



Land Use Fact Sheet #2

What is a Septic System and How Does It Work?

On-Site wastewater (septic) systems serve residences and businesses in the county that do not have a city sewer connection available. The on-site system is usually located on the same parcel as is the source of wastewater. Its purpose is to prevent surface and ground water contamination and to dispose of wastewater below the ground surface so that people will not come into contact with disease causing organisms (germs).

The septic tank is a treatment unit where waste is reduced by bacterial activity.

A modern septic tank is usually a two compartment tank made of concrete, plastic, or fiberglass, holding anywhere from 800 to 1500 gallons of liquid and solids. With normal household use, an empty tank will fill in two to four days and then begin discharging into the soil absorption field, or drainfield.

The heavier solids in waste water sink to the bottom as “**sludge**”. Here, anaerobic bacteria feed on the organic matter, reducing its volume by up to 40%, and producing by-products such as stable solids, liquids, and gasses (carbon dioxide, methane, etc.). The solids, like ashes left from a larger volume of firewood, eventually build up and need removal.

The lighter solids (grease, oils, soaps and lighter particles) float on the water surface as “**scum**”. The scum builds in volume just as the sludge does. If these sludge and scum layers are not removed by pumping, they can eventually flow into the soil absorption field, clogging the pipe, rock and soil pores, causing failure of the system. Not pumping the septic tank can be compared to not changing your car’s oil and filter.

The relatively cleared water remaining in the cleared water remaining in the middle flows into the soil absorption field, and is more easily absorbed without its former oils and solids. It remains, however, a carrier of bacteria, viruses, detergents, chemicals and dissolved solids.

The septic tank doesn’t treat chemicals. This is important because harsh chemicals can kill the bacteria that reduce the solids, greatly reducing the systems’ ability to function. In addition, chemicals discharged into the tank may enter the soil absorption field and eventually the groundwater with little or no change, and cause contamination.

The Soil Absorption Field (drainfield). Once the septic tank has pre-treated the wastewater as described above, the water flows into the soil absorption field. For current conventional systems, this is generally 200 to 1800 feet of rock filled trench (depth of two to three feet). Running near the top of the rock is a three to four inch perforated plastic pipe which distributes the water through the trench length. Native soil covers the pipe and rock.

The soil absorption field (Drainfield) spreads out the wastewater, allowing it to be stored in the rock spaces as it seeps into the soil. Some may be absorbed by plants, or passed by evapotranspiration in to the atmosphere. Further biological treatment and filtering occur in good unsaturated soils, and relatively safe water is eventually returned to the ground water table or nature hydrological cycle. In **saturated** (wet) soils, the soil is less able to provide an effective cleaning action. This may occur in areas with high ground water tables, or shallow, rain saturated soils.