CONFESSIONS OF LD DESIGNERS:
AN HONEST CRITIQUE OF DESIGN CHOICES FOR SUCCESSFUL IMPLEMENTATION

Dustin Atchison, PE, CH2M Hill
Alice Lancaster, PE, Herrera
Nate Cormier, ASLA, PLA, SvR
DESIGN
PROCESS

SITING.

MODELING.

WATER.

VEGETATION.

SOIL.

CONTEXT.
SITING.
I’m Going to Do a Rain Garden Project!
Geologic Maps Are Not Always Correct

**Map Units**

**Nonglacial Deposits (Holocene)**
- water
- Qw - Wetland deposits
- Qp - Peat
- Qb - Beach deposits
- Qbu - Uplifted beach deposits
- Qtf - Tideflat deposits
- Qal - Alluvium
- Qyal - Younger alluvium
- Ql - Lake deposits
- Qf - Fan deposits
- Qt - Terrace deposits

**Younger Glacial Deposits (Fraser Glaciation, Pleistocene)**
- Qvr - Vashon recessional outwash deposits
- Qvrl - Vashon recessional lacustrine deposits
- Qvrc - Vashon recessional coarse-grained deposits
- Qvi - Vashon ice-contact deposits
- Qvt - Vashon subglacial till
- Qvtm - Vashon subglacial meltout till
- Qva - Vashon advance outwash deposits
- Qvlc - Lawton Clay member of the Vashon Drift
Explorations Cost Too Much
PITS/Vactor Explorations
Tests are Not Always Representative
I’m Going to Do a Rain Garden Project!
Support Levels
- Oppose
- Neutral
- Support

Challenges
- Traffic Signal Needed
- Point or Unknown
- Pedestrian Crossing Needed
- Need Traffic Calming
- Install Sidewalk
- Blind Hill or Intersection

Drainage Issues
- Seeps or Spring
- Flooding or Puddles
- Wet Basement
- Point/Unknown

Destination
- Survey - No drainage or traffic issues

Suggestions
- Challenge
- Flooding
MODELING.
unit rain garden?

Notes:
1. Bottom width shall be a minimum of 2 feet and bottom area shall be flat (0% slope).
2. Imported bioretention soil shall meet City of Seattle specifications (minimum design infiltration rate of 3 inches per hour and 40% porosity).
ever seen a 2-yr, 24-hr storm?

- Rainfall
- Unmit. Runoff
- Mit. Runoff

Time

Runoff (cfs)

Rainfall (inches)

Runoff (cfs)

Rainfall (inches)
getting the water in
Length of opening required to pass 100% of flow ($L_T$):

$$L_T = 0.6 Q^{0.42} S_L^{0.3} \left[ \frac{1}{n S_x} \right]^{0.6}$$

Efficiency of Curb-opening ($E$) (% of flow captured):

$$E = 1 - \left[ 1 - \frac{L}{L_T} \right]^{1.8}$$
creating ponding

- Concrete
- Log/Wooden
- Earthen
- Gravel
- Concrete/Metal

Portland (2012 LID Manual)
High Point, Seattle
2012 LID Manual
Meadow on the Hylebos
NOTES:
1. Underdrain to pass through checkdam in non-pregraded PVC pipe.
2. Underdrain slope shall be 0.5% min.
3. PVC fittings shall be used to accommodate changes in grade, as needed.
4. Concrete checkdams shall be continuous (no joints).
5. Concrete checkdams shall be spaced 10" o.c. max when used as lateral bracing.

HERRERA

WORKING DRAFT
JULY 2013

BIORETENTION COMPONENTS
CHECKDAMS 1 OF 2

GREEN STORMWATER INFRASTRUCTURE
TYPICAL DETAILS
SAN FRANCISCO PUBLIC UTILITIES COMMISSION

BP C5.1
but not too much ponding
where does the water go?
Vegetation Design
Saltwater State Park, SvR
Volunteer Projects

Liberty Elementary School Bioswale CleanUp (January 22, 2006)

Willow and cottonwood trees had overgrown the bioswale plantings initially put in by students, parents and volunteers six years ago. The trees blocked drivers' sight, creating a hazardous situation in the parking lot.

