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Soak it Up! Toolkit

Community-wide implementation of green stormwater infrastructure

TRIECA 2016

Presented by Clifford Maynes

Green Communities Canada



OVERVIEW

- Cook's tour of Soak it Up! Toolkit
 - suite of programs and policies for implementing green stormwater infrastructure across the landscape
- download, use toolkit
- provide feedback
 - comprehensiveness
 - accuracy
 - examples
 - insights



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BACKGROUND

- Green Communities Canada
- RAIN Community Solutions
 - community engagement
- Green Infrastructure Ontario
 - intersectoral
 - policy
 - SRG for LID Guidance Document



Ontario policy framework

- "new normal"
- planning policies (PPS)
- Great Lakes Strategy/COA
- Climate Change Strategy



Ontario policy framework

- Interpretation Bulletin
 - pipes and ponds inadequate
 - approach that “mimics a site’s natural hydrology”
 - main tenet: “control precipitation ... where it falls”
 - use LID, watershed approach (early in process)
 - LID can replace ponds; possible w/tight soils
- LID Guidance Document
 - volume reduction targets



Local action

- stormwater, development are municipal
 - impacts, costs/benefits, authority



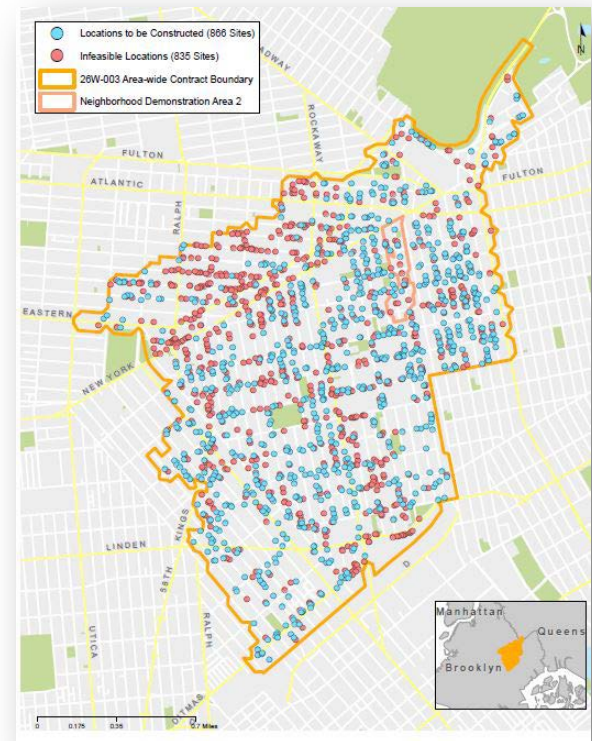
Soak it Up! Toolkit

- overview of policies, programs (~50 pages)
- for decision-makers, practitioners, influencers



Beyond demo projects ...

- across landscape
- watershed scale impacts
- a toolkit, not a road map
 - local priorities
 - local capacity
 - a linked strategy



Soak it up! Toolkit

- plans/strategies
- community engagement
- capacity
- new development
- green streets
- public lands
- urban forest
- private property
 - economic instruments



PLANNING

- opportunities to adopt:
 - principles
 - goals, targets, timelines
 - commitments
 - action plans
- local drivers?

