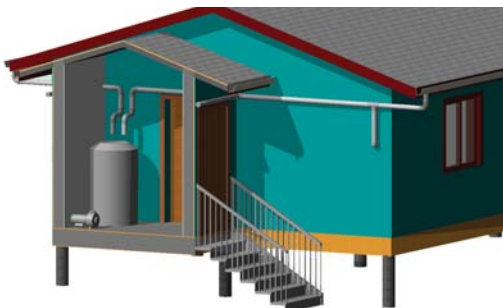
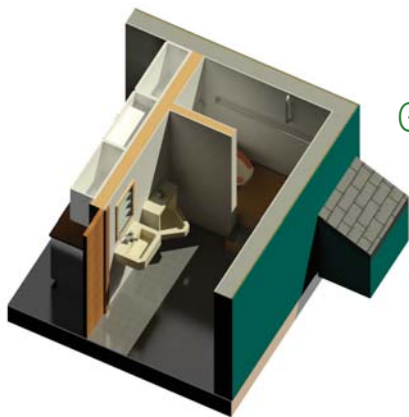


# Community: Kivalina, Alaska

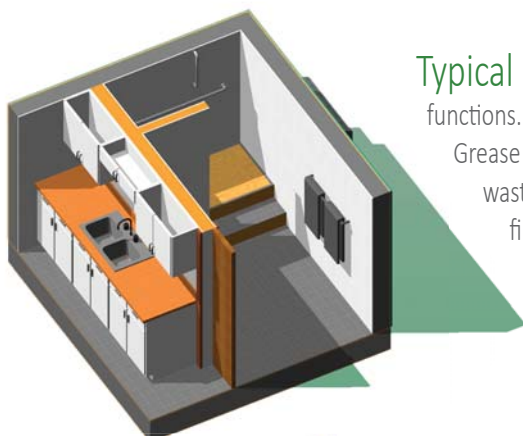
**Proposed project.** The biggest drawback of a typical piped water and sewer system is that they are not portable. In addition, it is difficult to protect a piped system from a major storm surge or climate change impacts. ANTHC is proposing a grey water disposal/separating toilet system. This system is one that is entirely homeowner based and is designed to address the most basic sanitation needs. A rain catchment system will be used to supplement water demands. Each system can be modified to fit the needs of the owner, and they can be moved with the community to the new location.



**Rain catchment system.** The average annual precipitation in Kivalina has been reported to be approximately 11 inches. For an 800-square-foot home with a catchment area of approximately 1,200 square feet, it is possible to recover nearly 3,000 gallons of water during the warmer months. Precipitation alone will not supply the average individual's water needs. Rain is not available year round; therefore, a water tank will be equipped to accept hauled water from the watering point as well as rainwater from the gutter system. A point-of-use water treatment device will be provided to treat water from non-potable sources.



**Grey water disposal.** A grey water tank will accept liquids that are discharged from the kitchen and bathroom sinks, urinal, and separating toilet. The urine will be diluted and the grey water will be periodically drained and disposed into the gravel. The shallow brackish ground water (water that has more salinity than fresh water, but not as much as sea water) and gravelly soils offer a freeze-proof and environmentally sound alternative for disposal of the grey water.



**Typical kitchen layout.** A kitchen sink will be provided for washing dishes and other cleaning functions. The solids/grease will be separated from the liquid and will flow to the grey water tank. Grease can debilitate even the most robust plumbing systems, and it is important to keep the waste line free from anything that could cause clogging and possibly freezing. Therefore, a solids filter and grease trap will be located under the kitchen sink that will separate the solids and grease from the dishwater.



**Typical bathroom layout.** The separating toilet is designed with two compartments—one to accept fluids and one to accept solid waste. The fluids will be directed to the grey water tank while the solids will be collected in a bag located in the toilet waste box. The toilet is designed to aerate the waste and remove odors through ventilation. Solids that are collected in the bag will be disposed of as solid waste. A waterless urinal and a ultralow flow bathroom sink will also be included that will discharge to the grey water tank.