The willow and cottonwood trees were too well established to pull or dig up. Volunteers cut the trees as close to the ground as possible. Some of the larger willow pieces became stakes for the city of Salem's restoration project on Claggett Creek.

The bioswale pictured a week after the clean up project.

The bioswale was a joint project of the city of Salem, Salem-Keizer School District, elementary school students and parents, and Pringle Creek Watershed Council volunteers.

Weary volunteers pose for a group photo.

Archibald Detention Basin
### Natural Drainage Practices Maintenance Guidelines
#### RAINFORESTS AND STORMWATER PLANTERS

## REGULAR MAINTENANCE

<table>
<thead>
<tr>
<th>Recommended Frequency</th>
<th>References and Images</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U-1-M1 Observation Ports</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visually check observation ports at least two times per year.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check observation ports after 1-inch of rainfall in 24-hour period and record water level.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image1" alt="Observation Port Image" /> <img src="image2" alt="Observation Port Image" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Remove cap of observation port. Measure depth between observed water level and top of lid for port. Replace cap securely when done. Keep a record of measurements (including date) in maintenance log.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Check O&amp;M Manual for minimum distance between top of observation port and water surface level during dry and wet weather.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- During rainy weather, ponding will occur in the rain garden and the water level will rise. After the rain event is over, the water level at the observation port should drop as the water drains out.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- If water does not drain out of the observation port after 72 hours after the rain event has ceased, or ponding at surface does not dry out in 48 hours, then the rain garden system requires remediation. See &quot;Ponding&quot; in section on Triggered Maintenance for rain gardens.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| <strong>U-1-M2 Inspect inflow and outflow points for clogging</strong> |
| Monthly and as needed during wet season. |
| <img src="image3" alt="Inflow Outflow Image" /> <img src="image4" alt="Inflow Outflow Image" /> |
| - If observed, remove sediment at surface, in pre-settling areas and at storm structure outfalls. |
| - Remove any accumulated debris from inflow/outflow points (curb cuts, pipes, trench drains, storm structures, etc.). |
| - Remove any vegetation that has grown around/blocking grates of storm structure or curb cut. |</p>
<table>
<thead>
<tr>
<th>MONTH</th>
<th>RUTINE BIORETENTION PLANTING AREA MAINTENANCE</th>
<th>WATERING</th>
<th>OBSERVE / ACT AS NECESSARY</th>
<th>APPLY MULCH (as needed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>2X / MONTH</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>March</td>
<td>2X / MONTH</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>April</td>
<td>2X / MONTH</td>
<td>AS NEEDED</td>
<td></td>
<td>MULCH - 1X</td>
</tr>
<tr>
<td>May</td>
<td>2X / MONTH</td>
<td>1X / WEEK</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>June</td>
<td>2X / MONTH</td>
<td>2X / WEEK</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>July</td>
<td>2X / MONTH</td>
<td>3X / WEEK</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>August</td>
<td>2X / MONTH</td>
<td>3X / WEEK</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>September</td>
<td>2X / MONTH</td>
<td>2X / WEEK</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>October</td>
<td>2X / MONTH</td>
<td>1X / WEEK</td>
<td></td>
<td>MULCH - 1X</td>
</tr>
<tr>
<td>November</td>
<td>2X / MONTH</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>December</td>
<td>1X / MONTH</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>January</td>
<td>1X / MONTH</td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

1. King County will be responsible for the long term maintenance of the bioretention swales designed for CSO control in accordance with Ecology regulatory requirements.
2. Early establishment is defined as a minimum of two years. Maintenance will continue after establishment - frequency will be adjusted.
3. King County is developing an operations plan and will share it with the community at future meetings.
BIORETENTION FACILITIES INSTALLATION IMAGES