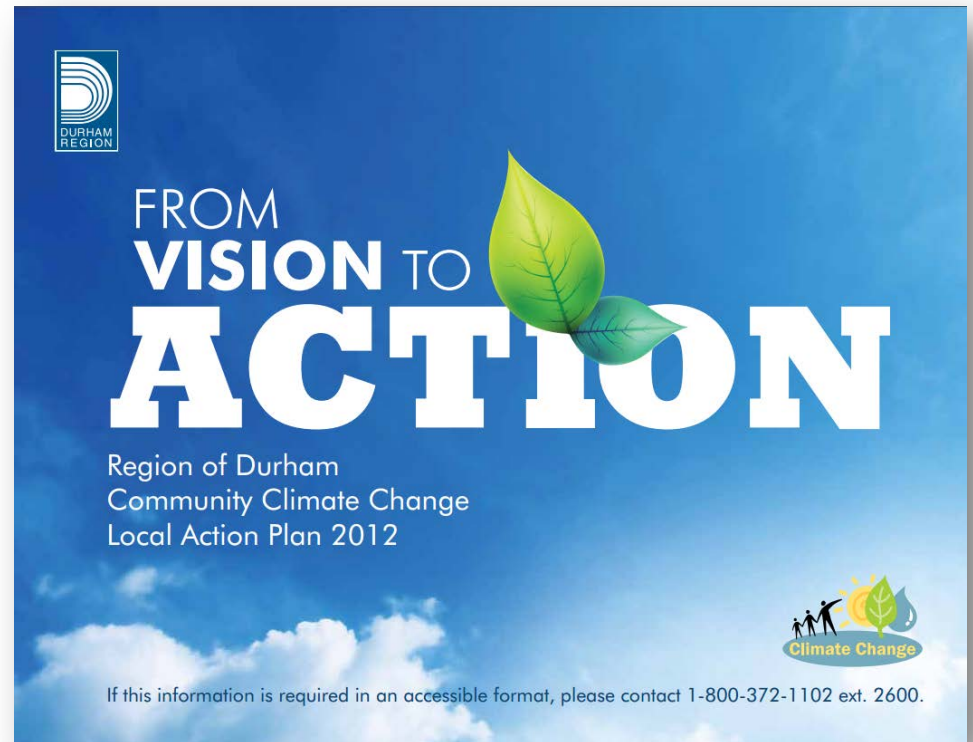


Planning options.

- Official Plan (PPS)
 - “maximize the extent and function of vegetative and pervious surfaces”
 - “promote ... best practices, including stormwater attenuation and re-use, and low impact development”
 - “minimize volumes and contaminant loads,”
 - maintain, increase “vegetative and pervious surfaces”
- growth plans

Planning options

- sustainability
- climate adaptation
- flood management



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Planning options

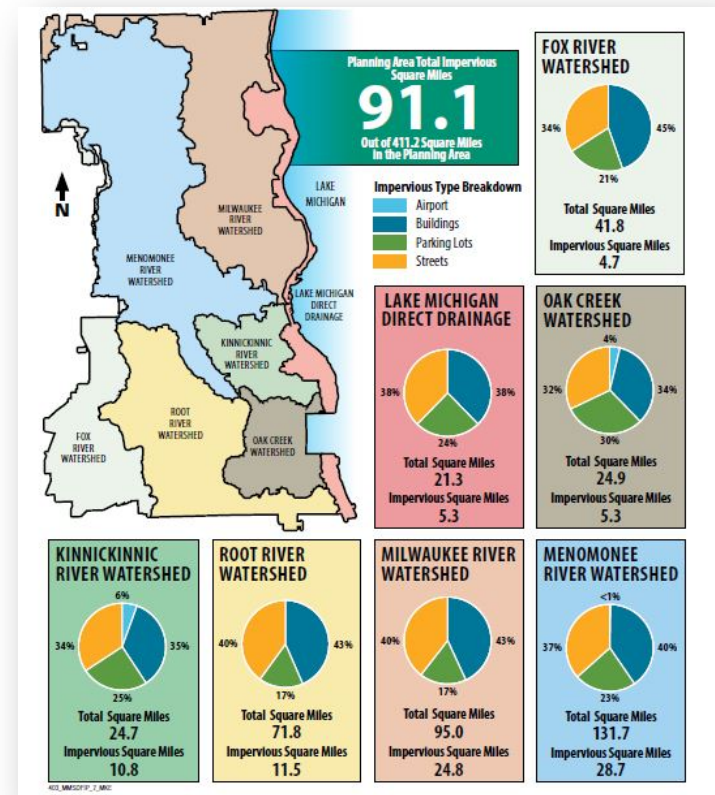
- source protection
- water quality
- watershed
- CSO



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Planning options

- stormwater
- asset management
- green infrastructure
 - value existing assets
 - specific opportunities
 - set targets, timelines
 - volumes, “greened acres”
 - green portfolio standard



New York City

- capture 1", 10% of impervious areas in CSO district, by 2030
- reduce CSO volumes by 3.8 billion gallons/year
- save \$1.5 billion vs. all grey, reduce risks



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COMMUNITY ENGAGEMENT

- address:
 - knowledge
 - understanding
 - attitudes, benefits
 - barriers, solutions



Engagement strategies

- workshops
- presentations
- tables
- partnerships
- pilots



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Onsite consultations

- avoid flooding
- other goals
- home
- commercial



Depave Paradise

- tear up pavement
- restore soil
- vegetation
- high-impact



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BUILD CAPACITY

- practitioners
- training: TRCA/CVC
- conferences
- contractor training
- toolkit/outreach

ROBERT GOO:

“We have to hold each others hands.”



