Small-Scale Stormwater Management in Vermont

Managing Stormwater from Rooftop to River

Winooski Natural Resources Conservation District
Stormwater Education and Action Program

Rain Gardens  ▪  Rain Barrels  ▪  Pervious Pavement
Rain Gardens
South Burlington
“Cadillac Gardens”

SOIL: Clay

COST:
Labor: $1,100
Materials: $2,100
Site Design: $5,000

FUNDING:
EPA
City of South Burlington
Rain Gardens
Landry Park, Winooski

SOIL: Construction fill

COST (3 gardens):
  Labor: $1,000
  Materials: $1,400
  Site Design: $0

FUNDING:
  VT DEC 319
  City of Winooski
  CREES USDA New England Water Quality Project
SOIL: Construction fill
COST:
   Labor: $0
   Materials: $350
   Site Design: $0
FUNDING:
   Lake Champlain Basin Program
Vermont Rain Garden Manual
Vermont Rain Garden Manual

- Complete rain garden plant list for VT
- Six rain garden themes
- Map of existing rain garden demos in VT
- Contact info for VT rain garden suppliers
- Picture of universal rain garden sign
Rooftop to River Initiative
Stormwater Education and Action Program

This RAIN GARDEN is protecting our local watershed from stormwater pollution.

www.vacd.org/winooski/
Pervious Concrete

Pervious $190 / sq yard*
Traditional $110/ sq yd

* price range depends upon soil type
Pervious Concrete
Taylor Park, St. Albans

Challenge:
• Maintenance
• Confidence

Photos courtesy Northwest Regional Planning Commission
Pervious Concrete & Rain Gardens

San Remo Dr, South Burlington

Installed urban rain garden photos:
Green Streets Program, Portland, Oregon
Portland Bureau of Environmental Services
Rain Barrels
Montpelier, South Burlington, St Albans

Managing stormwater by connecting high school art & science students with the community

Courtesy: Geauga Soil & Water Conservation District
LIDAR Elevation Mapping

RAN Program: University of Vermont
### Education for Town Officials

<table>
<thead>
<tr>
<th>LID Practices</th>
<th>Single Family Residential Lot</th>
<th>Small Commercial/Multifamily Lot</th>
<th>Existing Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underdrain Soil Filters</td>
<td>○</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Bioretention System</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Rain Garden</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Swale</td>
<td>●</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Vegetated Buffer</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Infiltration Practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry well</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Infiltration Trench</td>
<td>○</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Pervious Pavement</td>
<td>●</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Rain Barrel/ Cistern</td>
<td>●</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Green Roof</td>
<td>○</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Stormwater Planter</td>
<td>○</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Micro-bio Inlet</td>
<td>○</td>
<td>○</td>
<td>●</td>
</tr>
</tbody>
</table>

Key: ● = suitable, ○ = sometimes suitable with careful design, ○ = rarely suitable

Courtesy: Maine Coastal Program
## Education for Town Officials

<table>
<thead>
<tr>
<th>LID Practices</th>
<th>Rooftop</th>
<th>Non-Roof Top Impervious Areas</th>
<th>Disturbed Pervious Areas (Lawn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underdrain Soil Filters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bioretention System</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Rain Garden</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Swale</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Vegetated Buffer</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Infiltration Practices¹</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry well</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Infiltration Trench</td>
<td>●</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Pervious Pavement</td>
<td>○</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Rain Barrel/ Cistern</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Green Roof</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Stormwater Planter</td>
<td>●</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Micro-bio Inlet</td>
<td>○</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

**Key:** ● = suitable, ○ = unsuitable

**Courtesy:** Maine Coastal Program
Phosphorous Pollution in Lake Champlain, VT

Point vs. Nonpoint

- Point Source: 10%
- Nonpoint Source: 90%

Sources of Nonpoint

- Agriculture: 37%
- Forested Land: 7%
- Urban/Developed Land: 56%
Don’t “P” on Your Lawn!

and other lawn care tips for green lawns, not green lakes

Phosphorus (P) is a plant nutrient found in lawn fertilizer that feeds algal blooms in waterways. Create a beautiful lawn and keep “P” from polluting water by using P-free fertilizers and following these tips...

Stormwater & Phosphorous Pollution

• Education & Outreach Program
• Discourages the use of phosphorous fertilizer on lawns.
• Required by the Lake Champlain Phosphorous TMDL
Contacts

**General Information**
Jessica Andreoletti
Winooski Natural Resources Conservation District
jessica.andreoletti@vt.nacdnet.net
802-865-7895 x14

**LIDAR Information**
Helena Vladich
Gund Institute for Ecological Economics
Rubinstein School of Environment and Natural Resources
helena.vladich@uvm.edu
802-656-2985