operation.

## GARBAGE DISPOSALS

It is recommended that a garbage disposal not be used. If you must use it, do so very sparingly. Garbage disposals, by design, use large volumes of water and pass significant quantities of suspended solids into the septic tank. Garbage disposals very commonly overload OSSs. If you use the disposal you will need to have the septic tank pumped much more frequently. Regardless of the frequency of septic tank pumping, garbage disposals will increase the waste concentration, which can overload the drainfield. When you consider the total cost associated with operating a garbage disposal, it might be the most expensive appliance in your home.

## HOW MUCH WATER CAN YOUR OSS HANDLE?

Each OSS is designed based upon a residence's anticipated wastewater production, called the "loading rate". Loading rate projections are based on the expected maximum number of people that will reside in a house (usually considered to be two people per bedroom) with a maximum daily wastewater production per person of about 60-75 gallons per day. Exceeding the expected loading rate can seriously damage the OSS. The normal average monthly water use, as indicated by your water bills, should be no more than about two-thirds of the system's design loading rate. This will allow for occasional higher peak flows without damaging the OSS.

If your water bill indicates that you have been using excessive water, the source of the excess water could be either a leaking plumbing fixture (toilet or faucet). A check of all indoor plumbing fixtures (e.g., toilet tanks) can rule them out as the source.

Also, sometimes surface water or ground water leaking into the septic tank can overload a drainfield. Surface runoff should always be diverted away from the tank. Groundwater intrusion is a more difficult problem, suggesting tank or piping damage and you should consult the system designer or installer or an OSS maintenance firm to help with diagnosis and corrective measures. Tank leaks are most common during winter months, when sites are wettest and sealing mastics harden and fail. ( A test for the level of dissolved oxygen in the septic tank wastewater can often reveal the presence of water leaking into a tank. Ground and surface water contain more dissolved oxygen than does sewage.)

**Be aware that the system will not continue to operate properly at a loading rate higher than that for which it is designed**. T**he maximum designed daily loading rate for your system is _____ gallons per day.**

A common cause of *periodic overloading* is saving a number of wastewater generating activities for the weekend, when the laundry, dishwasher, bathtub and shower are used heavily. This overloads the system on weekends while a lower loading rate occurs during the weekdays. This high weekend water usage can damage the OSS.

Periodic overloading should be avoided by spreading wastewater-producing activities (e.g., clothes washing) evenly throughout the week. **In many cases life styles may need to be adjusted to accommodate living within the limitations of an OSS**.

Remember that all OSSs have a limited ability to treat and dispose of wastewater. Monitoring your family's water use habits will help you to estimate how you are impacting your OSS. This will be especially useful if your home has no water meter. The following are some typical water use figures for various household activities. These figures will help you calculate you' family's OSS loading rate.

1. Showers typically use 25 gallons of water.
2. Clothes washing - 40 gallons per load. (Front loading washers and the new spray-rinse washers use much less.)
3. Dishwasher - 9 gallons per load.
4. Toilet flushing - 1.6 gallons-per-flush toilets are now the standard for new construction.
5. Garbage disposal - 2+ gallons per use.

## WATER CONSERVATION

It is important that you practice good water use habits to get the maximum life span from your OSS. Laundry washing should be spaced throughout the week and not all done on a single day. Wash only full loads of laundry or dishes. Low flow plumbing fixtures (toilets, faucet aerators, showerheads) should be installed if not already present in the house. (Low flow fixtures will be present in homes built since 1993.) Water-conserving appliances, such as front-loading clothes washers or the new spray-rinse washers, should be chosen when replacing your appliances. Any water-generating activity should be thought of in terms of its impact on the OSS.

NOTE: **You can obtain water conservation pamphlets from the Health Department, at (206) 296-4932.**

# PERIODIC MAINTENANCE

It is essential that your OSS be inspected and maintained on a regular basis. This will catch most problems before they harm the system. Recent amendments to the state and county OSS regulations require periodic system monitoring (See "System Maintainer" in IMPORTANT NAMES AND PHONE NUMBERS, also see DRAINFIELD AND SITE INSPECTION, below.) **The first monitoring of your system must be completed by _____(date).**

## SEPTIC TANK PUMPING

Wastewater from all plumbing fixtures drains into the septic tank. Heavy solids settle to the bottom where bacterial action produces digested sludge and gases. Lighter solids that float, such as grease, oils and fats, rise to the top and form a scum layer. Sludge and solids that are not decomposed remain in the septic tank. These solids must be removed periodically by pumping the tank.

Septic tank pumping is only one aspect of OSS maintenance, but it is the first line of defense for your OSS and should not be neglected. The average pumping service interval recommended by the Health Department is 3-5 years. However, this interval depends on the septic tank's size and the amount of solids and oil and grease put down the drain. A more frequent pumping schedule may be necessary depending on you' family's garbage disposal use and cooking and cleaning (especially dish washing) habits. **Inspecting the sludge and scum accumulation annually is the only sure way to determine whether a tank needs to be pumped.** As sludge and scum gradually accumulate, less and less room is available for the sewage coming into the tank. This results in the sewage passing through the tank more and more quickly, allowing less time for scum and solids to separate from the sewage before it leaves the tank, as "effluent". Therefore the tank becomes decreasingly effective in protecting the drainfield from contaminants.

