

POWTS technology has advanced through the years and so has the treatment of domestic household waste. Some of the types of systems currently being installed under the regulations of the Department of Commerce include privies, holding tanks, conventional gravity systems, conventional lift systems, in-ground pressure distribution systems and mounds.

Privies

There are two basic types of privies. One is an open pit privy, which simply is a hole dug in the ground under a privy. An open pit privy requires a soil boring to prove that soils are suitable for waste. The second type of privy is a sealed vault privy. A sealed vault privy requires a minimum storage capacity of a 200 gallon watertight container to hold all waste and must be pumped by a licensed waste hauler when full. Other types of privies also include portable restroom units and a variety of different composting and incinerating toilets. Privies are for minimal and occasional usage and can be installed when a dwelling does not have pressurized water or plumbing fixtures. If a dwelling has pressurized water or plumbing fixtures, a code complying POWTS system must be installed.

Holding Tanks

A holding tank is another type of system. A holding tank is a watertight receptacle for the collection and holding of wastewater. The minimum size holding tank for up to a 3 bedroom house is a 2,000 gallon capacity tank. When the tank is full, a waste hauler must be contacted to pump and dispose of the effluent either by land-spreading or at a municipal wastewater treatment plant. When soils and/or topography become limiting factors, a holding tank may be the only viable system.

Septic Systems

Except for privies and holding tanks, all other systems include an important component called a septic tank. A septic tank is a water treatment device defined by the Department of Commerce as a device which renders inactive or removes microbiological, particulate, inorganic or radioactive contaminants from water which passes through the device or the water supply system downstream of the device. Downstream of the septic tank is another component of a POWTS, the Soil Absorption System (SAS) or also called a cell. Cells cannot be wider than 6 feet. Most cells are designed to be long and narrow, to utilize a larger soil area for treatment, including the native soil of the sidewalls of each cell. There are several different types of media used for SAS. Some examples are washed and screened rock, washed and screened sand, gravel-less leaching chamber units and other artificial media.

Conventional Gravity Flow System

The most common POWTS is a conventional gravity flow system. This system includes a septic tank and a SAS. The SAS is located at a lower elevation than the outlet of the septic tank and the effluent flows via gravity to the cell(s).

Conventional Lift System

A conventional lift system is similar to that of the gravity flow system, but the cells are located at an elevation above the outlet of the septic tank. A separate chamber is required to house a pump to dose the effluent to a high point and then the effluent flows to the cell(s) via gravity. This chamber can be in combination with the septic tank or a separate pump tank.

In-Ground or Mound Pressure Distribution System

An in-ground pressure distribution system is also a lift system that utilizes the shallowest natural soil possible which is 36 inches. It includes a septic tank, a pump chamber or pump tank, and a pressurized dosed cell. If 36 inches of natural suitable soil are not available, washed and screened sand is needed to

construct a mound. Mounds require a large area and a level site. A mound system also includes a septic tank, pump chamber or pump tank, and a pressurized dosed cell.

Older Systems

Some types of SAS, still present and in use today, once considered acceptable, but are no longer being installed due to state code changes include drywells, cesspools and conventional septic beds.

Drywells, also called seepage pits, were once commonly installed as a way of treating effluent leaving the septic tank. Drywells were constructed out of concrete blocks, bricks, fieldstones, or rocks and composed in a 4 – 6 foot diameter cylindrical shape and up to 8 feet in depth. Most were installed 5 – 15 feet in the ground. Because of this deep construction technique, not only was it dangerous to install drywells, but many were installed in or slightly above ground water resulting in untreated effluent entering the ground water. If a drywell was installed in groundwater, the system would very seldom fail or back up into a house, because the groundwater would flush the system out. The untreated effluent would then travel through the ground water to the water we drink and to surface waters of lakes, rivers and streams. Present code requires a minimum separation distance of 3' between the bottom of the infiltrative surface of a system and a limiting factor such as groundwater.

Cesspools are defined by Department of Commerce Chapter 81 as an excavation which receives domestic wastewater by means of a drain system without pretreatment of the wastewater and retains the organic matter and solids permitting the liquids to seep from the excavation. Some cesspools were constructed in such a manner that they did not have a cover and were exposed to the ground surface. This type of system does not utilize a septic tank and poses a serious health threat. The use of a cesspool as a POWTS is prohibited, including any cesspool existing prior to July 1, 2000.

Life Span of POWTS

The life span of a particular POWTS depends on water usage, household habits and other criteria. One way to improve effluent quality is to install an Aerobic Treatment Unit (ATU). An ATU introduces oxygen into the treatment tank to improve effluent quality before entering the SAS. An ATU can be installed to rejuvenate a failing SAS, and can also allow for downsizing of the installation of a new SAS, if area or soils are a limiting factor. An ATU is also required to be installed in eating establishments and other commercial businesses which have high strength waste. As technology continues to improve, new types of private onsite wastewater treatment components and systems will better protect public health and the waters of the state.

Borrowed from the 2012 Nelson Lake Septic System Survey completed by Sawyer County Zoning and Sanitation Department, WI