Manage Impacts at the Source

After all reasonable efforts to avoid and reduce impacts are exhausted, the final objective of the LID site planning and design process is to manage any remaining stormwater impacts including increases in runoff volume, pollutant loads, and peak flows. Techniques for managing stormwater impacts include disconnecting impervious surfaces by directing runoff to adjacent vegetated pervious areas (simple disconnection) or to structural stormwater BMPs located close to the source of runoff, conversion of impervious to pervious areas, and the use of source controls and pollution prevention.

Disconnecting Impervious Surfaces

As described in Chapter 2 - Stormwater Impacts, impervious surfaces with a direct hydraulic connection to a storm drainage system or a waterbody are considered "Directly Connected Impervious Area (DCIA)." Impervious surfaces that are separated from drainage systems or a waterbody by pervious surfaces or structural stormwater BMPs designed to retain the appropriate portion of the site's Water Quality Volume (WQV) are considered "disconnected" and contribute less runoff and reduced pollutant loading. Disconnecting impervious surfaces promotes infiltration and filtration of stormwater runoff and the reduction of DCIA. The two primary strategies for disconnecting impervious surfaces are described below.

Simple Disconnection. Impervious area disconnection, also called "simple disconnection," is a non-structural technique that involves directing stormwater runoff from impervious surfaces as sheet flow onto adjacent vegetated pervious surfaces where it has the opportunity for infiltration and treatment. Simple disconnection can be used to direct runoff from roofs, driveways, roads, parking lots, and solar arrays to vegetated pervious areas that meet specific characteristics (also called "Qualifying Pervious Areas") such that the appropriate portion of the site's WQV is dispersed and retained/infiltrated on-site without causing erosion or basement seepage. Key characteristics of the receiving pervious area include slope, soil infiltration capacity, dimensions and flow path length, size relative to the contributing area, and density of vegetation. Sites with flatter slopes, pervious soils, and a dense stand of vegetation are better

[61] Rhode Island Department of Environmental Management (RIDEM) and Coastal Resources Management Council (CRMC). 2011. Rhode Island Low Impact Development Site Planning and Design Guidance Manual.

suited for maintaining dispersed flow. Flows for larger storm events should bypass or exit the pervious area in a controlled manner.

Credits for the use of simple disconnection to meet the runoff volume and pollutant reduction requirements of Standard 1 (refer to Chapter 4 - Stormwater Management Standards and Performance Criteria) are described in LID Site Planning and Design Credits, including minimum criteria for receiving credit and restrictions on the use of simple disconnection.

Disconnection Using Structural Stormwater BMPs. Impervious areas that discharge runoff to structural stormwater BMPs designed to retain the appropriate portion of the Water Quality Volume (i.e., Infiltration BMPs or Stormwater Reuse BMPs) are also considered disconnected. Small-scale structural stormwater BMPs located close to the impervious areas where runoff is generated are generally preferred over large end-of-pipe controls. Chapters 8-13 of this Manual provide guidance on the selection, design, construction, and maintenance of structural stormwater BMPs to meet the stormwater management standards and performance criteria outlined in Chapter 4.

Conversion of Impervious to Pervious Areas

Impervious area conversion involves removing and replacing existing excess impervious surfaces (pavement, buildings, etc.) with pervious vegetated surfaces (lawn, meadow, woods) and restoring the pre-development infiltration rate and storage capacity (i.e., porosity) of the underlying soils. Conversion of the impervious surface to a vegetated pervious surface results in a reduction in runoff volume and pollutant loads and an increase in infiltration and groundwater recharge. This technique is applicable to redevelopment and retrofit situations. Credits for the use of impervious area conversion on redevelopment sites are described in LID Site Planning and Design Credits. Chapter 9 - Stormwater Retrofits provides additional guidance on impervious area conversion.

Source Controls and Pollution Prevention

Utilizing the source controls and pollution prevention measures described in Chapter 6 - Source Control Practices and Pollution Prevention can help minimize or prevent the discharge of pollutants in stormwater runoff. Source control practices and pollution prevention are operational practices (e.g., street and parking lot sweeping, catch basin cleaning and drainage system maintenance, and lawn and landscape management) that limit the generation of stormwater pollutants at their source and should be incorporated, to the maximum extent practicable, into the site design and operational aspects of all land development projects.