

Low impact development (LID)

A new approach to water management

FAST FACTS

LID helps to reduce urban heat by increasing green areas that dissipate heat quickly.

The largest green roof in existence is 10.5 acres, located atop Ford's Rouge River Manufacturing Complex in Dearborn, Mich.

LID has been shown to reduce energy consumption.

In 2005 alone, there were permits issued for the construction of 200,000 single-family detached houses in Florida, with only a few designed or constructed using LID techniques.

The need

In Florida, untreated stormwater runoff contributes to the pollutants entering our rivers, lakes and streams. Untreated stormwater runoff carries pet wastes, road residues, pesticides, fertilizers and other pollutants into our waterways. An estimated 80 to 95 percent of the heavy metals (copper, lead and cadmium) entering Florida waters are the result of untreated stormwater runoff. Natural processes that would otherwise retain, cleanse and filter storm water have been reduced by the impervious surfaces — roads and rooftops — associated with traditional urban development.

What is LID?

Low impact development (LID) is an approach to land development that uses various land planning, design and construction practices to simultaneously conserve and protect natural resource systems while reducing infrastructure costs. LID stands apart from other concepts through its emphasis on cost-effective strategies at the lot level. Designing an individual site to replicate predevelopment hydrology can reduce the project's impacts on natural systems.

LID is also about conservation

Florida's available water supply will soon be surpassed by the population it supports. Reducing stormwater runoff is only half of the equation in stretching our water supply to its fullest potential. Water conservation — whether in the shower or on the lawn — must become a widespread lifestyle choice. In 2005, total freshwater use averaged approximately 1.19 billion gallons per day in the 18-county area served by the St. Johns River Water Management District. Public water supply use

represents nearly half of this amount, making it the largest water use category in the District.

To preserve the quality of life and Florida's natural systems, it is important to consider different ways of developing communities and to implement new ideas.

One program the District has developed to increase water efficiency in new homes is Florida Water StarsSM. Similar to the Energy StarsSM program, Florida Water StarsSM provides criteria to improve a home's water efficiency both indoors and outdoors. A Florida Water StarsSM-certified home could reduce outdoor water use by 40 percent or more and indoor water use by 20 percent or more. If only 500 homes were built to Florida Water StarsSM standards and saved 95,000 gallons each, 47.5 million gallons of water would be saved every year.

Benefits

LID strategies move away from a centralized method of collecting, conveying and discharging to one that minimizes both impervious areas and stores and treats storm water in a more distributed fashion, sometimes even on the individual lot level.

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Uniformity is generally the rule with traditional developments. Houses may be fronted by St. Augustine sod and serviced by a centralized stormwater system that may include a retention pond. In contrast, LID allows and encourages the integration of treatment and management measures into individual lots or house sites. Strategic placement of distributed lot-level controls — such as preservation of natural on-site wetlands — can be customized to closely mimic a watershed's natural hydrology. The result is a hydrologically functional landscape that generates less surface water runoff, less pollution and erosion, and reduced overall damage to lakes, streams, rivers and coastal waters.



Challenges to LID

Incorporating LID into new development faces several challenges. Contractors and their subcontractors will need to change customary construction practices to accommodate LID. Some subcontractors may need to receive additional training to learn how to install proper irrigation systems, landscaping and evolving LID technologies. Local regulations, ordinances and codes may need to be modified to allow for changes in design and construction. Regulatory staff will need to become familiar with both the benefits and limitations of LID practices.

The District works closely with applicants applying LID concepts to a project. Senior regulatory staff members are being trained in how to review systems that employ LID practices. Projects that will incorporate LID practices into the overall project design will be reviewed by staff who are trained in both the advantages and limitations of the various LID practices. Attention will be given to utilizing appropriate practices to site specific needs.

A sticking point, however, is that many LID concepts are relatively new and unsupported by studies to confirm their effectiveness. The District is required by the state to ensure that permitted projects meet state water quality standards and don't cause flooding. In addition, LID can pose potential long-term maintenance concerns, since the responsibilities lie with the individual lot owner.

Preserving natural vegetation is part of a Florida Water StarSM-certified home and of LID.

Traditional centralized stormwater systems are easier to permit because they are maintained by a single entity, such as a homeowners group. Researchers throughout Florida are currently investigating potential benefits of LID to storm water and surface water management systems, which could be used to develop rules and regulations for these evolving concepts.

Sample LID practices

Many different types of LID practices can be used and new practices are being created. Some common LID practices include

- Vegetated swales, buffers and strips
- Narrower streets without curb and gutters
- Curb cutaways or median storage
- End-of-island bioretention cells
- Permeable pavers
- Green roofs
- Rain gardens and bioretention
- Tree or natural areas preservation
- Rain gardens, rain barrels or cisterns
- Inground infiltration and storage
- Green build programs such as Florida Water StarsSM

