

Recreation Management Tech Tips

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PORTABLE PRESSURE WASHER FOR CLEANING RECREATIONAL SITES

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BACKGROUND

Cleaning toilet buildings with brooms, mops, and brushes is time consuming. With reduced staff and increased workloads, toilets and other recreational structures may not be cleaned to an appropriate standard. Using a fire engine to clean toilets and recreational structures is inefficient and the engine may be unavailable during the fire season. The use of a high-pressure, low-volume portable pressure washer is more effective and less time consuming. The procedures for cleaning recreation sites with a pressure washer are contained in the U.S. Department of Agriculture (USDA) Forest Service San Dimas Technology and Development Center (SDTDC) publication *Cleaning Recreation Sites*, 9523 1206—SDTDC. (See figures 1 and 2.)



Figure 1—Cleaning the toilet interior with a pressure washer.



Figure 2—Cleaning the building exterior with a pressure washer.

Health and Safety

All sanitation workers must be trained in good hygiene and safety practices and follow Sections 22.3, 52.3, and 27.31 of the *Health and Safety Code Handbook*, FSH 6709.11. Human waste can contain a large number of pathogens and should always be treated as contaminated material. Always wear rubber gloves, boots, and face protection when cleaning toilet facilities.



Available Pressure Washers

SDTDC's literature search of available pressure washers found several brands and models costing between \$400 and \$10,000. Many of these units were unsuitable because of weight, pressure, or discharge. Most were also incomplete and required a water tank, a hose reel, or a hand-washing station. Some washers required the unit to be skid mounted.

As a result of the literature search, the SDTDC project leader decided to design and build a complete skid-mounted system that best met the needs of the USDA Forest Service. The design criteria included:

- Skid-mounted slip-on features for a light truck bed
- 100 feet of hose
- 200-gallon water tank
- Variable pressure wand
- 5.5 horsepower, belt-driven, gasoline engine (minimum)
- 3 gallons per minute minimum discharge
- 2-year warranty

The contract to build the portable washer was awarded to Marsh Industries. The prototype unit was delivered to the Tonto National Forest in Region 3 for evaluation. (See figure 3.)



Figure 3—Marsh Industries skid mounted slip-on pressure washer.

Paul (Pete) Libby of the Recreation and Lands Staff on the Tonto National Forest (Region 3) evaluated the unit and was pleased with the quality of construction.

However, he suggested the following modifications to ensure a safer and more efficient system.

- Replace the 200-gallon tank with a 100-gallon baffled tank. The 200-gallon tank exceeded the payload rating for a ½-ton truck. The tank was not baffled and caused water movement in the tank when stopping, starting, or cornering.
- Add a USDA Forest Service-approved spark arrester.
- Modify the heat shield over the engine. Several people received minor burns when reaching around the engine.
- Use a hose reel instead of a hose rack. A hose reel is easier and quicker for deploying and retrieving hose than a hose rack.
- Add a rack to hold a cooler, a 5-gallon hand-washing station, and a hose reel.

The Tonto National Forest made these pressure washer modifications. The modified unit decreased the time needed to thoroughly clean a toilet building, excelled at cleaning the toilet riser without brushes, and removed most graffiti from the walls.

The pressure washer worked so well for cleaning recreational sites that the forest wanted another unit. They requested quotes, using the modified criteria, and the contract for the new pressure washer was awarded to Hotsy Corp. (See figure 4.)



Figure 4—Hotsy skid-mounted slip-on pressure washer system.

Landa also manufactures a slip-on pressure washer that meets the original contract specifications. (See figure 5.) This unit is available from the General Services Administration contract. A comparison of the three pressure washers is shown in table 1.



Figure 5—Landa skid-mounted slip-on pressure washer system with trailer.

Conclusion

A pressure washer decreases the time and increases the thoroughness of cleaning recreational facilities. It uses less water than a fire engine and is available during fire season. It is also safer because employee-contact with hazardous chemicals is reduced. A complete slip-on pressure washer is easily removed from the pickup truck without having to disconnect the tank or hose. The unit can be stored when not in use.

For further information, contact Dave Erlenbach, project leader, by phone at 909-599-1267, ext 264, or by e-mail at derlenbach@fs.fed.us.

Table 1. Pressure washer comparison

MANUFACTURER	COST (2003) (in dollars)	DESCRIPTION
Marsh Industrial pressure washer system; skid-mounted	4,130	100-gal tank w/baffle 500 to 2,000 psi @ 3.5 gpm Hose reel w/100 ft of hose Honda 5.5 hp OHV ¹ engine
Hotsy Industrial Systems pressure washer system; skid-mounted slip-on; Model 2226	2,595	65-gal tank standard (125-gal tank optional, \$60 additional) 2,200 psi (variable) @ 2.6 gpm Hose reel w/100 ft of hose Honda 5.5 hp OHV ¹ engine
Landa (Cold Water) pressure washer system; skid-mounted slip-on; Model PG4-35324E	3,129 GSA ² pricing	100-gal tank; 3,500 psi; 3.8 gpm; 100 ft of hose, stainless steel wand gun; four quick-release nozzles; Honda 13 hp engine, OHV ¹ , belt drive, electric start
Landa Trailer Model TR-2500	2,355 GSA ² pricing	Single-axel trailer with mounting accommodations for the Landa system above

¹ off highway vehicle

² General Services Administration

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