RIDEM

Office of Water Resources

Fact Sheet

Low Impact Development

LOW IMPACT DEVELOPMENT (LID)

What Is LID?

LID is quite different from conventional stormwater treatment which is often referred to as "pipe-to-pond" stormwater management. LID is a comprehensive approach to managing stormwater that is integrated into a project design to minimize the stormwater impacts from development. In the past, the landscape was altered significantly to fit the style of development; whereas LID reverses the process by adapting the development to fit into the landscape.

LID is defined as:

> "a site planning and design strategy intended to maintain or replicate predevelopment hydrology through the use of site planning, source control, and small-scale practices integrated throughout the site to prevent, infiltrate and manage runoff as close to its source as possible." (RI Stormwater Design and Installation Standards Manual.)

The LID approach to stormwater management focuses on the preservation and use of natural systems for stormwater management. The primary goal of LID is to reduce runoff and mimic the way water moved through the site before development by using site planning and design strategies to store, infiltrate, evaporate, and detain runoff as close as possible to the point where precipitation reaches the ground. Stormwater is managed in smaller, cost-effective treatment practices located throughout the development site rather than being conveyed to and managed in one or more centralized facilities. Use of these strategies helps to reduce off-site runoff and ensure adequate groundwater recharge.

What Are the Benefits of Using LID?

Compared to conventional stormwater management, LID will:

- Result in less impervious surface generating less surface runoff, which will decrease the burdens on the municipal stormwater management infrastructure;
- Reduce the loading of sediments, nutrients, and pathogens to streams and other waterbodies. This improves the health of these systems and makes them more attractive for those interested in boating, fishing, or swimming;
- Reduce long-term operation and maintenance costs;
- Increase property values;

- Provide more open space for recreation;
- Provide for more pedestrian-friendly neighborhoods;
- Cause fewer safety concerns as LID-based BMPs feature shallow depths and gentle side slopes;
- Improve protection of sensitive natural resources, forests, wetlands, and habitats;
- Result in more aesthetically pleasing and naturally attractive landscapes; and
- Reduce consumption of land for stormwater management.

There are also significant cost benefits to developers when they follow the LID approach. These benefits are seen in three areas:

- The initial construction cost for a project -- concentrated (clustered) design, with less impervious area and drainage infrastructure, means significant construction cost savings to developers;
- Operation and maintenance costs for LID-based best management practices; and
- Increased property values for LID sites.

For more information on LID, see:

- RI Stormwater Solutions webpage at http://web.uri.edu/riss/
- EPA LID webpage at http://water.epa.gov/polwaste/green/

What Are the Requirements for LID in RI?

The RI Stormwater Design and Installation Standards Manual cites "The Smart Development for a Cleaner Bay Act of 2007" (RI General Law 45-61.2-2), which states that LID is to be the "primary method of stormwater control to the maximum extent practicable."

The Stormwater Manual defines "Maximum Extent Practicable (MEP)" as:

> "To show that a proposed development has met a standard to the maximum extent practicable, the applicant must demonstrate the following: (1) all reasonable efforts have been made to meet the standard in accordance with current local, state, and federal regulations, (2) a complete evaluation of all possible management measures has been performed, and (3) if full compliance cannot be achieved, the highest practicable level of management is being implemented."

All applications to DEM that are required to address stormwater management must comply with the Stormwater Manual and its requirements for LID.

What Is the Municipal Role in Implementing LID?

LID is generally considered to be an approach best implemented early in the design stages through the local planning process. Provided that wetlands are avoided, the configuration of the site design and the amount of impervious surface, which determines the amount of stormwater

generated, is subject only to the local planning codes. Whereas, the management practices for the treatment and control of the stormwater generated on the site must meet the DEM and CRMC technical standards.

Recognizing the important role of the municipalities in improving stormwater management, DEM and CRMC collaborated on the development of the "RI Low Impact Development Site Planning and Design Guidance Manual" to provide examples for local planning officials of how their ordinances may be amended to avoid and reduce the impacts from development and encourage the more effective implementation of LID practices. Appendix A of the LID Manual has a 46 element checklist of LID strategies to assist a community in identifying what ordinances to consider for improving stormwater management in the community. The local ordinances for all of Rhode Island's cities and towns were reviewed in 2013 using the checklist in the LID Manual. The checklist allows a community to quickly determine what specific LID site planning and design techniques they may want to adopt to more effectively implement LID practices.

Recommended Approach for Incorporating LID into Project Design

Complete the LID Assessment, which documents how the proposed project is complying with local LID requirements.

> In completing the LID Assessment, the applicant/designer is referred to the 2013 *DEM Survey of Municipal LID Ordinances* and asked to identify whether the project is complying with a required or allowed LID strategy.
>
> Refer to the LID Assessment as a guidance tool in developing the conceptual design plan and in meetings with local planners.

Schedule a pre-application meeting with appropriate DEM/CRMC regulatory staff and others as appropriate to review plans and the LID Assessment.

> DEM encourages applicants to schedule pre-application meetings early on in the design phase in order to ensure compliance with the technical design parameters and to review opportunities for optimizing LID.
>
> Benefits of pre-application meetings: Technical assistance from state regulators; improved communication and dialogue; identification of barriers to implementing LID strategies; evaluate feasibility and effectiveness of LID strategies.

Submit LID Assessment and other application materials to DEM/CRMC

> Once applications are submitted to DEM, DEM will attempt to ensure that the proposed project is complying with and taking advantage of LID strategies required and allowed in

the municipality where the project is proposed. Applications to DEM **must** include the LID Assessment.