Rain garden training

- Washtenaw County
 - classroom, field
 - volunteer commitment
- Groundbreakers



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NEW DEVELOPMENT

- limited impact
- easier to plan, build, require, incentivize
- demonstrate the new paradigm



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Infiltration standards

- onsite infiltration, e.g., 25mm
 - Washington, Atlanta
 - Toronto
 - Lake Simcoe
- offsite options
 - payment in lieu
 - SRCs



Benefits for developers

- more lots
- green sells



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Carrots

- accelerated applications
- design charette
- floor area bonuses

Rain Scaping



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Topsoil

- at least 30cm of topsoil
 - uncompacted
 - organic

Preserving and Restoring Healthy Soil: Best Practices for Urban Construction

Prepared by Toronto and Region Conservation Authority
June 2012
Version 1.0



Sustainable Technologies
Evaluation Program



Toronto and Region
Conservation
for The Living City

GREEN STREETS

- part of the problem
- part of the solution
 - bioswales
 - trees pits
 - rain gardens
 - permeable paving ...



Green Streets examples

- 2007 Portland policy: all city-funded road construction and reconstruction
- Seattle: selected areas
- Mississauga resolution
- Toronto guidelines
 - w/Complete Streets



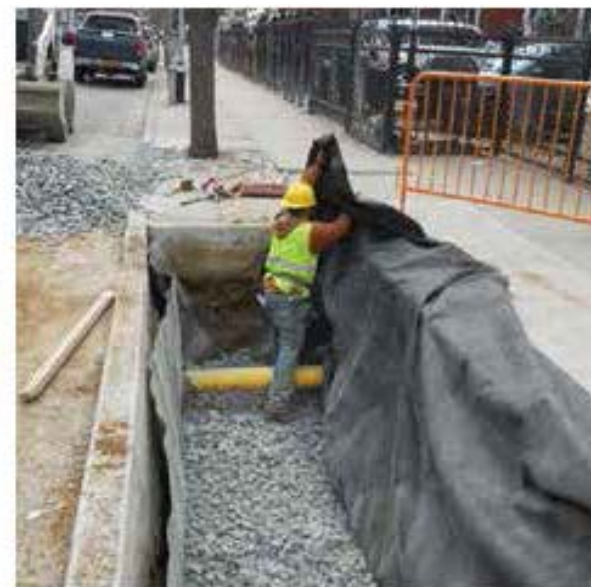
How to build a bioswale in the right of way



The contractor spray paints the length and width of the bioswale on the sidewalk. These borders are then cut with a saw.



The sidewalk and curb are removed and the material underneath is excavated to a depth of five feet.



The excavated bioswale is backfilled with broken stone, which is wrapped with geotextile fabric to prevent the next layer of soil from clogging void spaces in the stone layer.



If private utility service lines run through the bioswale, they are fitted with a protective sleeve.



The sidewalk and curb that were removed for the installation are replaced in kind. The new curb has one or two curb cuts that allow water to flow in and out of the bioswale.



The engineered soil contains sand, which allows for quick infiltration. The soil is graded to allow water to pond at the center of the bioswale during a rainstorm.



A steel tree guard is installed to protect the plants from foot traffic on the sidewalk. The tree guard posts are set in a concrete footing for stability.



All bioswales feature water- and drought-tolerant perennials that can survive in city streets. Bioswales include trees wherever possible.



Several factors can affect the estimated 10-month construction schedule for a typical bioswale, including permit approval, material procurement timelines, allowable planting seasons and weather conditions.