Photos were taken during the summer. Conditions vary with seasons.
Acceptable Maintenance:
- Mostly healthy vegetation with good appearance
- Appearance is good
- Occasional weedy species (5-10%)
- Some erosion and bare spots (0-5%)

Unacceptable Maintenance:
- Debris buildup
- Appearance is poor
- Weedy
- Overgrown
High Point Redevelopment, SvR
**Framed Palette Characteristics**
- Dark green foliage
- Broadleaf evergreens
- Cool and hot colored flowers

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**FOLIAGE PERIOD**
- BLOOM PERIOD
- FALL / WINTER INTEREST
- NWN = NORTHWEST NATIVE OR CULTIVAR

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**COMMUNITY MEETING - NOVEMBER 14, 2012**
**BARTON CSO CONTROL PROJECT WITH GSI (SHEET D23)**
### VERTICAL ACCENT SHRUB

<table>
<thead>
<tr>
<th>PLANT ID &amp; SPECS</th>
<th>PLANT ID &amp; SPECS</th>
<th>PLANT ID &amp; SPECS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arbutus unedo (U)</strong></td>
<td><strong>Acer circinatum (A)</strong></td>
<td><strong>Pheladelphia x virginiana 'Miniature Snowflake' (P)</strong></td>
</tr>
<tr>
<td>Strawberry tree</td>
<td>Vine maple</td>
<td>Dwarf snowflake mock orange</td>
</tr>
<tr>
<td><strong>Vaccinium ovatum (V)</strong></td>
<td><strong>Amelanchier alnifolia (W)</strong></td>
<td>Deciduous</td>
</tr>
<tr>
<td>Evergreen huckleberry</td>
<td>Western serviceberry</td>
<td><strong>Ribes sanguineum and cultivated varieties (R)</strong></td>
</tr>
<tr>
<td><strong>Viburnum cinnamomifolium (C)</strong></td>
<td><strong>Cornus sanguinea 'Midwinter Fire' (D)</strong></td>
<td><strong>Red flowering currant (F)</strong></td>
</tr>
<tr>
<td>Cinnamon Viburnum</td>
<td>Compact bloodtwig dogwood</td>
<td><strong>Symphoricarpos albus (S)</strong></td>
</tr>
<tr>
<td>Evergreen</td>
<td>Deciduous</td>
<td>Snowberry</td>
</tr>
<tr>
<td><strong>Hamamelis ssp. (H)</strong></td>
<td><strong>Witch hazel (J)</strong></td>
<td><strong>Deciduous</strong></td>
</tr>
</tbody>
</table>

**FOILAGE PERIOD**(5,710),(196,899)
**BLOOM PERIOD**
**FALL / WINTER INTEREST**
NN = NORTHWEST NATIVE OR CULTIVAR

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**COMMUNITY MEETING - NOVEMBER 14, 2012**
**BARTON CSO CONTROL PROJECT WITH GSI**
(SHEET D20)
### SMALL DECIDUOUS TREES

<table>
<thead>
<tr>
<th>PLANT ID &amp; SPECS</th>
<th>PLANT ID &amp; SPECS</th>
<th>PLANT ID &amp; SPECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer griseum (AG)</td>
<td>Cornus 'Starlight' (CS)</td>
<td>Malus 'Royal Raindrops' (MR)</td>
</tr>
<tr>
<td>Paper bark maple</td>
<td>Starlight dogwood</td>
<td>Royal raindrop crabapple</td>
</tr>
<tr>
<td>Amelanchier x grandiflora 'Autumn Brilliance' (AB)</td>
<td>Magnolia 'Galaxy' (MG)</td>
<td>J F M A M J J A S O N D</td>
</tr>
<tr>
<td>Autumn brilliance serviceberry</td>
<td>Galaxy magnolia</td>
<td>J F M A M J J A S O N D</td>
</tr>
</tbody>
</table>

