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DURHAM, N.H. -- In the wake of torrential downpours across central New England, the University of New Hampshire Stormwater Center has published its first year of field data. The 2005 Data Report evaluates the effectiveness of 12 stormwater treatments in protecting water quality and reducing runoff.

The report is available online: http://ciceet.unh.edu/news/releases/stormwater_report_05/

“Rains and flooding like we’ve recently experienced, of necessity, focus public attention on the impact of stormwater runoff,” says center director Robert Roseen. “Yet even ordinary rains affect water resources. The data in our report demonstrates that if we value water quality, we need to change our approach to stormwater management.”

As stormwater washes over the landscape, it collects a variety of pollutants and carries them into streams, rivers, and coastal waters, where they degrade water quality and threaten human health. Stormwater carrying such “nonpoint source pollution” is the biggest threat to water quality nationwide.

This report is a resource for land use decision makers who must comply with Phase II of the Clean Water Act. Under these regulations, U.S. communities with a population less than 100,000 are charged to develop stormwater management programs that improve water quality and reduce runoff volume.

To create stormwater management programs, there is no lack of approaches from which to choose—from long, winding swales that sweep along highways, to manufactured systems that fit neatly in a manhole. The challenge, according to Roseen, is selecting an approach that will do the best job of protecting local water quality, is within tight municipal budgets, and will meet regulatory requirements.

“The information needed to make these decisions has not readily available, particularly for emerging stormwater treatments,” explains Roseen. “People tend to rely on old standards of practice because they are unfamiliar with new technologies, or they lack access to data on their performance.”

Until now.

The center’s field site is unique in its capacity to test stormwater treatments, side-by-side, under strictly controlled conditions. There, researchers have evaluated three classes of stormwater treatments: manufactured devices such as underground infiltration units and
hydrodynamic separators; traditional, structural approaches such as swales and ponds; and Low Impact Development designs (LIDs) such as a bioretention system and a gravel wetland. The analysis revealed distinctive trends.

“As a group, LIDS did the best job of removing pollutants, while the performance of manufactured systems varied quite a bit,” explains Roseen. “Traditional approaches, like swales, did poorly to moderately at best.”

Certain design elements, common to several systems, promoted the most effective pollutant removal. These included infiltration and filtration mechanisms, large storage volumes and residence time, and dense root mats and herbaceous plants to absorb pollutants.

There is, however, a great deal more to learn, according to Roseen.

“We will continue to refine our methods and broaden the scope of our evaluation to meet the needs of stormwater managers,” says Roseen. The cost and process of maintenance, for example, is a critical issue that will be looking at in the coming year.”

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