

Natural Remedy



By Pavneet Brar

Using natural processes to address storm water challenges

Environmental changes, whether triggered by natural factors or human activity, are best dealt with through adaptation. With extreme weather events on the rise, we must adapt by taking proactive measures to build resilient surroundings. Low impact development (LID) techniques now are becoming mainstream, as they are effective at controlling quantity and improving quality of urban storm water. Many of these techniques revert back to nature and mimic natural processes, allowing more storm water to absorb into the ground.

At the University of Toronto, such promising solutions are explored by Dr. Jennifer Drake’s storm water research team. Treating at the source, where runoff is first generated, has many benefits for downstream infrastructure; this can be incorporated as a sole measure of treatment or as part of an integrated treatment train approach, in which storm water is treated at multiple points.

Bioretention systems, more commonly known as rain gardens, are an example of a localized control for storm water storage and treatment. These engineered gardens are shallow depressions consisting of amended soil, a hardwood mulch layer and native plants. They are able to achieve excellent removal of heavy metals and nutrients, while also attenuating peak flows and volumes. As bioretention systems and other LID techniques increasingly are being used by engineers, ecologists and planners, local environmental regulators are developing guidance documents to help streamline the design process. Standardized documents promote consistency in design, construction and operational practices.

While many LID techniques exist, bioretention systems are particularly desirable because they are aesthetically

pleasing; they literally exhibit what is referred to as “green infrastructure.” These systems beautify site landscaping while creating a natural habitat for birds and animals. Many underground or out-of-sight storm water controls may be effective, but visually appealing solutions such as bioretention are better at engaging the general public and educating them about environmental stewardship. The public is able to intuitively understand that natural landscapes are more beneficial than built infrastructure. With easier access to credible resources, there is an increase in community-led initiatives, such as individuals collecting weather data or installing their own rain gardens. This not only creates resilient neighborhoods, but also increases awareness of sustainability.

Although a change of mind-set is needed to adapt to the new climate normal, we can ensure success by primarily using our innate senses to work alongside nature and not against it. While we must continue to explore progressive ideas, we also must acknowledge strength in numbers; encouraging the general public to take environmental initiative is something powerful that can influence higher authorities. Often LID techniques are installed properly but issues are faced with their maintenance and long-term functionality; this creates the opportunity for community engagement and a new role for citizen scientists. While addressing local vulnerabilities is perhaps the first step toward adaptation, embracing such collaboration can result in broader environmental and societal well-being. **SWS**

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