

# Recreation Management Tech Tips

United States Department of Agriculture  
Forest Service



**Technology &  
Development Program**

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## PORTABLE VAULT TOILET SERVICE UNIT

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### BACKGROUND

Septic tank service companies pump most U.S. Department of Agriculture (USDA) Forest Service vault toilets. These companies have the equipment, training, and contacts at a municipal wastewater treatment plant that are required to pump vault toilets and to discharge the waste safely and legally. However, some USDA Forest Service vault toilets are in remote locations where such service is unavailable, or the vault toilets are inaccessible using standard equipment. In many of these cases, USDA Forest Service employees have to pump the toilet vaults with out-of-date or unsuitable equipment.

Field personnel asked the San Dimas Technology and Development Center (SDTDC) to find a better method to empty vault toilets. The grinder pump and poly tank used by districts to empty toilet vaults caused frequent pump jams that had to be cleared by hand.

Vacuum pumps are a more sanitary way to pump vault toilets. If a vacuum hose is clogged, pressure can be reversed to clear the clog, which eliminates the risk of human contact with vault toilet waste. The waste does not go through the vacuum pump, so the pump does not become clogged with debris.



Figure 1—Vacuum pumping a vault.

SDTDC developed the specifications and Marsh Industrial fabricated and manufactured a small vacuum pump service unit for vault toilets. The unit has a 500-gallon waste tank and a 200-gallon freshwater tank. The tanks may be permanently trailer-mounted or skid-mounted for use on a multi-use trailer. When full of water and wastewater, the unit weighs nearly 3 tons, making it unsuitable for the bed of a pickup truck. In 2003 a complete unit, with trailer, cost approximately \$11,000. Contact Marsh Industrial for their current price.



Figure 2—Marsh Industrial toilet service unit.

French Glen Blacksmiths will also fabricate a vacuum pump service unit to USDA Forest Service specifications. In 2002, a trailer-mounted service unit, with a 500-gallon waste tank and vacuum pump and a 500-gallon clean water tank and pressure pump, cost \$12,000. Contact French Glen Blacksmiths for options and current prices.





Figure 3—French Glen Blacksmith toilet service unit.

Many local fabrication shops can fabricate a toilet-service unit. To ensure that your quotes are comparable, specify the desired pump sizes, tank sizes, and material, as well as hose sizes and length and any other required options. The Marsh Industrial unit uses a 12-volt pressure pump with a 4.5-gallon per minute at 20/40 pounds per square inch and a 9-horsepower belt drive gasoline vacuum/pressure pump. It has a 200-gallon freshwater reservoir and a 500-gallon wastewater reservoir. The freshwater hose is 5/8 inch in diameter by 50 feet with a spray nozzle. The suction hose is 2 inches in diameter by 30 feet with a wand.

For further information regarding Marsh Industries or French Glen Blacksmiths, contact Brenda Land, project leader, by phone at 909-599-1267, ext 219, or by e-mail at [bland@fs.fed.us](mailto:bland@fs.fed.us).