**The tank should be pumped before either the scum mat or sludge layer is twelve inches thick.** Once your characteristic sludge accumulation rate is known, pumping frequency can be adjusted accordingly. The Health Department can supply you with a brochure including information on how to measure accumulated scum and sludge. Measuring the sludge and scum levels can be an awkward process. OSS maintainers or septic tank pumpers can do this for you if you prefer.

Knowing the location of your septic tank will save time and money when it is time to have it checked or pumped. Current code requires that newly installed tanks have access lids at the surface. Also, you can locate your septic tank by referring to your OSS as-built drawing, attached to this manual. Once you have located the tank, contact the Health Department at (206) 296-4932, for a list of septic tank pumpers currently certified to operate in King County. You may want to call several, because prices and details of the service provided may vary. For instance, some companies might insist on pumping the tank whether or not accumulated sludge and scum levels warrant it, and the thoroughness of the tank inspections may vary.

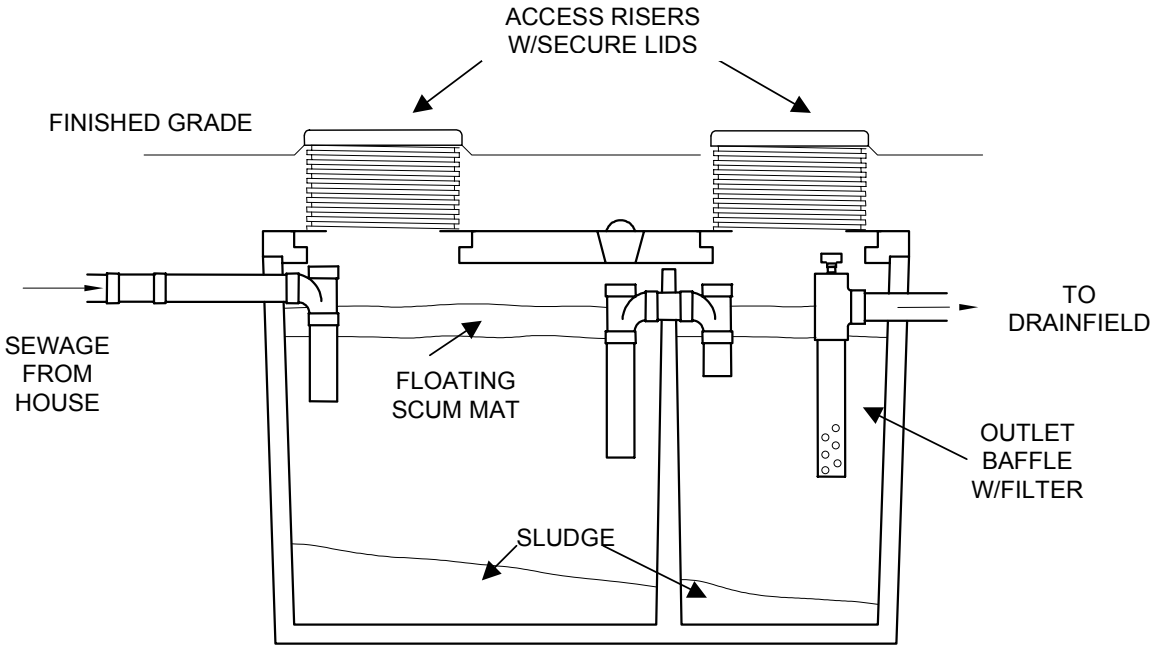
After the tank accesses are opened the pumper will note the odor and appearance of the wastewater inside. If the tank is working properly there should be a layer of scum on top and the wastewater should smell musty, like compost, not sour or nauseating. Before the pumper begins pumping the tank s/he will measure the scum and sludge layer thicknesses. Knowing the thicknesses you can judge the rate at which the solids have accumulated in the tank, and estimate the required pumping frequency. Required pumping frequency can change as household conditions, such as the number of residents, change.

**When the septic tank is pumped, make sure that both septic tank compartments are pumped.** Upon completion of pumping, the pumper is to provide you with a report detailing the service. At a minimum this report is to include:

1. Name, address, and phone number of the pumping firm;
2. Name, address, and phone number of the owner/occupant of property serviced;
3. Date service performed;
4. Depth in inches of floating scum mat and sludge layer;
5. Type of tanks and number of compartments pumped;
6. Number of gallons pumped;
7. General tank condition observed;
8. Condition of baffles, noting whether the filter baffle was cleaned;
9. Description of any other service performed; and
10. Signature and certificate of competency number of person performing the work.

Failure to provide this report is a violation of King County Board of Health regulations.