### BROADLEAF EVERGREEN TREES

<table>
<thead>
<tr>
<th>PLANT ID &amp; SPECS</th>
<th>CONIFEROUS EVERGREEN TREES</th>
<th>PLANT ID &amp; SPECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnolia grandiflora 'Victoria' (MV)</td>
<td>Calocedrus decurrens (CD)</td>
<td>Thuja plicata 'Hogan' (TP)</td>
</tr>
<tr>
<td>Victoria evergreen magnolia</td>
<td>Incense cedar</td>
<td>J F M A M J J A S O N D</td>
</tr>
<tr>
<td>J F M A M J J A S O N D</td>
<td>N W N</td>
<td>N W N cultivar</td>
</tr>
<tr>
<td>Quercus ilex (QI)</td>
<td>Pinus contorta contorta (PC)</td>
<td>Shore pine</td>
</tr>
<tr>
<td>Holly oak</td>
<td>J F M A M J J A S O N D</td>
<td>N W N</td>
</tr>
</tbody>
</table>

**Legend:**
- **FOLIAGE PERIOD**
- **BLOOM PERIOD**
- **FALL / WINTER INTEREST**
- **N W N = NORTHWEST NATIVE OR CULTIVAR**

**Community Meeting - November 14, 2012**

**Barton CSO Control Project with GSI**

(SHEET D21)
Swale Concept – Winter, SvR
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>ZONE</th>
<th>PLANT TYPE</th>
<th>LOCATION</th>
<th>FUNCTION</th>
<th>PLANT HT</th>
<th>DECIDUOUS / EVERGREEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emergents, Perennials &amp; Low Shrubs (sedges, rushes, grasses, irises)</td>
<td>Swale Bottom / Lower Slope</td>
<td>Water Quality Treatment</td>
<td>36&quot; max.</td>
<td>Mix</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Steppables / Groundcovers/ Arborist Wood Chip Mulch</td>
<td>Crossing / Overflow / Curb Strip / Upper Slope</td>
<td>Steppable</td>
<td>6&quot; +/-</td>
<td>Evergreen</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pervious Concrete Path</td>
<td>Crossing</td>
<td>Access</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Groundcovers / Low Shrubs</td>
<td>Driveway / Intersection</td>
<td>Sight Clearance / Durable</td>
<td>24&quot; max.</td>
<td>Evergreen</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Groundcovers / Shrubs</td>
<td>Sidewalk / Upper Slope</td>
<td>Accent / Border / Anchor</td>
<td>6&quot;-36&quot;</td>
<td>Mix</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Tall Accent Shrub</td>
<td>Sidewalk / Lower Swale</td>
<td>Accent</td>
<td>4&quot;-6&quot; +/-</td>
<td>Mix</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Small Tree / Large Shrub</td>
<td>Sidewalk / Upper Slope</td>
<td>Shade / Water Quality</td>
<td>25&quot; max.</td>
<td>Mix</td>
<td></td>
</tr>
<tr>
<td>2 + 4</td>
<td>Tree</td>
<td>Crossing / Sidewalk / Upper Slope</td>
<td>Shade / Water Quality</td>
<td>20'-50' - varies based on power line location</td>
<td>Mix</td>
<td></td>
</tr>
</tbody>
</table>

TYPICAL BIORETENTION SWALE PLANTING ZONES
PLANT ZONE PLAN, ELEVATION & SECTION
Bulb & Intersection Palette Characteristics:
- Bright foliage
- Medium sized leaves
- Vibrant colored flowers
- Low for visibility

