



Kelso

Low Impact Development

Issue #1
February 17, 2017

Find Out More

Kelso LID Web Page:
<http://www.kelso.gov/stormwater/low-impact-development-lid>



An example of a bioretention area built to capture street runoff. (Photo by Otak, Inc.)

Upcoming Events

City Council Hearing on
February 21, 2017

City Council Hearing on
March 21, 2017

What Is Low Impact Development?

The Problem

Stormwater runoff is the main cause of water pollution in urban areas, and it contributes to flooding and erosion.

Rain can soak into the soil, stay on the surface and evaporate, or run off to streams and other water bodies. Prior to urbanization, when rain falls on undeveloped prairies and forests, most of the water is absorbed by the soil and plants. In natural systems in the Pacific Northwest, only a small fraction of precipitation typically runs off over the surface.

After we build cities and suburbs, rain that falls onto impervious surfaces such as roofs, streets, and parking lots cannot soak into the ground. Instead, stormwater quickly drains through storm sewers and into nearby water bodies and picks up pollutants along the way. The increased proportion of runoff means that even small storms can harm water quality, cause flooding, and erode stream banks, causing property damage and harming habitat.

The Solution

Low Impact Development (LID) is an approach to land development that mimics a site's natural pattern of runoff. LID emphasizes conserving natural areas and vegetation on site and minimizing impervious surfaces. Extra runoff that is produced by development is captured and treated on site. Small, distributed stormwater facilities slow runoff down, spread the runoff out, and soak it into the soil.

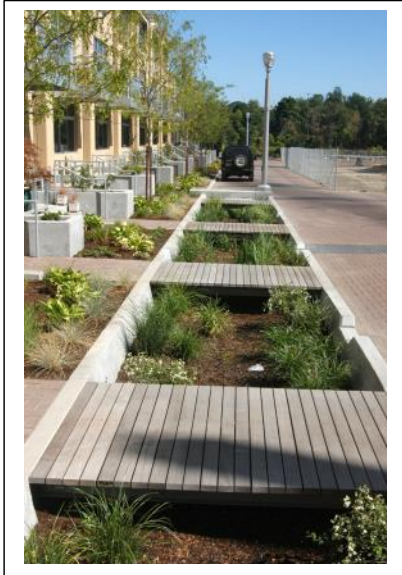
You have probably seen some types of LID around Kelso and other cities in Washington and Oregon. Bioretention and permeable pavement are just two examples of LID. (Continued on page 2.)

Regulatory Background

Most stormwater runoff in Kelso is conveyed through a network of pipes, ditches, catch basins and some water quality treatment facilities to the City's drainage channels and rivers – the Columbia, Cowlitz, and Coweeman. This network is called a municipal separate storm sewer system (MS4).

The Clean Water Act established the National Pollutant Discharge Elimination System (NPDES) to protect the water quality of streams, rivers, and lakes by limiting how much pollution can be discharged to them. Kelso operates the MS4 under a municipal stormwater NPDES Permit.

Under the Permit, Kelso is required to incorporate LID into its development codes, update the Kelso Engineering Design Manual (KEDM), and adopt the 2014 Stormwater Management Manual for Western Washington (SWMWW) to meet state standards for stormwater control on development sites.



Example of bioretention as landscaping in a mixed use development. (Photo by Otak, Inc.)

LID Update Process

To meet its Permit requirements, Kelso is incorporating LID principles into its existing codes and standards and adopting the 2014 SWMMWW.

In 2016, Kelso began reviewing its municipal code and engineering standards for subdivisions, planning and zoning, streets and sidewalks, stormwater design, and buildings and construction. We looked for opportunities to reduce impervious surfaces and keep native trees during the development process, which helps reduce and slow runoff. We looked for ways to add bioretention and permeable pavement to the Kelso Engineering Design Manual (KEDM).

We will use this review to recommend changes to the City code and the KEDM. City Council and Planning Commission will consider proposed updates this spring and summer. Opportunities for public involvement began in late January. Kelso must incorporate LID and adopt the 2014 SWMMWW by June 30, 2017. See the timeline below.

What is Low Impact Development (cont.)

LID techniques mostly fall into two categories: minimizing impervious surfaces and treating and infiltrating stormwater on site.

Permeable pavement replaces impervious asphalt and concrete surfaces with porous asphalt and concrete surfaces. These materials contain small voids that provide a path for water to flow through. Water that falls on the surface infiltrates into the soil below. Pollutants that collect on these surfaces are filtered out. Parking lots, driveways, sidewalks, and other paved surfaces can all be built using permeable pavement.

Bioretention areas are simple structures that mimic natural processes to treat and infiltrate stormwater. Runoff from impervious areas is directed to small, shallow, plant-filled depressions where the water can pool and soak into porous soil. The water is then taken up and transpired by the plants or trickles down to recharge aquifers. The soil and plants in the bioretention area also absorb and break down pollutants and prevent them from reaching streams and lakes.



An example of grassed permeable pavers. (Public Domain)

Timeline

Blue boxes on the top row show the timeline for the update to the development code. Tan boxes on the bottom row show the timeline for the update to the Kelso Engineering Design Manual.

