

Forbes House Rain Garden Project

The new rain garden at the Forbes House, located at Juanita Beach Park, is much more than a pleasing collection of beautiful plants and shrubs. It also serves as a demonstration project and helps improve water quality. A rain garden is a landscaped depression designed to help to slow and soak up storm runoff.



Before Construction



Finished Rain Garden

How the Garden Works:

The rain garden collects stormwater runoff from the house's roof and allows it to naturally soak into the ground. The bowl shape of the garden aids in the collection of water and amended soils improve its filtration properties. This garden design allows for absorption of stormwater runoff and filtration of pollutants.

Project Benefits:

- The rain garden design provides for stormwater infiltration to recharge the groundwater and incorporates deep-rooted plants to naturally filter the runoff, which enhances water quality.
- Over 200 plants provide a low-maintenance, drought-tolerant landscape that will require little to no watering and no fertilizers or pesticides, which will further protect water quality.
- The project enhances the beauty of the landscape and attracts beneficial wildlife.

Design Features:

At approximately 330 square feet and with a maximum ponding depth of about 12 inches, the flat-bottomed rain garden is designed to collect runoff from about 1300 square feet of roof area. This size of rain garden, which is equal to about 25% of the area of the roof that drains to it, in well-draining soils, is likely to capture almost all of the runoff in a given year. Runoff from the roof is directed to the garden through a yard drain and any overflow exits the garden through an outlet located in the southwest corner of the garden. For this project, it was easier to re-slope the roof downspouts, rather than using several pipes to get the water to the yard drain. The bottom of the garden contains a variety of sedges and rushes while the drier slopes and top edges are planted with drought-tolerant plants (see planting plan for details).

In planning and locating the garden, we took several factors into consideration including:

- Proximity to building foundation, septic system, and underground utilities
- Location of water source
- Soil type and slope
- Potential for viewing by pedestrians

Plant Choice & Installation:

The rain garden contains a collection of perennial shrubs and herbaceous plants that are tolerant to both temporary pooling and drought. We selected low-maintenance plants based on suitability to the site and aesthetic appeal.

The rain garden currently contains the following plants:

Species	Size	Quantity
Shrubs		
Dwarf Japanese Barberry - <i>Berberis thunbergii</i> var. <i>atropurpurea nana</i> 'crimson pygmy'	1 gal.	9
Dwarf Mugo Pine - <i>Pinus mugo pumillo</i> 'dwarf mugo'	3 gal.	1
Singleseed Juniper - <i>Juniperus squamata</i> 'Blue Star'	1 gal.	6
Perennials		
Siberian Iris - <i>Iris sibirica</i> 'Butter & Sugar'	1 gal.	6
Siberian Iris - <i>Iris sibirica</i> 'Ceasar's Brother'	1 gal.	3
Siberian Iris - <i>Iris sibirica</i> 'Windwood serenade'	1 gal.	5
Siberian Iris - <i>Iris sibirica</i> 'Bennerup Blue"	1 gal.	3
Groundcovers		
Spreading Stonecrop - <i>Sedum oreganum</i>	4 in.	9
Broad-leaved Stonecrop - <i>Sedum spathulifolium</i>	4 in.	9
Grasses		
Fescue Grass - <i>Festuca glauca</i> 'Boulder Blue'	1 gal.	20
Blue Oat Grass - <i>Helictotrichon sempervirens</i>	1 gal.	4
Fountain Grass - <i>Pennisetum alopecuroides</i> 'Little Bunny'	1 gal.	34
Autumn Sedge - <i>Carex dipsacea</i>	1 gal.	28
Tufted Hairgrass - <i>Deschampsia caespitosa</i> 'Northern lights'	1 gal.	28
Emergents		
Common Rush - <i>Juncus effusus</i> 'Quartz Creek'	1 gal.	36
Spreading Rush - <i>Juncus patens</i> 'Elk's Blue"	1 gal.	12



The house beds currently contain the following plants:

