Using WinSLAMM to Evaluate LID Practices: Shepard Regional Drainage Plan
Calgary, AB

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Project Location: Calgary Alberta
Overview:

- Planning level study
- Shepard drainage Area = 26,782 ha. (66,180 ac.)
- Mostly undeveloped, east of Calgary, Alberta

Study Objectives:

- 50 year land-use plan
- Investigate LID approach to meet post-construction runoff volume targets
  - Average annual precipitation = 420 mm (16.5”)
  - Post-construction runoff goals = 40 mm (1.6”) and/or 90 mm (3.5”)
- Predict post-construction pollution reduction achieved through LID management approach
Steps:

- Create representative Calgary rainfall file
  - Based on 38 years of record
- Identify and map future land use conditions
- Create WinSLAMM “standard landuses”
  - Land use
  - Source areas
  - Soil types
  - Drainage conditions

Steps (continued):

- Create WinSLAMM standard landuses
  - Identified 25 future landuse conditions
  - Examples:
    - Shopping Center
    - New Brighton Residential
Steps (continued):

Strip Mall Land Use

Legend
- Source Areas
- TYPE
  - Driveway
  - Landscaped
  - Parking
  - Roof
  - Sidewalk
  - Street

Steps (continued):

New Brighton Res. Land Use

Legend
- Source Areas
- TYPE
  - Driveway
  - Landscaped
  - Private walk
  - Road
  - Rooftop
  - Sidewalk
Steps (continued):

- Collect land use plans from local governments
- Create GIS future land use coverage for project area

Steps (continued):

- Model volume & pollution reductions from series of LID practices:
  - Absorbent landscaping
  - Rain gardens
  - Cisterns (water reuse)
  - Green roofs
  - Wet detention pond (water reuse)
- Model applications at 2 levels:
  - “Moderate” LID implementation
  - “Increased” LID implementation
Results:

<table>
<thead>
<tr>
<th>Post-Construction Condition</th>
<th>Un-Managed Condition</th>
<th>“Moderate” LID Application</th>
<th>“Increased” LID Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runoff Volume (mm)*</td>
<td>140</td>
<td>87</td>
<td>63</td>
</tr>
<tr>
<td>TSS Loading (kg/ha)</td>
<td>202</td>
<td>26</td>
<td>24.8</td>
</tr>
</tbody>
</table>

* Goal = 90 / 40 mm

Results:

Annual Post – Construction Runoff Volume (mm) by Subcatchment

No Management  "Moderate" LID  "Increased” LID
Questions?