

low impact development



The Water Resource Protection and Conservation Toolkit

This is one of a series of 12 fact sheets developed by the Northwestern Indiana Regional Planning Commission with funding from the Joyce Foundation for the Water Resources Protection and Conservation Toolkit. The toolkit provides background on, and methods to protect and conserve local water resources. These tools are intended to help citizens and local officials to manage and protect water resources for future generations.

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Low Impact Development Practices and Benefits

The following are examples of activities that are characterized as "low impact development" (LID) and identifies whether they reduce runoff, improve water quality, conserve water, and/or sustain groundwater. LID design integrates stormwater management and erosion and sedimentation control into natural systems that keep rainwater on site. This is different from traditional development that uses pipes and drains, ponds, and storm sewers to move water quickly off site and into streams, rivers, and lakes.

Source: GeoSyntec, Inc.



Buffer Strips are landscaped areas using particular plants and soil that filter, or help clean, runoff before the water enters a storm drain system or waterway.

- ✓ Reduce Runoff
- ✓ Improve Water Quality
- ✓ Sustain Groundwater

Source: City of Chicago



Cisterns are devices that hold storm rainwater runoff in above or below ground storage tanks. This water can be used at a later time for irrigation or other needs.

- ✓ Reduce Runoff
- ✓ Conserve Water

Source: GeoSyntec, Inc.



Curbless Parking Lots send runoff to adjacent bioretention cells or filter strips to hold and clean the water rather than sending it directly to the storm sewer system.

- ✓ Reduce Runoff
- ✓ Improve Water Quality
- ✓ Sustain Groundwater

Low Impact Development Resources

Catching the Rain: a Great Lakes Resource Guide for Natural Stormwater Management, American Rivers
www.americanrivers.org/site/DocServer/CatchingTheRain.pdf?docID=163

This report by American Rivers offers an easy reference to a variety of natural stormwater management approaches suitable for the Great Lakes region

Conservation Design Forum Low Impact Development Resources;
www.cdfinc.com/CDF_Resources/CDF_Resources.htm

Low Impact Design Strategies, Prince George's County, Maryland,
www.epa.gov/owow/nps/lid/lidnatl.pdf

Stormwater BMP Design Supplement for Cold Climates, Center for Watershed Protection,
www.cwp.org/cold-climates.htm

Protecting Water Quality in Urban Areas, Minnesota Pollution Control Agency,
www.pca.state.mn.us/water/pubs/sw-bmpmanual.html

For more information, please contact: Northwestern Indiana Regional Planning Commission
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Source: Milwaukee Metropolitan Sewerage District



Disconnecting a downspout is done to reduce the amount of rainwater sent into storm sewers and instead channels it onto the ground and into the soil.

- ✓ Reduce Runoff
- ✓ Improve Water Quality
- ✓ Sustain Groundwater

Source: US DOT



Narrow Roads reduce runoff by reducing the amount of paved areas. This increased the amount of rainwater that seeps into the ground rather than into the storm sewer system.

- ✓ Reduce Runoff
- ✓ Improve Water Quality
- ✓ Sustain Groundwater

Source: GeoSyntec, Inc.



A **Rain Garden** is a man-made depression in the ground that collects and stores runoff and is filled with particular plants that help filter and clean the water as it is allowed to seep into the ground.

- ✓ Reduce Runoff
- ✓ Improve Water Quality
- ✓ Sustain Groundwater

Source: Low Impact Development Center



Green roofs are roofs planted with a specialized mix of plants in a lightweight soil that can thrive in harsh, dry, and high temperatures on the roof and tolerate short periods of saturation from heavy rains. Green roofs help reduce water pollution from runoff in urbanized areas by absorbing and cleaning rainwater.

- ✓ Reduce Runoff
- ✓ Improve Water Quality

Source: Low Impact Development Center



Permeable Pavement is made up of blocks or other materials that allows rainwater to pass through. Rainwater then seeps into the ground or is sent to a rain garden, swale, or infiltration trench.

- ✓ Reduce Runoff
- ✓ Improve Water Quality
- ✓ Sustain Groundwater

Source: Franklin Best Development Practices Guidebook



A **Swale** is a broad, shallow channel with a dense stand of vegetation covering the side slopes and bottom. Swales are designed to trap pollutants, increase groundwater recharge and slow the flow of runoff, which reduces erosion. They are used in lieu of curbs and gutters in low density development.

- ✓ Reduce Runoff
- ✓ Improve Water Quality
- ✓ Sustain Groundwater

Source: USEPA



An **Infiltration Trench** is a rock-filled trench with no outlet that receives stormwater runoff. To help clean the runoff, the stormwater initially passes through a swale, or something similar, before entering the trench. It is then stored in the voids of the stones, slowly seeping through the bottom and into the ground over a few days.

- ✓ Reduce Runoff
- ✓ Sustain Groundwater

Source: GeoSyntec, Inc.



Rain Barrels are barrels connected to roof downspouts to collect and hold rainwater. The water can later be used to water plants or lawns.

- ✓ Reduce Runoff
- ✓ Conserve Water

Source: GeoSyntec, Inc.



Tree Box Filters are small areas designed to hold runoff beneath trees, where it is cleaned by vegetation and the soil before being sent to the sewer system.

- ✓ Improve Water Quality