Alleys

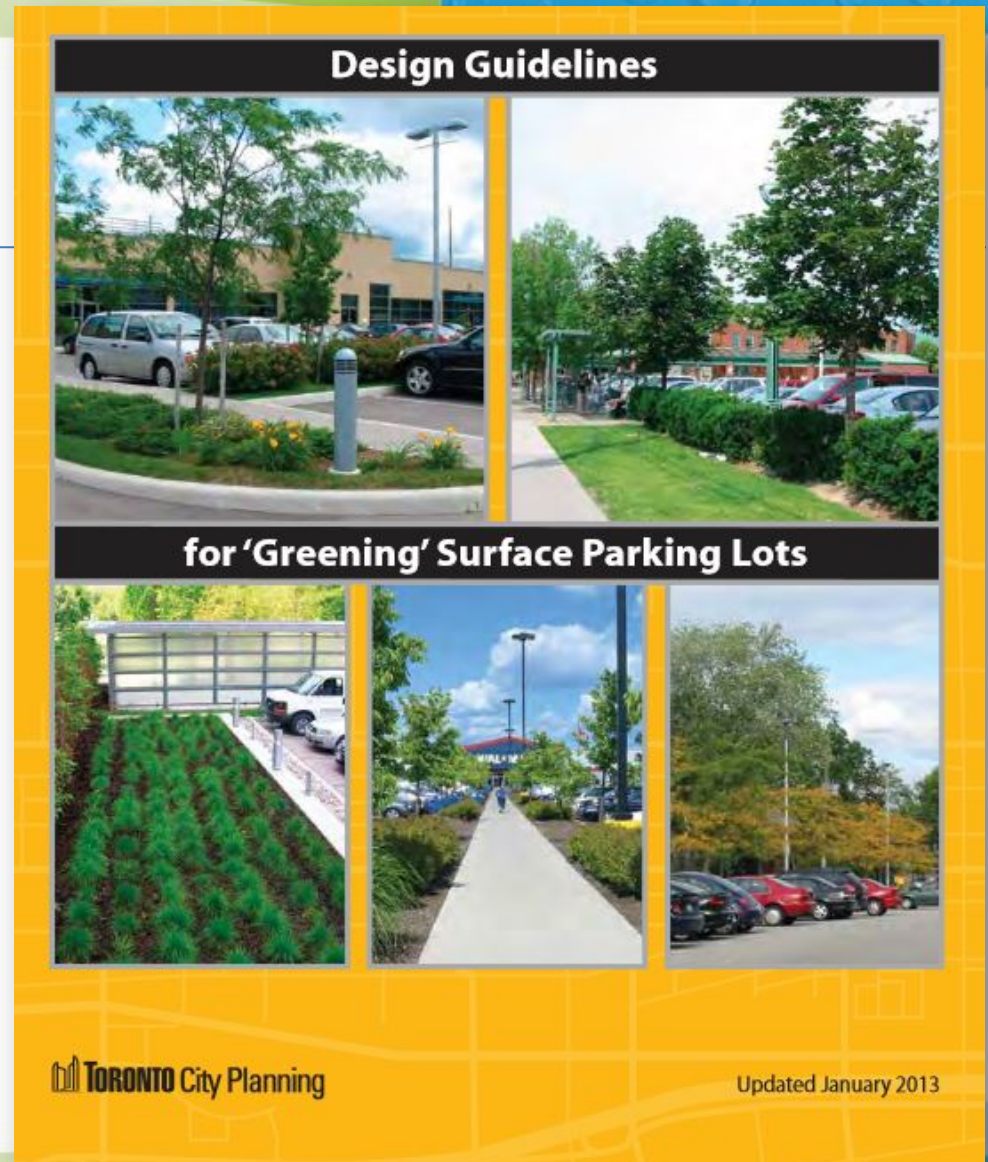
- public safety, flooding, trash ...
- Los Angeles
- Chicago
- Montreal



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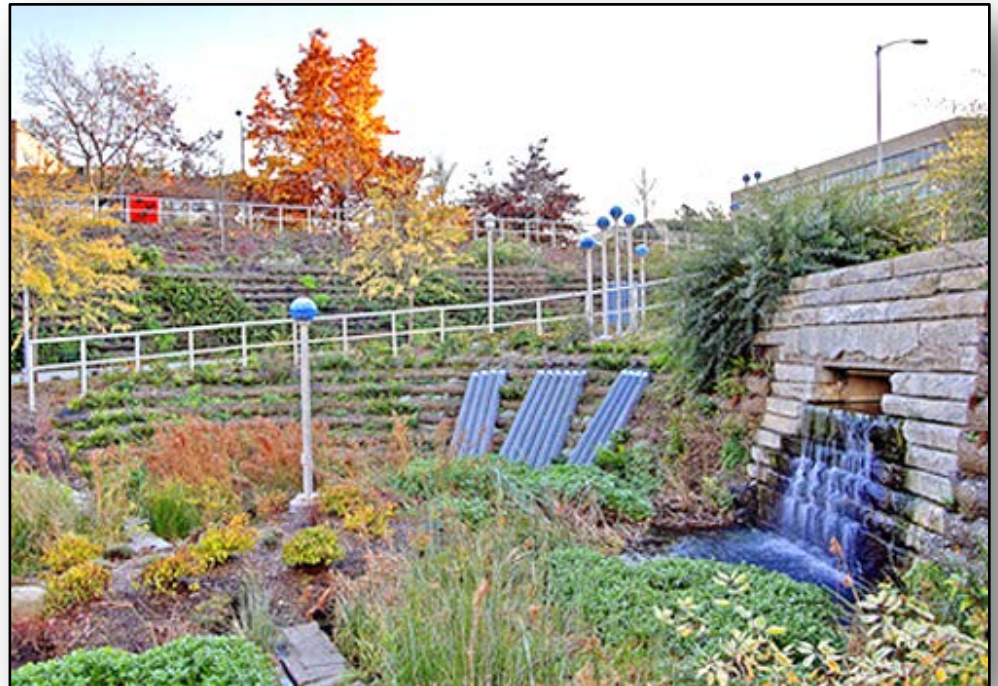
Parking lots

