

## SEWER PROBLEMS - WHAT ARE THE CHOICES

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Not all properties are created equal. Various situations of soil types, ground water problems, poor planning, and other factors has left some home owners on the hillside with potentially serious sewage treatment and disposal problems. Following is a brief discussion of the various options available to safely handle household domestic waste.

**Conventional Septic Tank and Leach field:** By far the most common system for handling on-site sewer, these systems serve as an inexpensive means for handling on-site domestic waste. The septic tank functions to separate solids from liquid waste. The collected solids remain in the tank and receive further treatment and consolidation via an anaerobic treatment process. The liquid moves from the septic tank to the leach field; most common are the trench and bed disposal system. Here the waste water is dispersed into the soil where it receives its final treatment. These systems are a proven technology and can safely handle domestic waste when properly designed and located on large lots. For most hillside lots, they are an efficient, safe, and relatively inexpensive system that can produce years of reliable service. The technology is used world wide, especially in areas with low population densities.

*Unfortunately, because of poor land use decisions years ago, we have some properties that because of tight soils, high groundwater, or high density (small lots), the conventional and well understood septic system and leach system will not perform adequately. When this situation exists, the answer might lie with one of the system listed below.*

**Package Treatment Systems:** These systems are small treatment systems sized to handle individual homes or several homes. They treat waste to a much higher quality than conventional septic systems and produce an effluent that can often be safely discharged in environment considered unsuitable for septic system waste. The liquid effluent from these units might be able to percolate into tighter soils without the problems of soil clogging as experienced with conventional septic systems. The effluent, being far cleaner than septic tank waste, might be able to be discharged in areas where high ground water persists or where high residential density exists. These systems cost more initially and do require ongoing monitoring and maintenance, but because of the efforts of the Municipal Health Department, we now have several very reliable systems that the municipality will accept for use in Anchorage. It is expected that such a unit operated correctly could eliminate the problem of leach field replacement as the soil does not clog as happens over time with the conventional septic tank effluent.

**Step Systems:** Sometimes referred to as modified sewer systems, these system incorporate a solid separation phase (*similar to the basic septic tank*) followed by a pump system that discharges to a small diameter pressure line system. The pressure line can be directed to a remote parcel of land for further treatment and disposal or can be delivered to the municipal gravity sewer system. The advantage of these systems are the

substantially reduced construction cost and neighborhood disruptions for the pressure lines over that of conventional gravity sewer lines. The central business and residential area of Wasilla has such a system. Anchorage Water and Waste Utilities has not been very receptive to such system for Anchorage to date, however for some sites, this could be the most cost effective alternative to the homeowner.

**Elevated Bed Disposal System:** Where high ground water persists, an elevated bed might be an alternative. In simple terms, an elevated bed is nothing more than a soil disposal system that is elevated on the property to gain adequate separation from high ground water or bedrock. These systems are more costly than conventional buried systems largely because of the extra materials necessary to construct the system. They still require a septic tank and often require a pressure distribution system to move the waste from the septic tank to the leach field.

**Holding Tanks:** Holding tanks have been a frequent last resort for properties that experience difficult on-site problems such as very tight soils (will not perk), high ground water, high bedrock, or close proximity to surface waters. This is a safe method of handling sewage, provided the homeowner arranges to have the tank pumped out on a regular basis. Disadvantages are its high annual operating cost, however this cost is offset because there is no leach field to replace as the soil becomes clogged. For a number of reasons, local and state regulations only allow holding tanks when conventional on-site systems will not work.

**AWWU Sewer Service:** A proven technology that carries all the waste from the home and delivers it to a central treatment plant for treatment and disposal. This is a reasonable way to handle waste from urban areas where large populations are concentrated in small areas. The economics change as distances and lot sizes increase. The major drawback to south Anchorage homes are the high initial cost, which could **exceed** the cost of some homeowner's initial investment in their properties and homes.