



After extensive testing, the authors selected leaf compost as the ideal medium. It was available from a city compost system at about \$10.00 per cubic yard. In contrast, compost derived from yard wastes met many of these criteria, but failed leaching tests.

The pollutant removal performance of the prototype was computed based on flow composite monitoring of seven storm events (Table 1). The system provides excellent removal of sediment, particulate nutrients, organic carbon, hydrocarbons and some heavy metals. Total dissolved solids, however, increase after passing through the compost filter, which appears to reflect the exchange and/or leaching of cations within the compost. Similarly, while particulate nutrient forms are trapped within the compost, the system exports soluble forms of nutrients, such as nitrate and soluble phosphorus. Subsequent monitoring in 1992 has confirmed that these removal rates can be equalled or exceeded. In general, the compost system was most effective during the first flush of runoff and in smaller storms, with removal rates declining as storm size increased. Better removal rates can probably be attained by increasing either the surface area or storage volume of the compost system.

The compost system requires annual or biennial removal and disposal of the compost layer, followed by replacement with fresh compost. This routine maintenance operation can cost the owner several thousand dollars. Early tests indicate that the used compost can be safely landfilled. A few operational problems have been encountered with the compost system. The key problem has been sediment deposition over the surface of the compost bed that reduces the permeability rate. Perhaps the use of larger forebays, lower design perme-

**Table 1: Pollutant Removal Performance of Leaf Compost Filter (Stewart, 1992)**

Pollutant	Percent Removed
Total Suspended Solids	95
Total Dissolved Solids	-37
COD	67
Total Phosphorus	41
Soluble Phosphorus	(negative)
Organic Nitrogen	56
Nitrate	-34
Cadmium	N.D.
Lead	N.D.
Zinc	88
Hydrocarbons	87
Chromium	61
Copper	67
Boron, Calcium, Potassium, Magnesium, Sodium	(negative)

ability rates, or regular raking/discing of the filter bed surface could relieve the problem. W&H Pacific are continuing to refine the design to increase its effectiveness.

—TRS

**Reference**

Stewart, W. 1992. *Compost Stormwater Treatment System*. W&H Pacific Consultants. Draft Report. Portland, OR.