



Low Impact Development and Green Infrastructure Tour

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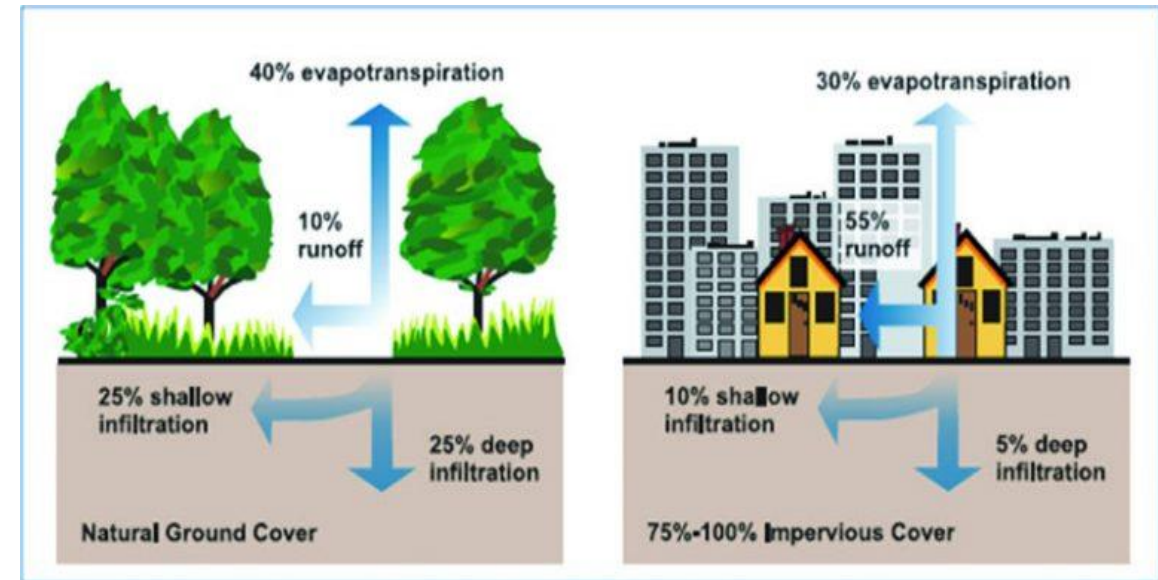


Why is Stormwater Runoff Bad?

- As stormwater travels over impervious surfaces, it picks up chemicals and sediments that are not naturally found in our waterways. They can eventually cause toxic algal blooms and other pollution problems. This can create a host of human health, wildlife, and ecological issues.
- Stormwater is also more likely to create flooding if there are too many impervious surfaces, which can lead to erosion and infrastructure damage.

What is Low Impact Development (LID)?

Low Impact Development is a stormwater management practice that aims to use or mimic the natural landscape to mitigate the effects of flooding and water pollution that is produced from stormwater runoff.



Source: [Understanding Stormwater Runoff and Low Impact Development \(LID\)](#) | Oklahoma State University (okstate.edu)

Why Low impact development?

- Aligns with municipal POCDs and Natural hazard mitigation plans along with NVCOG transportation and environmental goals, the MS4 general permit, and the CT Stormwater Quality Manual.
- Provides more ecological and cost-saving benefits in most cases, when compared to traditional stormwater and sewer systems.
- Allows for flood reduction and water quality improvements
- Improves aesthetics of a community.



Green Stormwater Infrastructure

Green Stormwater Infrastructure (GSI) is an LID concept and refers to specific installations that are designed to infiltrate water into the ground rather than let it runoff. The following examples will show information on the types of GSI that were shown during our tour on the UConn Storrs campus, which has over 75 examples of GSI.



Permeable Pavement

Permeable pavement is a paved surface designed to capture stormwater runoff and allow it to move through spaces on the surface. A deep layer (up to 37 inches or more depending on traffic intensity) of different types of gravel underneath the pavement provides space for the water to filter as it infiltrates into the soils below.

It is important to note that vacuuming is required on a frequency based on uses and how much sediment falls within it. In this lot, only the parking spaces are impervious; the drive lane is traditional asphalt. This creates less of a need for catch basins and piping, helping to reduce the overall cost of the lot.

Resources:

- [CONNECTICUT STORMWATER QUALITY MANUAL \(uconn.edu\)](#)
- [whatispermeablepavementpdf.pdf \(ct.gov\)](#)
- [permeable pavement \(pdf\)](#)
- [Pervious Pavement \(youtube.com\)](#)



