



Adapted from San Diego County Draft LID handbook

## BENEFITS OF LID

- ◆ Reduces pollution in runoff
- ◆ Reduces flooding and protects property
- ◆ Protects drinking water supplies
- ◆ Protects fish and wildlife habitat from high flows
- ◆ Preserves and restores trees and other vegetation
- ◆ Maintains stream flows and water levels in wetlands
- ◆ Reduces building costs for stormwater management
- ◆ Results in more attractive neighborhoods

## RESOURCES

Many LID resources are available by searching online. For additional assistance, contact the Vermont Department of Environmental Conservation Stormwater Section, the Regional Planning Commission in your region, or your local Conservation District.

### VT DEC Stormwater Section

[www.vtwaterquality.org/stormwater.htm](http://www.vtwaterquality.org/stormwater.htm)

### Vermont Regional Planning Commissions

[www.vapda.org/](http://www.vapda.org/)

### Vermont Association of Conservation Districts

<http://www.vacd.org/>

## LOW IMPACT DEVELOPMENT

Tips for Protecting Surface Waters



For Homeowners And Developers

### Legend

-  Grass Channel
-  Swale
-  Infiltration Trench
-  Wetland Pond
-  Bioretention
-  Rain Garden
-  Porous Pavement

## LID KEY CONCEPTS

### Conserve

Preserve native trees, vegetation, and soils, and maintain natural drainage patterns.

### Control at the Source

Minimize runoff volume at the source by collecting or directing it to vegetated areas where it can infiltrate slowly. This enables recharge in streams, wetlands, and groundwater.

### Customized Site Design

Each home or commercial/industrial site can help protect the watershed through the appropriate combination of LID techniques.

### Pollution Prevention and Maintenance

Reduce pollutant loads to waterbodies and increase efficiency and longevity of infrastructure with proper and timely maintenance.

## WHAT IS LOW IMPACT DEVELOPMENT (LID)?

**Low Impact Development** is an approach to managing stormwater runoff using strategies that mimic natural hydrologic processes. Rather than conveying the runoff from small frequent storm events directly into underground pipes, drainages, or surface waters for offsite discharge, **LID** features dissipate and infiltrate runoff with onsite landscape features, and where practical, with onsite permeable surfaces. These features filter runoff and reduce its volume before it leaves the site. **LID** techniques can be employed at individual homes, in subdivisions, and at commercial and industrial properties. It can be implemented at the start of new construction or when retrofitting an existing property.

By mimicking natural processes on developed lots, we can minimize runoff and maximize infiltration. Controlling runoff closer to its source (ex: rooftops, driveways, roadways, parking lots) and directing it to vegetated areas can reduce its overall volume, the distance it travels, and the amount of pollutants it collects. The net result is fewer contaminants entering our lakes, rivers, and streams.

## RAIN GARDENS



A rain garden is a landscaping feature planted with native plants to help manage stormwater runoff from impervious surfaces such as roofs, sidewalks, and parking lots.

## LID SITE PLANNING AND DESIGN ELEMENTS

### Design for the Terrain

Design your home to fit the existing terrain, place roads parallel to contours.

### Limit Land Disturbance Activities

Minimize land disturbance in construction areas, preserve intact natural systems.

### Reduce and Disconnect Impervious Areas

Decrease the amount of impervious surface and the “connectedness” of impervious surfaces to streams, ditches, and other stormwater systems.

### Preserve and Utilize Natural Drainage Systems

Use existing and newly constructed vegetated systems to keep runoff on site, and to promote infiltration and groundwater recharge.

### Maintain Pre-Development Vegetation

Maintain vegetation to promote infiltration and evapo-transpiration and reduce erosion. Maintain healthy soil bacteria to help biodegrade pollutants.

### Provide Setbacks and Vegetated Buffers

Create buffers to reduce pollutant transport to surface waters both during and after construction.

### Minimize Alteration and Creation of Steep Slopes

Minimize disturbance on steep slopes, stabilize slopes with vegetation, avoid compacting soils.

## BIORETENTION



Bioretention areas are depressions constructed to treat stormwater as it flows through vegetation and soil before entering the storm drainage system. Parking lot islands are good candidate sites for bioretention.

## LID ACTIONS

### Driveways

Minimize width and length, use permeable pavers, create two-tracks with grass in the middle.

### Roads and Parking Lots

Minimize width and length, reduce use of curbs, cluster roadside parking, depress vegetated islands to act as rain gardens

### Lawns and Landscaping

Maintain as much native vegetation as possible, add compost and aerate after construction to increase infiltration capacity, add rain gardens to yards.

### Rooftop Runoff

Disconnect downspouts from driveways, detain rooftop run-off in rain barrels or cisterns for watering plants or flushing toilets.