



## ***SPOTLIGHT ON...* LOW IMPACT DEVELOPMENT**

Low Impact Development (LID) is a suite of practices to keep pollutants from entering our waterways and Puget Sound during precipitation events. LID encourages people to conserve water and use existing property features to copy water patterns found in nature (Puget Sound Action Team, 2005). It involves allowing plants, soil, and microbes to naturally hold and filter storm water while also recharging groundwater. Common LID projects include permeable pavement, vegetated roofs, roof rainwater collection systems, and dispersion. We explore three LID tips that contribute to healthy shoreline living and may even inspire a new family project! Keep LID principles in mind as you implement home and garden projects. By doing so, you can truly enhance your property and protect Puget Sound for years to come.

### **Permeable Pavement for Your Patio or Driveway**

According to Puget Sound Action Team (2005), “The transition from a native landscape to a built environment increases the impervious surface coverage of roads, parking areas, sidewalks, rooftops, and landscaping. Such changes reduce, disrupt, or eliminate native vegetation, upper soil layers, and native drainage patterns that process stormwater.” Without natural soils and plants to absorb, slow and mitigate storm runoff, natural occurring processes are amplified. Two major ones include increased streambed channel and bank erosion and increased in-stream sedimentation. These higher than normal flows often contain mass loads of pollutants (Department of Ecology, 2010).

Permeable pavement is one way to restore the natural infiltration of stormwater through the ground because it allows water and corresponding pollutants to filter through soil instead of washing away down a street and eventually into Puget Sound. This means there is less volume and flow during big storm events, which also decreases flooding (EPA, 2000). There are many different types of permeable surfaces, including the grass-gravel grid, porous concrete and interlocking pavers. Permeable landscape pavers are commonly found at commercial hardware stores; installation is similar to regular pavers. Costs tend to be about the same as traditional materials or a little bit more.



Permeable Pavers: B & N Florida

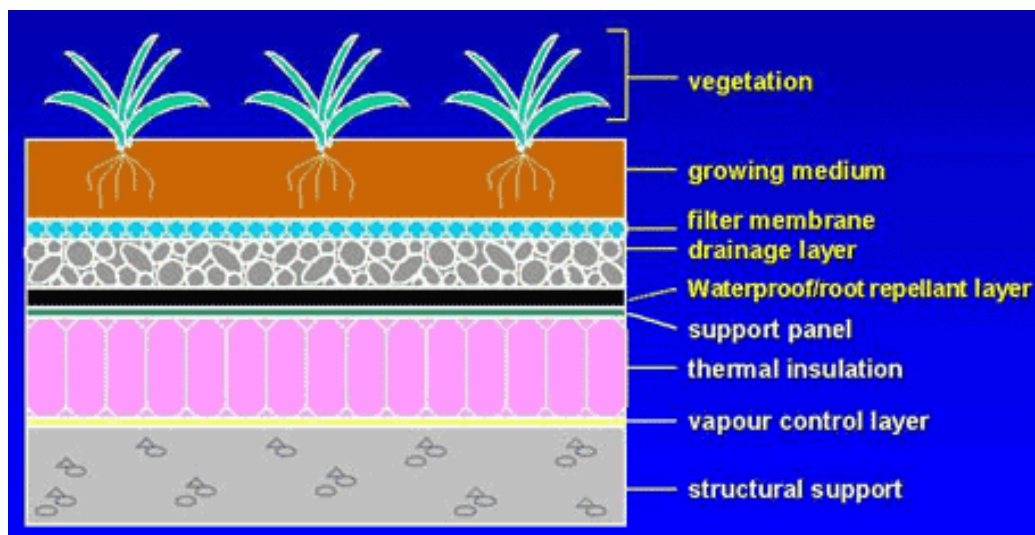
**Beware Bluff Landowners:** Infiltration may not be a good option for you. If you live in an area with steep slopes, any infiltration should be considered carefully. If you have a portion of your property that slopes away from the bluff, that may be an area that can be infiltrated. Green or living roofs, described next, may be a better option for you.

