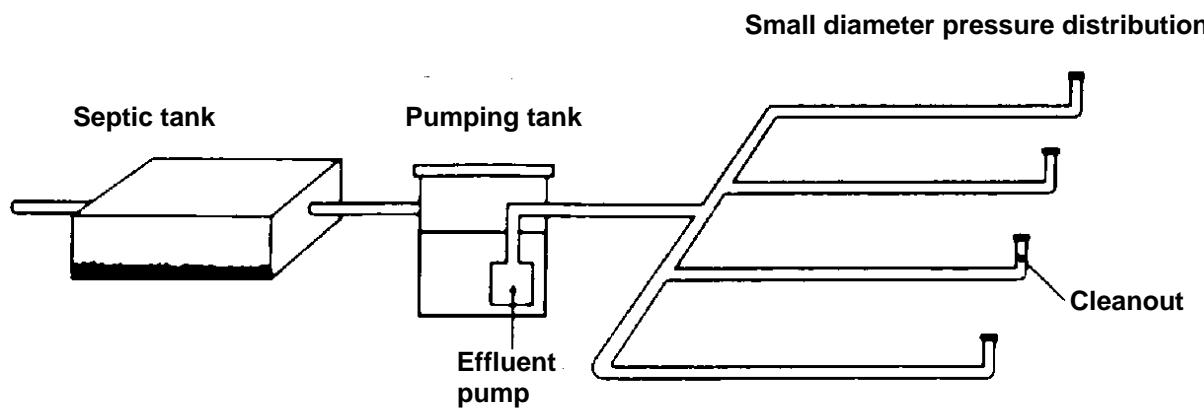


System Type: Septic tank/Pretreatment to Low Pressure Pipe

Basic Design: A low pressure pipe (LPP) system is a shallow, pressure-dosed soil absorption system. LPP systems were developed as an alternative to conventional soil absorption systems to eliminate problems such as clogging of the soil from localized overloading, mechanical sealing of the soil trench during construction, anaerobic conditions due to continuous saturation, and a perched seasonal water table. The LPP system uses several design features to overcome site challenges including: shallow placement, narrow trenches, pressure-dosing with uniform distribution of the effluent, design based on loading, resting and re-aeration between doses. The main components of a LPP system are a septic tank or an aerobic unit, a dosing chamber (a submersible effluent pump, level controls, a high water alarm, and a supply manifold), and small diameter distribution laterals with small perforations (holes). The septic tank is where large solids are removed and primary treatment occurs. Partially clarified effluent then flows by gravity from the tank to a pumping chamber, where it is stored until it reaches the level of the upper float control, which activates the pump with each dose providing 5 to 10 times the lateral pipe volume. The level controls can be set for a specific pumping sequence, or timed dosing, which allows timed breaks between doses and increased time for the soil to absorb the effluent under less saturated conditions. Demand dosed pump sequences deliver effluent based on demand. The pump turns off when the effluent level falls to the level of the lower float control. The pumping chamber is usually sized to provide excess storage of at least one day's capacity (above the alarm float) in case there is a power failure or pump malfunction.



Advantages: Shallow placement of trenches in LPP installations promotes evapotranspiration and enhances growth of bacteria. Improved distribution through pressurized laterals disperses the effluent more uniformly throughout the entire drain field area. Periodic dosing and resting cycles enhance and encourage aerobic conditions in the soil. Shallow, narrow trenches reduce site disturbances and thereby minimize soil compaction and loss of permeability. LPPs allow placement of the drain field area upslope of the home site. The problem of peak flows associated with gravity-fed conventional septic systems is overcome.

Disadvantages: Cost is higher than those of conventional systems due to specialized construction and possible engineering design fees. In some cases, the suitability could be limited by the soils, perched seasonal water table, slope, and space characteristics of the location. A potential exists for clogging of holes or laterals by solids or roots.

Operation and Maintenance: A properly designed and installed LPP system requires very little ongoing maintenance. Regular pumping of the septic tank and pumping chamber (every 2-5 yrs) at a cost of \$50-\$100 annually. Some solids may accumulate at the end of the lateral lines, which should be flushed out once a year. Turn-ups installed at the distal ends of laterals facilitate this process. Annual service contract, if required, between \$100-\$300.