Rain Gardens and other LID’s for Surface and Stormwater Management

“Treating water as a resource not a waste stream”
The goal of Rain LID is to treat stormwater at the point that it is created. In effect, having housing developments function more like natural features.
Primary goals for LID:

1) no measurable impacts to receiving waters

2) maintain or more closely approximate pre-development surface flow volumes and durations
Low Impact Development

Objectives:

• Protect and restore native soils/vegetation.
• Reduce the development envelope.
• Reduce impervious surfaces.
• Manage Stormwater as close to its origin as possible.
• Integrate stormwater controls into the design—create a multifunctional landscape.
• Reduce concentrated surface flow, minimize stormwater contact with impervious surfaces, and increase stormwater contact with soils and vegetation.
Why LID?


• Our waters are highly polluted –
  • On an average day, it’s estimated that 140,000 pounds of toxic chemicals – including petroleum, copper, lead, zinc and polychlorinated biphenyls (PCBs) – enter Puget Sound. Source: “Control of Toxic Chemicals in Puget Sound,” Washington State Department of Ecology, Phase 2: Development of Simple Numerical Models, 2008; www.ecy.wa.gov/Programs/wq/pstoxics/index.html
  • About 75 percent of the toxic chemicals entering the Sound are carried by stormwater runoff that flows off of paved roads and driveways, rooftops, yards and other developed land. Source: “Control of Toxic Chemicals in Puget Sound,” Washington State Department of Ecology, Phase 2: Development of Simple Numerical Models, 2008; www.ecy.wa.gov/Programs/wq/pstoxics/index.html

• Legislation is continuing to tighten on stormwater and water usage

  • Wetter winters – Overall rain is not expected to increase but rain events are expected to be more intense and warming weather will cause reduced snowpack all creating more erosion.
  • Dryer summers – rain garden plants, designed to be drought tolerant, will not suffer with this change and need no irrigation.
Kitsap County Quick Facts

- Population: 251,133 - 2010 census
- 394.94 square miles
- 636 People per square mile. 2\textsuperscript{nd} most densely populated in Washington State
- One of 12 Washington counties in the Puget Sound basin
Kitsap County’s Large Constituents

- 4 cities
- Large unincorporated rural area
- 3 Native American Tribal Governments
- 3 US Naval bases
Kitsap County’s Unique Water Challenges

- No large rivers – 1,003 miles of streams (1 river, Union)
- Long marine shoreline – 228 miles of shoreline (almost an island)
- No mountains containing snow pack
Kitsap County’s Unique Water Challenges

- Medium rain fall county average 50”/yr. (varies from 26”-60”) with long summer drought (3 mos. with average <0.5”)
- Large but declining salmon fishery
- Large but declining shellfishery – recently seen improvements!
A Strong foundation

- 1993 – Forward thinking county leaders created Kitsap County’s Surface and Stormwater Management (SSWM) Program through Ordinance 156-1993. Kitsap SSWM is an interagency partnership tasked with the following goals:
  - Protect public health and natural resources.
  - Minimize institutional costs.
  - Obtain support for the program from other municipalities, tribal governments, and county residents.
  - Meet state and federal regulatory requirements.
  - Provide a permanent funding source to address nonpoint source pollution. (Tax assessment)
Kitsap Surface and Stormwater Management partners:
Anatomy of a Rain Garden

Water flowing off impervious surfaces (for example a roof or driveway) can be delivered to the rain garden through a swale lined with decorative rock or plants, through a pipe, or across a landscape area.

Selected native plants or hardy cultivars

Ponding depth (6" to 12" typical)
Mulch layer
Gradual side slopes
Overflow

Existing ground

Rain garden soil mix depth
(12" to 24" typical)
2010 Rain Garden Program established

- Outreach
  - Workshops
  - Festivals
  - Farmer’s Market
  - Fairs
  - Colleges/schools
  - PSNS Learn at Lunch
  - Mailings
- Technical assistance
- Basic Rain Garden design
- Installation Assistance
- Cost Share – 50% up to max. $500.00
- Installed 13 rain gardens
Kitsap Conservation District
Rain Garden retrofit Cost Share Program

- Kitsap Conservation District (KCD) administers the implementation of the Rain Garden Cost Share Program for Surface and Storm Water management.
- The rain garden program for Kitsap County reimburses landowners/small commercial businesses of unincorporated Kitsap County 50% of costs for materials and contractor labor, not to exceed $500.00 per rain garden.
- Each cost shared site is evaluated for participation in the program prior to purchase of materials or starting work.
- Landowners must apply for cost share with KCD prior to starting work.
- KCD contributes technical assistance, basic design, and construction assistance if necessary.
- Once the application is approved and garden is built, the landowner must submit original receipts for cost share reimbursement.
2010-2013 Rain Garden Program Matures

- 2012 added
  - Cisterns – Cost shared 3
  - Permeable Pavement - 0
- Installed 70 rain gardens
- Significant* contacts with 380 properties
  * Communication with land owner requesting a site visit.
- Summer 2013 Added excavation service to the program
- Summer 2013 Adding option to excavate RG, provide and place biorentention soil and provide zone 1 plants with no cost share.
Challenges Encountered

- Uninformed population – have seen significant increase
- Economic downturn – furloughs...
- Other priorities
- Trained professionals – installers and designers
- Expense
- Buy-in
- Material availability
  - Native plants
  - Bioretention Soil
- Site constraints
  - Septic Systems (OSS)
  - Steep slopes and banks
  - Poor draining native soils
  - High seasonal water table
Looking Forward

• Increase amount of cost share $1,500 – $2,000?
• Increase percentage of cost share 60-40, 70-30?
• Increase BMP’s
  • Native tree planting
  • Conservation Landscaping/soil amendment
  • Pavement removal
  • Permeable pavement
• Contract with a landscape installer to install LID BMP’s
• Keep pressing forward! Still have a long way to go!!
Organizations and agencies to collaborate:
• City and County Public Works Departments
• Conservation Districts
• Public Utility Districts
• Educational Institutions
Rain Gardens do their job and will accentuate your landscape.
Kitsap Conservation District

Teresa Brooks
t-brooks@conservewa.net
360-337-7171 ext.24
www.kitsapcd.org

Mindy Fohn Kitsap SSWM Water Quality Manager
mfohn@co.kitsap.wa.us
360-337-7066
Grattix “Rain Garden in a Box”