Plant ID & Specs:
- Mahonia repens
  - Low Oregon holly-grape
  - Zone 4 / NWN
- Geranium x ‘Gerwat’
  - Rozanne
  - Rozanne hardy geranium
  - Zone 3.4
- Narroissus ‘Dutch Master’ or ‘King Alfred’
- Daffodil
- Carex dolichostachya ‘Kage Nishiki’ or ‘Ice Dance’
- Gold fountain sedge
  - Zone 3.4
- Iberis sempervirens ‘Snowflake’
- Snowflake candytuft
  - Zone 3.4
- Euonymus fortunei ‘Kewensis’
- Wintercreep euonymus
  - Zone 2.3.4
- Veronica iiwakensis
- Speedwell
- Cornus sericea ‘Kelseyi’
  - Dwarf redtwig dogwood
- Juncus effusus ‘Spiralis’
- Corkscrew rush
  - Zone 1 / NWN cultivar
- Juncus patens ‘Elk blue’
- California gray rush
  - Zone 1 / NWN cultivar

Planting Zone Plan

COMMUNITY MEETING - NOVEMBER 14, 2012
BARTON CSO CONTROL PROJECT WITH GSI
(SHEET D26)
Messy Ecosystems, Orderly Frames
Joan Iverson Nassauer

Abstract: Novel landscape designs that improve ecological quality may not be appreciated or motivated if recognizable landscape language that communicates human intention is not part of the landscape. Similarly, ecologically valuable remnant landscapes may not be protected or maintained if the human intention to care for the landscape is not apparent. Landscape language that communicates human intention, particularly intention to care for the landscape, offers a powerful vocabulary for design to improve ecological quality. Ecological function is not readily recognizable to those who are not educated to look for it. Furthermore, the appearance of many indigenous ecosystems and wildlife habitats violates cultural norms for the most appearance of landscapes. Even to an educated eye, ecological function is sometimes invisible. Designers can use cultural values and traditions for the appearance of landscape to place ecological function in a recognizable context. I describe several examples of cultural language "cuts to care" that provide a cultural context for ecological function, and I demonstrate how these cues can be used in design.

"... A continuous refining of the phenomenon as it seldom becomes a part of the reality of nature."
—Sidney K. Robinson
Inquiry in the Picturesque

Ecological Function, Cultural Perception

Ecological quality tends to look messy, and this poses problems for those who imagine and construct new landscapes to enhance ecological reality. What is good may people "see their terrain through preferred and accustomed spectacles." As much as our affection for the cultural concept of nature would lead us to believe, otherwise, people do not know how to see ecological quality directly. We know how to see ecological quality only through our cultural lenses, and through those lenses, it may or may not look like nature (Nassauer 1992a). Nature has come to be identified with pictorial conceptions of the picturesque (How-
<table>
<thead>
<tr>
<th>Street Character Image</th>
<th>Type of Street</th>
<th>Street Character Description</th>
<th>Recommended Plant Palette</th>
<th>Plant Character</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Open</td>
<td>None to few physical object/boundaries Views</td>
<td>Framed</td>
<td>Dark green foliage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Broadleaf evergreens</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cool and hot colored flowers</td>
</tr>
<tr>
<td></td>
<td>Enclosed</td>
<td>Tall walls, fences and vegetation</td>
<td>Airy</td>
<td>Light foliage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medium sized leaves</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Light colored flowers</td>
</tr>
<tr>
<td></td>
<td>Semi-Open</td>
<td>Low walls, fences and vegetation</td>
<td>Blended</td>
<td>Medium dark green foliage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Needle-leaf evergreens</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Warm colored flowers</td>
</tr>
<tr>
<td></td>
<td>Bulbs &amp;</td>
<td>No Parking Zones</td>
<td>Bulb &amp; Intersection</td>
<td>Bright foliage</td>
</tr>
<tr>
<td></td>
<td>Intersections</td>
<td></td>
<td></td>
<td>Medium sized leaves</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vibrant colored flowers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Low for visibility</td>
</tr>
</tbody>
</table>

PLANT CONCEPTS IN RESPONSE TO STREET CHARACTERISTICS
Framed Palette Characteristics
- Dark green foliage
- Broadleaf evergreens
- Cool and hot colored flowers

