Using natural capital to manage stormwater in the City of Delta

Asset Management BC
September 26, 2018
Delta’s Green Infrastructure Program

Goals:

• Increase permeable surfaces throughout the city
• Focus rainwater infiltration on sites that drain into fish-bearing streams
• Improve local streetscapes
• Increase community awareness
• Make green infrastructure the standard practice

https://tinkerscreek.org/what-is-stormwater/
Delta’s Green Infrastructure Program

Our green infrastructure components:
• Porous parking (lots and curbside)
• Roadside infiltration swales
• Underground infiltration galleries
• Daylighted ditch
• Street trees
• Larger green spaces
• Bike lanes
• Rain gardens
• Education
10+ Years of Rain Gardens in Delta

Deborah Jones, rain garden coordinator with the Cougar Creek Streamkeepers
What is a Rain Garden?

http://www.crd.bc.ca/watersheds/lid/documents/RainGardenBrochure.pdf
Why Build a Rain Garden?

• Reduce flooding
• Reduce erosion in creeks
• Filter out pollutants before they reach the storm drain and enter our waterways
• Recharge groundwater
• Provide habitat for beneficial insects, birds and wildlife
Rain Garden Examples
Cougar Creek

Removed curb

Blocked drains

Excavated swale; installed drain rock wrapped in geotextile

Installed overflow CB

Cougar Canyon school rain garden - before

Removed curb

Installed overflow CB

Cougar Creek

Excavated swale; installed drain rock wrapped in geotextile

Blocked drains
Cougar Canyon school rain garden - after

Cost: $26,963
Sunshine Hills rain garden - before
Sunshine Hills rain garden - after

Cost: $23,552
Curb cuts

Enlarged inflow

Trench drain moves runoff from gutter to garden

Heath rain garden - after

Cost: $14,002
North Delta rec centre - after
Two years later
Unique Design Features
Construction Stats

- “Community” rain gardens: **27**
- “Municipal” rain gardens: **40+**
- Average cost per square metre: **$125**
School Rain Garden Program
Rain Garden Education Program
Rain Garden Education Program

In 2007, the Cougar Creek Streamkeepers published “Lawrence and the Rain Garden”

You can help!
Tips for home and garden
Help us with existing projects
Start your own project
Join our Green Team email list
Purchase our book Lawrence and the Rain Garden

Read all about the Cougar Canyon Elementary School Rain Garden Project in ...

Charming canine gardener Lawrence gives you the inside scoop in this 112-page book for the young and young-at-heart, featuring delightful and informative colour photos of the rain garden project from start to finish (though as Lawrence says, a garden is never finished, because it's always growing and changing).

A great gift for dog lovers, gardeners and budding environmentalists!

http://www.vcn.bc.ca/cougarcr/helppurchase.html
Community Awareness
Community Awareness
Rain gardens help keep North Delta’s streams flowing

Those little dry creek beds at our parks, recreation centres and schools are more than just decorative elements.

JAMES SMITH / Sep. 14, 2016 4:30 p.m. / COMMUNITY

They’re becoming an ever more common sight at our parks, schools and other community spaces, these little dry creek beds lined with ferns, flowers, bushes and trees.

But these rain gardens, as they’re called, are more than simple decorative elements to spice up a boring piece of lawn; they’re helping to make our streams and creeks healthy year-round.

Simply put, a rain garden is any landscaping that receives and soaks up rainwater runoff from an impervious surface such as a parking lot, street or roof. Deborah Jones of the Cougar Creek Streamkeepers organizes and constructs rain gardens in the area, including builds done in partnership with the Corporation of Delta and the Delta School District.

“The idea of a rain garden is instead of wasting rain water from a roof or a parking lot or a street down a pipe, out to a creek and out to the ocean within a couple of hours, instead we’re going to use nature’s free reservoir, which is the ground, to store that water,” Jones said.
MCCLOSKEY STUDENTS BUILD DELTA’S LARGEST RAIN GARDEN

November 9, 2017  Category: District, School

This week students at McCloskey Elementary worked alongside volunteers and members of Cougar Creek Streamside Committee to build the largest rain garden in Delta. The rain garden will work to help filter pollutants from stormwater run-off and will add habitat for local wildlife.
Ongoing Maintenance
Adopt-a-Rain-Garden Program
Rain Garden Volunteer Stats

• Number of volunteers: **16**
• Average number of hours/year to maintain a garden: **21 hrs** (range: 1-70 hrs)
• Average number of minutes/m²/year: **9 min** (range: 1-35 min)
Lessons Learned

Communicate!

Photo source: Adrian MacNair, South Delta Leader (2014)
Lessons Learned

Size the overflow based on expected garden intake.

Curb cuts: bigger is better.

Use rocks, logs, pools, and plants to slow down water.
Lessons from the School Rain Garden Program

• Collaborative project
  • Municipality
  • Streamkeepers
  • School district
  • School principal
  • Parent Advisory Committee
  • Neighbourhood “captain”

• Incorporate fundamentals of hydrology and landscape architecture (= proper function and plant survival)

• Train the construction crew (*water in a garden?*)

• “Planting Day” leads to sense of ownership

• Provide educational materials (e.g. signage)
Other Projects Using Natural Capital

• Hwy 91 off-line storage system (fish habitat)
• Tilbury stormwater management wetland
• Delsom pond
• Stormwater infiltration galleries in North Delta
Thank you!