

Green Infrastructure Performance

Results of Monitoring Best Management Practices



Summary

Performance data for Green Infrastructure Best Management Practices under localized weather, soil, slope, and anticipated use conditions is one factor needed for widespread application of these approaches. CNT is working with the U.S. EPA, Illinois EPA, City of Chicago and its outlying communities in research projects to assess the performance and applicability of Green Infrastructure BMPs to local conditions. Results to date from sites across the country indicate that Green Infrastructure BMPs are consistently effective in reducing volumes of runoff, peak flows, and pollutant loads at a reduced cost.

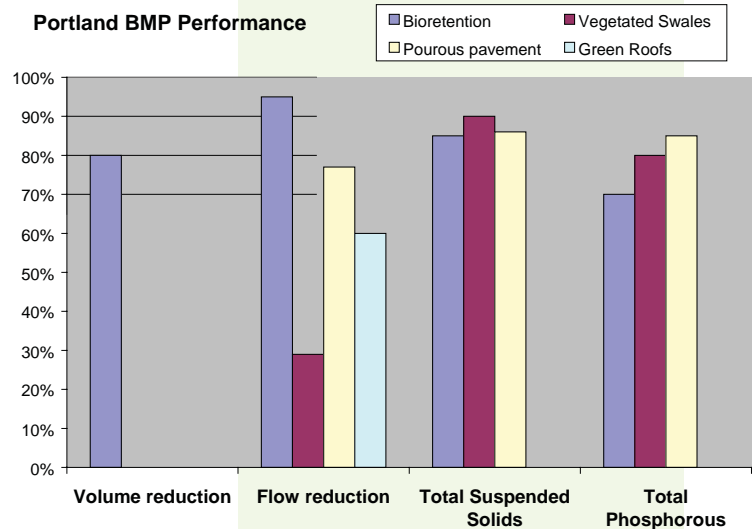
Individual BMP Performance

Three centers of research have produced monitored or modeled performance results on individual BMPs: The Portland Bureau of Environmental Services; The Milwaukee Metropolitan Sewerage District (MMSD); and the University of New Hampshire Stormwater Center (UNH).

Portland

The Portland Bureau of Environmental Services performed an effectiveness evaluation of all the BMPs currently in use in the City. The number of pollutants considered was limited to enable comparisons. Portland estimates its Green Streets design saves 40% compared to conventional stormwater infrastructure.

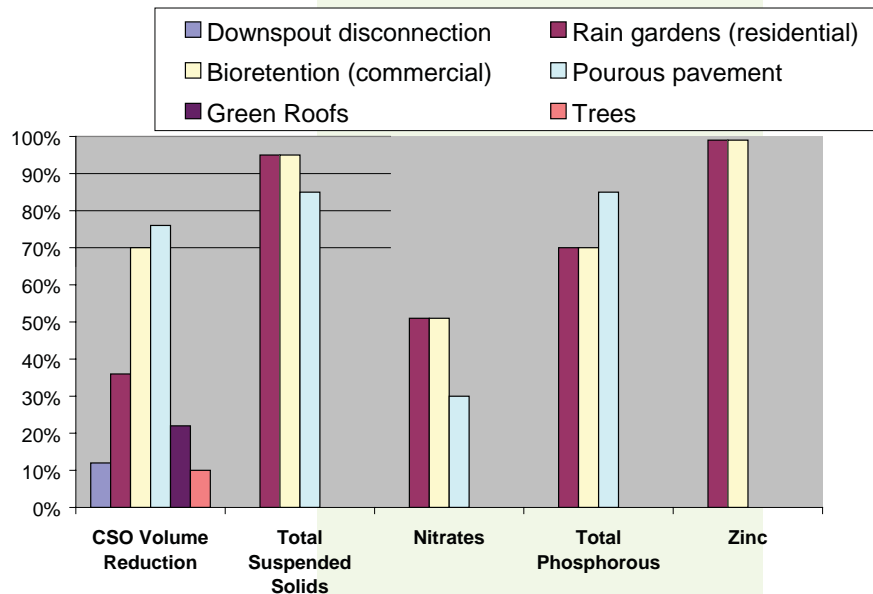
Portland BMP Performance



Milwaukee

The impact of selected BMPs on reducing the average annual stormwater runoff volumes and peak flows during historic storm events that caused combined sewer overflows was evaluated using the Hydrologic Simulation Program Fortran (HSPF). The analysis conducted continuous simulation modeling for the period from 1995-2002.

Milwaukee BMP Performance



University of New Hampshire

The Stormwater Center compared the performance of conventional stormwater management practices to Green Infrastructure techniques and manufactured devices in a controlled field setting. The site was designed to test each BMP under similar conditions. (see performance graph on reverse)

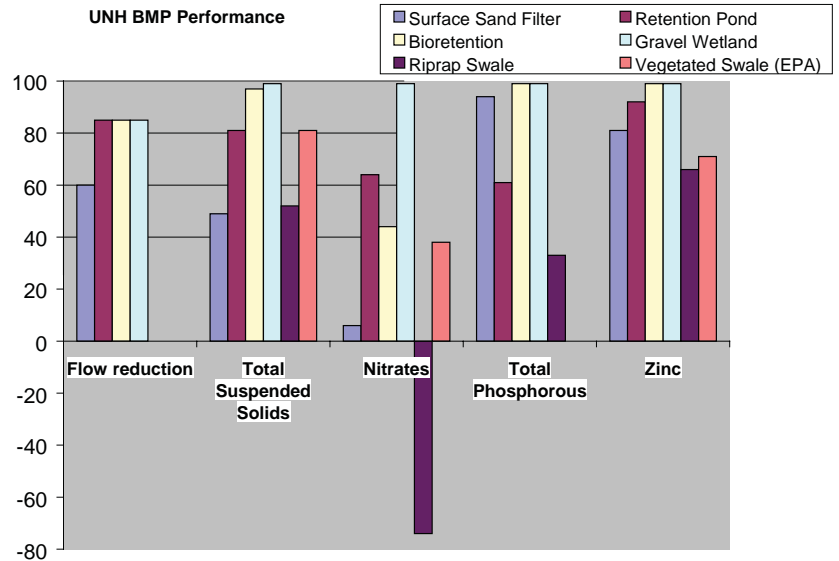
For more information, contact Steve Wise, Natural Resources Portfolio Manager

Green Infrastructure Performance Results of Monitoring BMPs

Watershed Applications

Paired watershed studies test the affects of BMP implementation on a water or sewershed scale. Two of the most prominent to date are the Burnsville, MN rain garden project, and the Seattle SEA Streets program.

The Burnsville study monitored two very similar residential areas—one was the study's control site while the other treatment watershed employed 17 new rainwater gardens within a 25-lot, 5.3-acre neighborhood with traditional curb and gutter. Both the control and treatment watersheds were monitored before and after rainwater garden construction to facilitate the statistical evaluation of the paired watershed data. The results show that there is an 89 to 92 percent reduction in the runoff volumes from the treatment watershed associated with the rainwater gardens.



Results from UNH study

Seattle's Street Edge Alternative project, known as SEA Streets, replaced a street's curb and gutter drainage system to reduce impervious area and install vegetated stormwater detention. Monitoring has demonstrated that the 2nd Avenue SEA Streets project has prevented the discharge of all dry season flow and 98 percent of the wet season runoff. It can fully attenuate the runoff volume produced by approximately 0.75 inch (19 mm) of rain on its catchment. The SEA Streets design saves 20% or more of the cost of conventional street drainage: \$280,000-\$325,000 per block for a green streets vs. \$425,000-\$525,000 for a traditional block.

