

# LET IT RAIN!

## *Stormwater Source Protection Tools for Grassroots Advocates in Ontario*



In Ontario cities, towns and urbanizing rural areas, stormwater runoff ranks as one of the largest threats to watershed health, the security of drinking water supplies, and public infrastructure. Most municipalities still manage rain using traditional drainage methods: collect, concentrate and dispose, despite significant advances in methods and policies that achieve greater protection for your watershed's health.

Now is the time to get started on the renewal of our watersheds. Effective, ecologically sound stormwater management pays dividends - both financial and ecological - for your municipality. Here's how to talk stormwater, including facts, resources and what you need to know to move from runoff to renewal in your watershed.

### **Make the Connection To Stormwater in Your Municipality**

Overland runoff from roofs, driveways, lawns, and roads transports sediment, garbage, animal fecal contamination, and road runoff containing grease, oil, salt, metals and rubber into local waterways. The contaminated runoff leads to frequent beach closings and nutrient enrichment of large and small lakes including the Great Lakes, extensive damage to natural habitat, and degradation of drinking water sources. In centres with combined sewer systems carrying both stormwater and sewage to treatment plants, rain inflow often exceeds sewer capacity and results in conveyance system overflows and treatment plant bypasses of untreated sewage to rivers and lakes.

### **Turn Stormwater into a Resource!**

Low impact stormwater management provides a variety of techniques to restore and maintain natural hydrology in developed and rural watersheds. Low impact stormwater management takes careful planning and creative thinking, but in the long run provides greater local economy, environment, and quality of life benefits.

#### ◆ Financial Savings

- Reduce or avoid the costs of mitigation, repair, and/or reconstruction required by damages from flooding, erosion, and combined sewer overflows.
- Reduce or avoid the costs associated with expanding wastewater infrastructures.
- Reduce or avoid the costs of construction site preparation and infrastructure for new developments.

#### ◆ Comply with Provincial and Federal Laws

- ◆ **Improved Quality of Life:** Clean, restored waters improve and expand recreational and local tourism opportunities, and contribute to healthier citizens and community





## Fast, Hot and Dirty – Our Legacy of Development

### Fast

Impermeable surfaces in a city such as streets, driveways, sidewalks, parking lots and roofs. Runoff flows across these surfaces, picking up speed as it concentrates flows together, and drains rapidly into storm drains. By design, sewer systems stream-line and accelerate flow. Where the pipe discharges to a lake or river, the volume and speed attained often result in eroded river banks and occasionally in flash floods.

*Though it should take a rainfall an average of 72 hours to drain from a watershed, many urban watersheds drain within 8 hours.*

### Hot

Paved and impermeable surfaces absorb heat energy and become urban heat islands. When it rains, warmer surface temperatures raise the temperature of runoff. This heat transfer substantially changes a river's temperature, degrading cold water habitats necessary for fisheries survival. Hotter temperatures also encourage the growth of bacteria and algal blooms.

*Degraded shoreline canopy exacerbates water temperature rises due to the loss of shading, which reduces spawning habitat.*

### Dirty

Rainfall that flows across impermeable surfaces and off of agricultural fields picks up non-point pollutants ranging from sediment, roofing tar, oil, and road salt, to pet and wildlife waste, pesticides, fertilizers, and trash. Non-point pollutants' chronic impacts over long periods of time slowly destroy the ability of the watershed to sustain life. Non-point pollutants like road salts don't immediately kill but always degrade the overall health of our waters. Sediment washed into rivers is the largest single non-point threat to habitat for fish and other aquatic species.

*Automotive, boating and transportation drips and spills discharge more oil to North America's watersheds and, finally, the ocean, than all of the tanker spills in the world.*





## Evolving From Runoff to Renewal

Stormwater management that incorporates Low Impact Design (LID) tools manages rain water as a resource as opposed to a nuisance. We shift from Runoff to Renewal by incorporating LID into our municipality's stormwater management standards. Utilizing on-site LID practices to re-establish pre-development rain flows, prevent pollution, and restore habitat may take time, but it will reap significant benefits. Establishing an LID policy framework reduces runoff and protects water quality by re-establishing natural stormwater functions for both urban and rural landscapes. LID means transforming runoff by means of bioengineering – to establish natural drainage and flow patterns, appropriate-scale infrastructure – applied locally on individual properties, and social change marketing – to empower the individual land owner, or tenant to practice and maintain low impact stormwater methods on their property.

