

Frequently Asked Questions about Low Impact Development (LID)

1. What is LID?

LID is defined by the *LID Technical Guidance Manual for Puget Sound* (January 2005) as a stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of existing natural site features integrated with distributed small-scale stormwater controls to more closely mimic natural hydrologic patterns in residential, commercial, and industrial settings.

The LID approach to developing land and managing stormwater is to imitate as much as possible the natural, pre-development hydrology (or movement of water) of the site. In a mature Pacific Northwest forest, for example, almost all the rainfall (or snowmelt) disperses along the forest floor, where it infiltrates into the ground, is taken up by the roots of plants and trees, or evaporates. Researchers estimate that less than one percent becomes surface runoff. But when forests and natural open spaces are cleared, and buildings, roads, parking areas and lawns dominate the landscape, rainfall becomes stormwater runoff, carrying pollutants to nearby waters. Much less water infiltrates and is taken up by plants, less evaporates back to the atmosphere, and much more (about 20-30 percent in a suburban neighborhood) becomes surface runoff or stormwater runoff.

2. What are the benefits of LID?

When combined with other key elements of a comprehensive local stormwater program, effective land-use planning under the Growth Management Act and watershed or basin planning, LID can help communities more efficiently and effectively manage stormwater and protect their water resources.

- **LID can help better protect the environment.** LID techniques remove pollutants from stormwater, reduce the overall volume of stormwater, manage high storm flows, and recharge—or replenish—streams and wetlands.
- **LID can help reduce flooding and protect property.** Reducing impervious surfaces, increasing vegetation and dispersing and infiltrating stormwater results in less runoff. This reduces the likelihood of flooding from big storms.

- **LID helps protect human health** by more effectively removing pollutants from stormwater. Untreated stormwater can be unsafe for people to drink or swim in.
- **LID protects drinking water supplies** by ensuring that rainfall infiltrates where it can recharge aquifers, rather than being treated as a waste and discharged to marine waters.
- **LID is good for the economy.** LID can help protect shellfish growing businesses, water quality and marine sediment quality. This ensures that our resources remain clean and Puget Sound remains a great place to run a business and attract employees. Taxpayers don't have to pay for expensive cleanup efforts for polluted waters and sediments. And because LID projects in many cases are less expensive to build, it means that developers and builders can often save money on overall development costs by using LID.
- **LID provides cost-effective alternatives to systems upgrades.** Land developed prior to the 1990s usually provides little, if any, stormwater treatment. In many cases, LID systems, such as bioretention, are much less expensive to use than costly stormwater vaults or land-consuming stormwater ponds.
- **LID can increase the appearance and aesthetics of communities.** LID projects leave more trees and plants and have less impervious surfaces, which makes for greener developments and communities.
- **LID can increase public safety.** One of the hallmarks of LID is narrower streets. Studies show that when vehicle traffic is slowed, there are fewer pedestrian accidents and fatalities.

3. What are some common LID Best Management Practices (BMPs)?

- Bioretention cells or swales (also known as rain gardens)
- Pervious pavement
- Preservation of native vegetation (also known as native vegetation areas)
- Amending soil with compost
- Vegetated roofs (also known as green roofs or eco-roofs)
- Minimal excavation foundations
- Rooftop rainwater harvesting
- Dispersion of stormwater into native vegetation areas

4. Where can LID be used?

Almost anywhere. LID BMPs can be used on land already developed or in new development projects. They can be used along residential and inner city streets, and along state highways. They can be used in parking lots of businesses and industries, and in residential driveways. They can be used at single-family residences and multi-family projects, in very dense urban settings and in more rural areas. They can be used as part of planned unit developments and other planned developments.

5. Do you have to use all of the LID BMPs in order for a project to be considered LID?

Using LID BMPs on any development site certainly helps. Yet if a local government is going to offer incentives to encourage LID (for example, public recognition, streamlined permitting, or a density bonus), they usually want to make sure there's a commensurate benefit to their community. They want to make sure the project is truly an LID project, and not one that just uses one or two LID BMPs to manage a small portion of the stormwater.

AHBL worked with staff from the Puget Sound Partnership, WSU Extension, and the Department of Ecology to come up with some minimum criteria for defining a project as LID. These criteria are outlined in the draft LID Chapter prepared under the LID Local Regulation Assistance Projects in 2005, 2006, 2008, and 2009 and include minimum amount of stormwater managed by LID BMPs (based on soils and density), minimum percentage of native vegetation retained on site, and maximum allowable impervious surface.

6. Can you use LID BMPs on sites with till soils?

Yes. The practicality and viability of implementing LID is dependent on a number of factors, including the type of soils on site and their infiltration rates. Some soils, such as those with high clay content make infiltration difficult and in some cases impractical. Nevertheless, even soils with low infiltration capacities (e.g. infiltration rates below 0.30 inches per hour) can still be viable candidates for LID, depending on the site conditions and goals of the LID facility. For example, stormwater can still be dispersed into native vegetation with slow infiltrating soils. And bioretention swales can be designed to hold rainwater until it can slowly infiltrate. A careful site assessment should be conducted to understand the practicality of LID on a site, and LID BMPs should always be designed based on the capacity of the soils on site and according to guidance outlined in the *LID Technical Guidance Manual for Puget Sound* (current edition).

7. What are examples of incentives that other jurisdictions are using to promote LID?

- Flexibility in Bulk, Dimensional & Height Restrictions
- Density Bonus
- Dedicated Review Team
- Reduced Review Time/ Expedited Review
- Lower Stormwater System Development Fees
- Reduced Application Fees
- Revised Fee Structure
- Public Recognition
- Adjustments to the Required Parking
- Property Tax Reduction

8. Have any jurisdictions made LID mandatory? If so, which ones?

(Note: Jurisdictions listed are those that have participated in the LID Technical Assistance Projects)

- Mason County in the Belfair and Allen Urban Growth Areas (2006 participant)
- San Juan County (2008 participant) – recommendations not yet adopted but took a prescriptive approach
- Town of Hamilton (2008 participant) – recommendations not yet adopted but took a prescriptive approach
- City of Lake Forest Park (2008 participant)
- City of Kent (2009 participant) – recommendations delivered June 2009; took a prescriptive approach
- Island County (2009 participant) – recommendations delivered June 2009; took a prescriptive approach
- City of Sequim (2009 participant) – recommendations delivered June 2009; took a prescriptive approach

9. What are some good resources for LID?

- Puget Sound Partnership's LID web site:
http://www.psparchives.com/our_work/stormwater/lid.htmLID Technical Guidance Manual for Puget Sound: <http://www.psp.wa.gov/documents.php>
- U.S. EPA's LID web site: <http://www.epa.gov/owow/nps/lid/>
- LID Center, Maryland: <http://www.lowimpactdevelopment.org/>
- Seattle's Natural Drainage Systems:
http://www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/Natural_Drainage_Systems/Natural_Drainage_Overview/index.asp