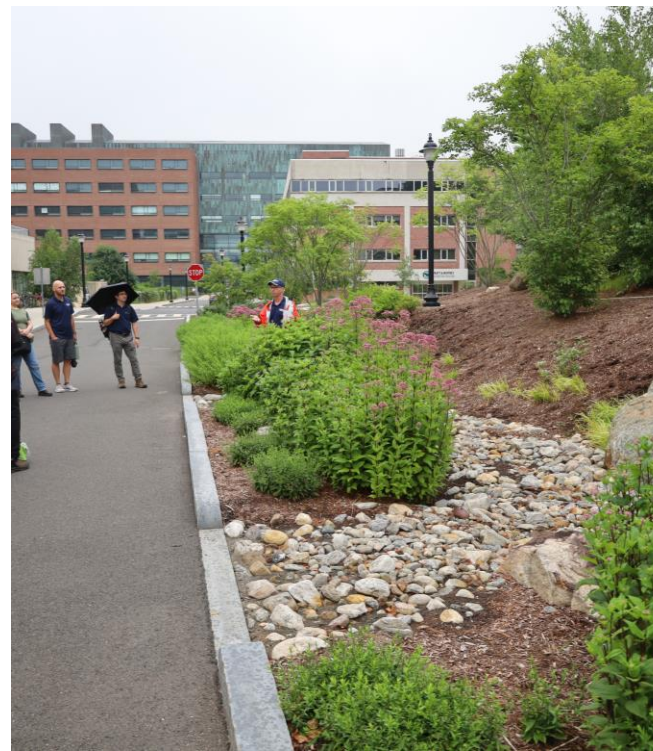
Bioretention/Rain Gardens

Bioretention areas/Rain gardens are permeable cost-efficient depressions in the landscape that typically include native facultative (plants that can survive many environmental conditions) wetland plants or trees and a mulch layer or ground cover. This form of GSI provides groundwater recharge, pollutant treatment, flood mitigation, and increased wildlife habitat. The gardens can accept runoff from a roof, sidewalk, street, parking lot, or other impervious surface while added to the aesthetics of a land scape.

Rain Gardens are typically smaller scale bioretention areas that do not include an underdrain and can be installed relatively inexpensively. The installation of this GSI can be a great project for anyone that wants to improve their property aesthetics and stormwater management!

Resources:

- [Rain Gardens | CT NEMO Program \(uconn.edu\)](#)
- [Rain Garden App Home \(uconn.edu\)](#)
- [Rain Garden Maintenance \(youtube.com\)](#)
- [Rain Garden Sizing \(youtube.com\)](#)



Bioretention Basin

Bioretention systems are versatile shallow, vegetated depressions that capture, store, and filter stormwater runoff. It is recommended to install overflow drains in the event of heavy rainfall.

Especially for larger enclosed bioretention areas, catch basins are used to capture sediment in stormwater and slowly release the water into a waterway or stormwater system. It is important to vacuum these basins and make sure the entry opening is clear of any debris when needed.

Resources:

- [NPDES: Stormwater Best Management Practice, Infrastructure Planning \(epa.gov\)](#)
- [NPDES: Stormwater Best Management Practice, Bioretention \(Rain Gardens\) \(epa.gov\)](#)
- [Bioretention | CT Stormwater Quality Manual \(uconn.edu\)](#)
- [Bioretention \(youtube.com\)](#)
- [Bioretention basin 2 - YouTube](#)



Permeable Pavers

Permeable pavers are interlocking blocks designed to allow water to infiltrate through the spaces between the pavers/bricks (this is what makes these pavers permeable) and into the ground below, reducing stormwater runoff and minimizing erosion. Traditional impervious pavement does not allow for infiltration resulting in runoff traveling into stormwater systems and waterways.

Permeable pavers must be vacuumed periodically to remove sediment that will clog those spaces. It is important to note that certain concrete paver materials should be pre-treated prior to being exposed to road salt. Check with the manufacturer.

Resources:

- [CONNECTICUT STORMWATER QUALITY MANUAL \(uconn.edu\)](http://uconn.edu)
- [whatispermeablepavementpdf.pdf \(ct.gov\)](#)
- [permeable pavement \(pdf\)](#)
- [Pervious Brick Pavers \(youtube.com\)](#)



Green Roof

Green roofs have a light planting medium (typically expanded shale or other lightweight material) with succulent plants that can withstand harsh rooftop conditions. Through evapotranspiration (evaporation from plants and soil), green roofs can significantly reduce the amount of rainwater that would otherwise run off an impervious roof surface – UConn research suggests 50%.

This GSI practice requires low maintenance (mostly weeding) but can be expensive to install. It is also important to ensure structures can support the green roof at full saturation. It is often best to install on new roofs that can be designed to handle the load.

Resources:

- [Soak Up the Rain: Green Roofs | US EPA](#)
- [Green Roof – YouTube](#)
- [Chapter 4 \(ct.gov\)](#) (pg. 20)





Conclusion

Infrastructure damage and ecological pollution from underperforming traditional stormwater and sewer systems is on the rise with the increase of extreme rain events. LID can bring flooding and water quality resiliency to communities that decide to take the initiative to implement this practice. GSI does come with its own maintenance needs, but so do traditional stormwater systems. If municipalities accept and implement this practice, it can bring improved aesthetics and resiliency to their community.



For any questions on this topic, please feel free to contact us!

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