- Toronto standard
 - public lots
- co-benefits
 - safety
 - aesthetics
 - reduced salt
 - reduced slip and trip



PARKS

- increase infiltration, harvesting, reuse
- Philly, Lakeside, Corktown Commons
- maintain, enhance recreational values
- Great Urban Parks
- fall workshop w/OPA



SCHOOLYARDS

- often impervious
- combine education, engagement, water management ...
- “rain is a resource”



FORESTS

- trees “soak it up”
- co-benefits
- ➔ 40% canopy
- plant, maintain
 - .63m³ for m²
- Victoria, Oakville, Toronto, Vancouver



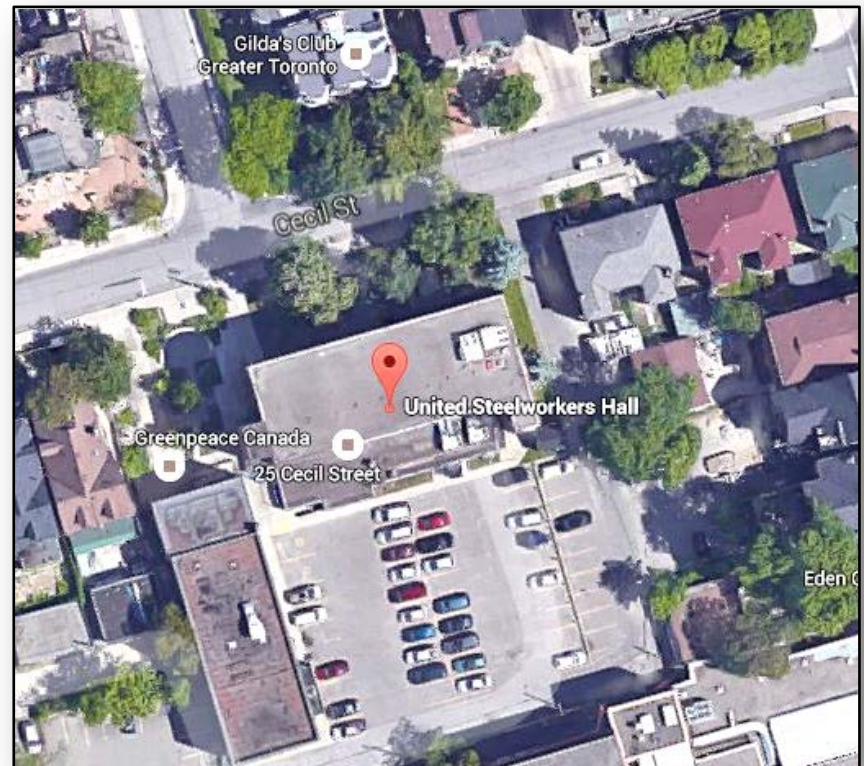
DOWNSPOUTS

- downspouts, weeping tiles overload sewers → flooding, CSOs, backup
- disconnect, harvest, infiltrate
- voluntary, incentives, mandatory
- Portland, London, Toronto ...



FEES, INCENTIVES, MBIs

- toughest challenge: developed private lands
- stormwater user fees
 - funds for grey and green
 - fairer – volumetric
 - credits, incentives
- many examples, how-to
- workshop



Barriers, solutions

- “rain tax”
 - mythbusting
- cost-effectiveness
 - incentives
 - GARP, P3
 - SRCs
- maintenance



Toolkit download

www.raincommunitysolutions.ca/en/toolkit/



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