Species	Size	Quantity
Tree		
Vine Maple - <i>Acer circinatum</i>	5 ft.	1
Shrubs		
Japanese Pieris - <i>Pieris japonica</i> 'Mountain Fire'	4 ft.	1
Rainbow fetterbush - <i>Leucothoe fontanesia</i> 'rainbow'	3 gal.	1
Perennials		
Purple Coneflower - <i>Echinacea purpurea</i> 'White Swan'	1 gal.	3
Purple Coneflower - <i>Echinacea purpurea</i> 'Kim's Knee High'	1 gal.	2
Sword Fern - <i>Polystichum munitum</i>	1 gal.	3
Lily Turf - <i>Liriope muscari</i> 'Big Blue'	1 gal.	16
Blazing Star - <i>Liatris spicata</i> 'Kobold'	1 gal.	5
Sword Fern - <i>Polystichum munitum</i>	1 gal.	3
Goldstorm Coneflower - <i>Rudbeckia</i> 'Goldsturm'	1 gal.	2
Groundcovers		
Spreading Stonecrop - <i>Sedum oreganum</i>	4 in.	9



Broad-leaved Stonecrop - <i>Sedum spathulifolium</i>	4 in.	9
Grasses		
Feathered Reed Grass - <i>Calamagrostis</i> 'Karl Foerster'	1 gal.	8
Blue Oat Grass - <i>Helictotrichon sempervirens</i>	1 gal.	3



Compost was spread over the entire garden before planting. Mulch was applied on the sloping sides of the rain garden to help conserve water, suppress weed growth, and prevent erosion.

The plants will occasionally need to be watered, especially during our dry summers. They are otherwise low-maintenance plants and should not have fertilizer or pesticide added. Other periodic maintenance includes weeding, mulching, and keeping the inlet and overflow clear.

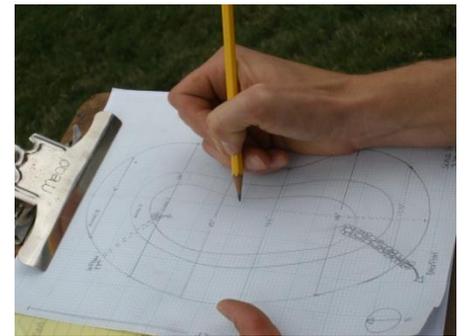
Project Tasks:

Location

- Forbes House identified as location for demonstration rain garden
- Location of garden in relation to house determined (at least 10 feet from foundation)
- Soil drainage test conducted

Planning & Design

- Rain garden depth, area, and shape determined
- Amount of amended soil to order calculated
- AutoCAD drawings of rain garden completed
- Planting plan/plant list for rain garden and existing house beds developed
- Plants, soil mix (60% sand, 40% compost), and mulch ordered
- Planting plan routed to Parks for review and approval
- Temporary informational sign fabricated
- Volunteers recruited for planting phase of project



Plan for garden depth, area, & shape

Construction

- Utilities located before excavation
- Outline of rain garden marked
- Soil mix delivered
- Downspouts rerouted and yard drain installed as entry for water into rain garden
- Native soils excavated
- Bottom of rain garden leveled
- Rain garden soil mix installed (12 inch depth), filled to a level that left 12 inches below edge of rain garden for ponding
- Rock-lined overflow provided
- Temporary sign describing project and recruiting volunteers posted



Excavation of native soils

Planting

- Plants delivered
- Plants placed in desired locations
- Set-up and preparations for volunteers made
- Volunteer event (17 volunteers) - plants installed, exposed soil covered with mulch & compost, plants watered



Volunteer installing emergent plants

Site maintenance

- Mulching as needed to prevent erosion and weeds

- Watering as needed
- Weeding as needed
- Keeping inlet and outlet clear of debris

Cost:

Materials for the rain garden have an approximate value of \$2360. This garden is large and was installed by City staff and volunteers, but there are ways to keep down the cost of home installation including:

- Recruit friends to excavate garden by hand and to install plants.
- Purchase smaller plants. Emergents can be bought in tubes for about \$1 each.