## WARNING:
## NEVER ENTER A SEPTIC TANK. PEOPLE HAVE DIED IN SEPTIC TANKS. THESE TANKS CONTAIN TOXIC GASES AND LITTLE OR NO OXYGEN.




**TYPICAL SEPTIC TANK**

## TANK BAFFLES

Septic tank baffles are devices within the septic tank that are essential to keep the solids in the tank, where they belong. Baffles also separate the floating scum layer from the liquid layer, promote settling of solids to the bottom of the tank, and allow only clarified liquid to enter the drainfield. There are three baffles located in a two compartment septic tank -- one on the inlet, where the sewage enters the tank; one on the wall dividing the tank into two compartments; and one on the outlet, where the effluent leaves the tank. All tank baffles should be inspected whenever the sludge and scum levels are measured, but to thoroughly inspect the baffles, it is sometimes necessary to pump the tank.

A broken outlet baffle can allow floating scum to leave the tank through its outlet, so that the tank retains no scum. This defeats the purpose of the tank and makes it appear that it does not require pumping. Sewage scum entering the drainfield can ruin it. Baffles must be replaced if they are in poor condition.

**The outlet baffle will probably contain a filter** to keep any solids larger than 1/8th inch from passing into the pump tank and being pumped into the drainfield. This filter will need periodic checking and cleaning. If the filter clogs, plumbing drains may drain slowly or sewage may backup in the house. The filter baffle should be checked, and generally cleaned, annually. No water should be used inside the house while the filter is removed for checking and cleaning. This will minimize the escape of sludge and scum from the septic tank. Cleaning the filter generally involves simply removing it and hosing it off into the access for the inlet compartment of the tank.

**CAUTION: Some of the filter baffles when removed for cleaning may pass solids into the pump tank. If this is the case, the septic tank might need to be pumped down before removing the filter baffle for cleaning. Consult the manufacturer of your baffle, or your system maintainer (see SPECIFICATIONS FOR MECHANICAL COMPONENTS).**

Make sure that the filter baffle is cleaned at the time of tank pumping. Any time that the tank is checked, the filter should also be checked for blockage. The frequency of cleaning required will depend on user habits but is rarely greater than once a year.

## DRAINFIELD AND SITE INSPECTION

Six months after installation, and every three years, the drainfield (and the operation of the system in general) must be inspected to determine its condition. Additionally, if your property is served by a garbage disposal, the septic tank must be inspected annually. A combination of state and county board of health regulations requires these inspections. They are intended to save you money in the long run while protecting public health. More frequent inspections are sometimes desirable, e.g., if there is reason to expect that the drainfield is damaged or is being overloaded with effluent.

At a minimum the inspections must include:

1. Drainfield Area Evaluation for -
    - Indications of surfacing effluent or ponding in the monitoring standpipes
    - Appropriateness of vegetation, landscaping impacts, etc.
    - Absence of:
        - Vehicle traffic
        - Inappropriate building
        - Impervious materials or surfaces
        - Abnormal settling or erosion
2. Septic Tank Inspection for–
    - Sludge and scum accumulation (i.e., need for pumping)
    - Clogging, damage, or improper placement of the outlet baffle filter (Clean as needed.)
    - Evidence of tank leakage
    - Risers and lids are at or above grade and lids are secured

The inspection must check liquid levels in the inspection ports, look for seepage around the toe of the drainfield, and complete a number of other observations. If these procedures detect potential problems, additional tests might be needed. These tests sometimes include sampling and laboratory testing of effluent or soils. (See the APPENDIX A inspection form for a full list of the components of the periodic inspection.)

The inspection will require locating the inspection ports, which are the capped plastic standpipes within the drainfield. Check the as-built drawing for the number and location of these. Do not alter or remove these inspection ports, as they provide a "window" into the drainfield. If liquid within either of these pipes is observed to be ponding 4-6 inches or more continuously (i.e., for more than a day), or increases in depth over time, then there may be a problem with the functioning of the drainfield. The drainfield area must be checked for sewage breakouts or erosion.

Continuous ponding seen through the inspection ports is a sign that the OSS is stressed. Corrective measures should be taken before the system actually fails. Replacement of failed drainfields can cost thousands of dollars. If you notice any potential problems, you should contact an OSS maintainer and the County Health Department for a consultation.

# MAINTENANCE LOG

The following log sheet will allow you to accurately document any service done to your OSS. You may wish to keep a log of the monitoring done on this sheet as well. Keep this manual together with reports you receive from your system maintainer and the company(s) that pump the septic tank. Having these documents available can save you hundreds or even thousands of dollars in maintenance, diagnosis, and repair costs over the life of your home. At the time of sale of your property these records will provide the buyer assurance that your OSS has been well maintained.

| MAINTENANCE RECORD | | | | |
|---|---|---|---|---|
| **DATE** | **CO. NAME/ADDRESS** | **PHONE NO.** | **SERVICE PERFORMED** | **COST** |
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