FOLIAGE PERIOD
- BLOOM PERIOD
- FALL / WINTER INTEREST
NWN = NORTHWEST NATIVE OR CULTIVAR

None to few physical object/boundaries Views

COMMUNITY MEETING - NOVEMBER 14, 2012
BARTON CSO CONTROL PROJECT WITH GSI
(SHEET D23)
Airy Palette Characteristics
- Light foliage
- Medium sized leaves
- Light colored flowers

Plant ID & Specs
- Mahonia repens
  - Low Oregon holly-grape
  - JFMAMJASOND
  - Zone 4 / NWN
- Spiraea betulifolia
  - Shiny-leaf spirea
  - JFMAMJASOND
  - Zone 4 / NWN
- Caryopteris x clandonensis ‘Sunshine Blue’
  - Blue mist caryopteris
  - JFMAMJASOND
  - Zone 4
- Abelia x grandiflora ‘Prostrata’
  - Prostrate white abelia
  - JFMAMJASOND
  - Zone 3.4
- Coreopsis lanceolata ‘Stemtaler’
  - Tickseed
  - JFMAMJASOND
  - Zone 3.4
- Hemerocallis ‘Happy Returns’
  - Happy returns daylily
  - JFMAMJASOND
  - Zone 3.4
- Iris foetidissima ‘Variegata’
  - Variegated Gladwyn Iris
  - JFMAMJASOND
  - Zone 3.4
- Thymus serpyllum ‘Elfin’
  - Elfin creeping thyme
  - JFMAMJASOND
  - Zone 2,3,4
- Sedum reuveni
  - Miniature stonecrop
  - JFMAMJASOND
  - Zone 2,3,4

Cornus sericea
- Dwarf redtwig dogwood
  - JFMAMJASOND
  - Zone 1 / NWN cultivar
- Carex muskingumensis
  - Palm sedge
  - JFMAMJASOND
  - Zone 1
- Deschampsia flexuosa ‘Aurea’
  - Golden crinkled hair grass
  - JFMAMJASOND
  - Zone 1
- Carex stipata
  - Beaked sedge
  - JFMAMJASOND
  - Zone 1 / NWN

Foliage Period
- Blue
Bloom Period
- Orange
Fall/Winter Interest
- Yellow
NWN = Northwest Native or Cultivar

Planting Zone Plan

Community Meeting - November 14, 2012
Barton CSO Control Project with GSI
(Sheet D24)
**BLENDED PALETTE**

**PLANT ID & SPECS**

- *Taxus cuspidata* ‘Emerald Spreader’
  - Zone 4

- *Juncus balticus*
  - Zone 1 / NWN

- *Polystichum munitum*
  - Western sword fern
  - Zone 4 / NWN

- *Carex stipata*
  - Beaked sedge
  - Zone 1 / NWN

- *Geum flore pleno* ‘Blazing Sunset’
  - Zone 4

- *Avens*
  - Zone 1 / NWN

- *Deschampsia flexuosa* ‘Aurea’
  - Golden crinkled hair grass
  - Zone 1

- *Veronica livanensis*
  - Speedwell
  - Zone 2, 3, 4

- *Juncus balticus*
  - Rocky Mountain iris
  - Zone 1 / NWN

- *Juniperus conferta* ‘Blue Pacific’
  - Blue Pacific Shore juniper
  - Zone 3, 4

- *Sedum reflexium*
  - Miniature stonecrop
  - Zone 2, 3, 4

Blended Palette Characteristics
- Medium dark green foliage
- Needle-leaf evergreens
- Warm colored flowers

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**FOLIAGE PERIOD**

**BLOOM PERIOD**

**FALL / WINTER INTEREST**

NWN = NORTHWEST NATIVE OR CULTIVAR

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**COMMUNITY MEETING - NOVEMBER 14, 2012**

**BARTON CSO CONTROL PROJECT WITH GSI**

(SHEET D25)
urban amenity

SW 12th Ave, Portland BES
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