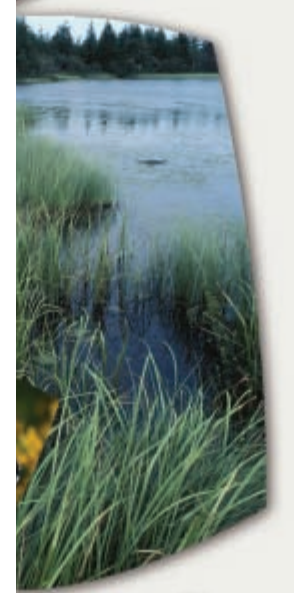
### Putting the LID on Stormwater – Basic Principles of Low Impact Development (LID)

1. Conservation – maintain water table and tree canopy and infiltration, and restore riparian vegetation
2. Minimization – eliminate/reduce impermeable surfacing wherever possible
3. Strategic Timing – ensure rain flows and drainage enter the watershed drainage system in a manner that avoids flooding or erosion
4. Integrated Practices – utilize infiltration, bioremediation, and storage of rainfall and runoff flows
5. Pollution Prevention – restrict known non-point source pollutants arising from private property and municipal activities, from road salts, and pesticide to car washing, and educate to control other discharges – animal feces, sediment, and road runoff

### How Does LID Protect My Watershed?

By retaining, filtering, treating and using the water on-site, LID reduces or eliminates most problems associated with stormwater volume and runoff. LID also provides visual and environmental benefits to the local landscape. Many LID practices are highly effective, comparatively low cost and relatively easy to implement in contrast to traditional pipe and pond methods. LID methods for capture, bio-infiltration and pollution prevention include:

- ◆ Downspout disconnection and rain harvesting barrels or cisterns
- ◆ Rain gardens, street trees and naturalization
- ◆ Green roofs
- ◆ Permeable paving and soakaway/ infiltration pits
- ◆ Salt alternative de-icing
- ◆ Pesticide free maintenance and weeding
- ◆ Multifunction swales (storage, infiltration and conveyance)





## Runoff to Renewal: Coordinating with Local Officials

As you prepare to approach your local decision-makers, consider the following suggestions.

- ◆ Know the basics of stormwater infrastructure in your community and its impacts.
- ◆ Investigate the online resources provided in this publication and local news media to understand the benefits of using LID to minimize and manage stormwater.
- ◆ Form coalitions and partnerships with likeminded groups and individuals, many voices are more effective.
- ◆ Identify case studies of successful stormwater management, social marketing and best practices in communities similar to yours to help promote change in your community.
- ◆ Be clear about what you are asking. You may start by asking what, if any, existing plans or regulations address stormwater and whether any are planned or under consideration.
- ◆ Seek specific opportunities for public comment on local ordinances or master plans, how such opportunities are advertised, and request to be on notification lists if possible.
- ◆ Be knowledgeable and respectful of decision-makers' perspectives, and decide who and when to approach strategically. Know your community and work within it to promote LID.
- ◆ Know what you are offering. You may simply be interested in contributing as a concerned citizen or organization. Once familiar with the status of existing and proposed stormwater efforts, determine how you can help what is underway or initiate new efforts and offer to partner on such projects.
- ◆ Be persistent. It may take some time for you to identify the best contact(s) in your community, and longer for you to build respect and develop productive relationships. If you have contacts and/or are known and respected in your community, you are already ahead of the game!



## Resources

There are a number of excellent resources out there, please visit [www.glahabitat.org](http://www.glahabitat.org) for more information on how to link and leverage Integrated Stormwater Management with existing programs, for a list of Integrated Stormwater Management resources, (including a Stormwater Source Protection Checklist for municipal leaders in Ontario, and the RiverSides Foundation Homeowners Guide to Rainfall, [www.torontorainguide.org](http://www.torontorainguide.org)).

This is one of several tools developed by the Great Lakes Aquatic Habitat Network and Fund, Inc. with the help of the RiverSides Foundation in Toronto. Designed to help grassroots advocates and municipal leaders creatively address stormwater in their communities, we encourage you to pursue this conversation with others. For more information, please contact GLAHNF or RiverSides. Published March 2007.



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Cover Photos: Junior Pennsylvania Lake Erie Watershed Association members established a rain garden in downtown Erie, Pennsylvania. Image courtesy of JrPLEWA.

Inside Photos: Since Chicago's City Hall rooftop garden project, over two million square feet of green roofs have been installed in the city; Chicago, Illinois now leads the nation in green roof acreage. The City Hall green roof was designed by Conservation Design Forum, in Elmhurst, Illinois. Image courtesy of CDF. • Three young friends play in Bear Creek, Kent county, MI, once unsafe for bodily contact, healthy now thanks to sound stormwater management. Image courtesy of Rain Gardens of West Michigan, a project of the West Michigan Environmental Action Council.

Back Page Photos: Seth Hildebrand fishing, Rondo on the Sturgeon.