### **A Living Roof**

Living (or green) roofs are another type of Low Impact Development; like porous pavers they reduce stormwater flow. According to the University of Vermont (2000), green roof benefits also include cleaner water as microorganisms and plant roots sequester pollutants, building insulation that contributes to energy efficiency, possible wildlife habitat in urban areas, and enhanced aesthetics. Other sources indicate that a living roof can actually extend the life of your roof,

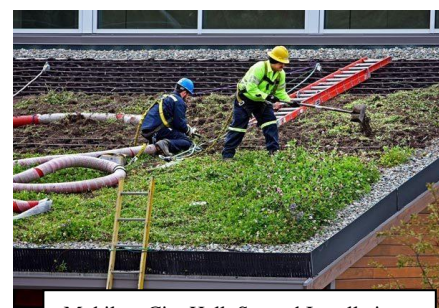
if installed properly. That's because sunlight is a very harsh agent, putting a great deal of stress on our roofs. Green roofs act as a barrier to that sunlight.

Green Roofs for Healthy Cities (2010) described the technical components of a living roof as, "...a system, an extension of the existing roof which involves a high quality water proofing and root repellant system (to protect the structure), a drainage system, filter cloth, a lightweight growing medium and plants. Green roof systems may be modular, with drainage layers, filter cloth, growing media and plants already prepared in movable, interlocking grids, or, each component of the system may be installed separately." Professional green roof installers are now much more available than in the past. Some residents are now installing living roofs on garages, sheds and other secondary structures.



Not all plants are appropriate for a living roof. When shopping for plants, consider these traits:

- low growth height,
- rapid growth / spreading,
- high drought tolerance,
- roots that spread out rather than go deep,
- little or no need for special irrigation or nutritional requirements,
- low maintenance trimming, weeding, feeding, and
- avoiding plants with airborne seeds to prevent the green roof plants invading other landscapes (Snodgrass, 2010).



Mukilteo City Hall: Second Installation

Proper design, installation, care, and maintenance are essential to maintaining a healthy green roof. The Ford Motor Company in Dearborn, MI, for example, worked with Michigan State University researchers to successfully design and implement a 10.4 acre living roof on one of the manufacturing facilities. Conversely, the Mukilteo City Hall living roof was contaminated by bad mulch and sprouted clover that overgrew the native plants; it was later reinstalled (Seattle Times, 2009). Typical maintenance involves routine inspection drainage layer flow paths, initial watering, fertilization, and irrigation (LID Urban Design, 2010).

## Car Washing at Home



Many people enjoy washing their cars at home in the driveway or do not have access to a commercial car wash. However, there are a few environmental impacts associated with residential car washing. Many home car wash detergents are harmful to the environment. Soap suds flow into the outdoor stormwater drain, which often then flows into streams or creeks, then out to the Sound. Since residential car washing skips the wastewater treatment process, pollutants such as oil, grease, and fuel are thereby transferred to our marine environment. If this

happens, your neighbors might notice soap bubbles--or worse, oil "rainbows"--floating downstream! These untreated pollutants impact salmon habitat, fish, and aquatic habitat.

According to Snohomish County resources, "Surfactants are chemicals designed to lift and coat the dirt and grime so it doesn't settle back onto your car...surfactants are also great at coating fish gills and this prevents fish and aquatic insects from getting the oxygen they need." Shore Stewards can set a good example, protect habitat, and keep the water clean with five easy steps:

1. Park the car on grass or an area where the water can filter into the ground and not run off to the storm drain. If you have a septic system, DO NOT do this on the drainfield.
2. Divert the drainage away from the storm drain but not onto a septic system drainfield.
3. Use a hose with a shut-off valve to reduce possible runoff from the grassy area.
4. Dump your soapy water out in the sink or on an area where it will filter into the ground.
5. Try a waterless car wash product. Research is still being done on these commercially available products but they may be better than washing your car in an area where water runs unimpeded to a storm drain.
6. Consider washing your car less frequently. For those who feel a clean car should be a weekly activity, even dropping one week a month could make a big difference.

## References and Resources

LID Urban Design. (2010). *Maintenance: Greenroofs*. Retrieved August 10, 2010 from [http://www.lid-stormwater.net/greenroofs\\_maintain.htm](http://www.lid-stormwater.net/greenroofs_maintain.htm)

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