

Summary Fact Sheet

Category: 4.0 Site Design Strategies

Practice: 4.3 Site Minimization/Fingerprinting/Impervious Areas Reduction

General Description: Site fingerprinting, also known as minimal disturbance techniques, is a practice that minimizes ground disturbance by identifying the smallest possible land area that can practically be impacted during site development. Minimizing the amount of site clearing and grading reduces the overall hydrologic impacts of site development. Ground disturbance is typically confined to areas where structures, roads, and rights-of-way will exist after construction is complete. Development is also placed away from environmentally sensitive areas, future open space, tree save areas, future restoration areas, and temporary and permanent vegetative forest buffer zones. Existing vegetated or open space may be preserved instead of clearing a portion of the site in order to create lawn areas.

A key component of minimizing overall site impacts is reducing impervious areas (both connected and disconnected, i.e. fact sheet 4.1). Typical techniques include limiting roadway lengths and widths, minimizing lot setbacks (which in turn minimize driveway lengths), installing sidewalks on only one side of private roadways, and by using alternative materials such as permeable paving blocks or porous pavements.

Water Quantity Controls

By minimizing soil compaction, minimizing the construction of impervious surfaces, and preserving the maximum amount of pervious area, site fingerprinting reduces the calculated runoff volume and peak discharge rate. This is reflected in a decrease in the site's weighted Rational Method runoff coefficient C or the TR-55 Curve Number (CN). These hydrologic methods are discussed in sections 6-0802 and 6-0803 of the PFM.

Water Quality Controls

Water quality benefits gained through site fingerprinting and impervious area reduction are attributed to the decrease in stormwater volume. Sites instituting these practices infiltrate larger volumes of stormwater and maintain a more natural flow regime than conventionally developed sites. Pollution generation, concentration, and transport are also minimized by the use of these practices.

The Fairfax County PFM stipulates that new development parcels are required to reduce the projected total phosphorus load by at least 40% as compared to a site without BMPs.

Location: These practices may be applied on any site and may include the following techniques: (1) reducing pavement area and the compaction of permeable soils; (2) minimizing construction easements and material storage areas, and providing appropriate construction sequencing; (3) preserving existing trees through site design and layout; (4) reducing total impervious area; (5) disconnecting impervious areas; and (6) maintaining existing topography and flow paths.

Design Construction and Materials: This is a planning and development practice and as such does not include many construction items or materials. Tree protection structures and habitat protection measures may be required on site. Alternative paving materials are utilized to limit imperviousness and are discussed in Summary Fact Sheet 3.2 – permeable/porous pavements.

Cost: Site minimization is a pre-development and planning technique and consequently is not typically assigned a cost as with other BMPs.

Maintenance: Maintenance is not typically required for these practices, but may include the posting and inspection of signs demarking and indicating non-disturbance areas.

Performance and Inspection: The goal of site minimization is to preserve the natural features and function of the landscape. Inspection activities should ensure that preserved areas remain protected and undisturbed by development activities.



Example of Site Minimization/Impervious Area Reduction

Source: LID Center

Potential LEED Credits:

Primary: Sustainable Sites – Prerequisite 1 “Erosion and Sedimentation Control” (Required)
Sustainable Sites – Credit 1 “Site Selection” (1 Point)
Sustainable Sites – Credit 5 “Reduced Site Disturbance” (1-2 Points)

Other: Sustainable Sites – Credit 2 “Urban Redevelopment” (1 Point)
Sustainable Sites – Credit 6 “Stormwater Management” (1-2 Points)
Sustainable Sites – Credit 7 “Landscape & Exterior Design to Reduce Heat Islands” (1-2 Points)
Innovation & Design Process (1-4 Points)

Links to Additional Information:

Fairfax County PFM:
<http://www.co.fairfax.va.us/dpwes/publications/pfm/6.htm>

Virginia Stormwater Management Handbook:
<http://www.dcr.virginia.gov/sw/stormwat.htm#pubs>

Northern Virginia BMP Handbook:
<http://www.novaregion.org/pdf/NVBMP-Handbook.pdf>

Center for Watershed Protection. 1998. *Better Site Design: A Handbook for Changing Development Rules in Your Community.*

Prince George's County Department of Environmental Resources. 2000. *Low-Impact Development Strategies – An Integrated Design Approach.*