Cost of materials for rain garden (not including house beds)

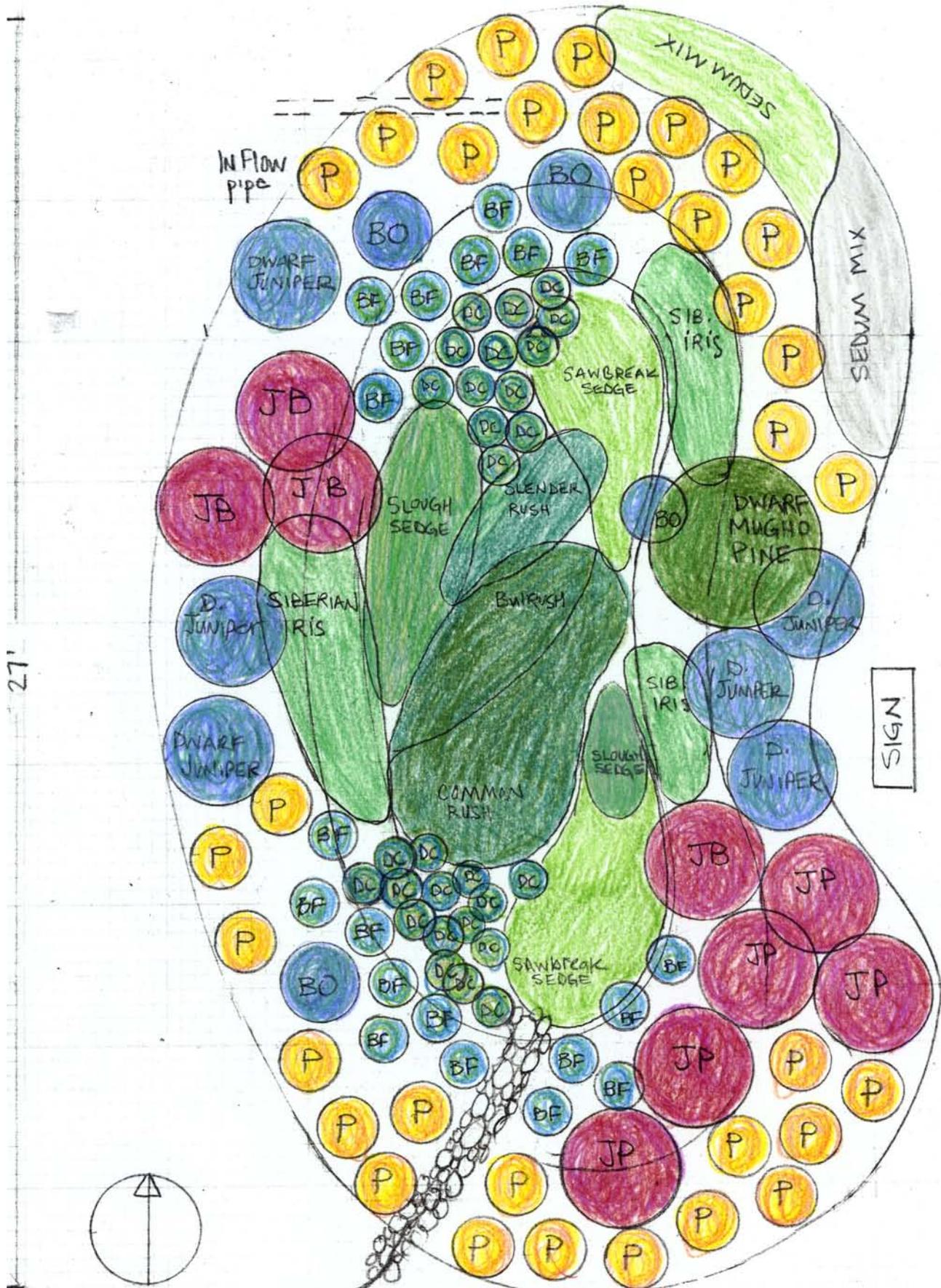
213 plants for rain garden (combination of 1 gallon and 4 inch pots):	\$1304.31 (incl. delivery)
Compost (3 yards):	\$165.00 (incl. delivery)
Mulch (2 ½ yards):	\$43.63
Rain garden soil mix (20 yards):	\$405.00
Soils delivery charge :	\$430.00
Drain rock:	\$12.00
Help of volunteers and staff:	Priceless
TOTAL:	\$2359.94

Recognition:

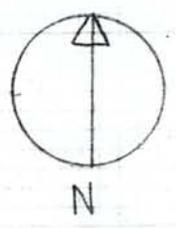
The Forbes House rain garden was installed in October 2008 as a demonstration project. It is the result of a collaborative effort of the Kirkland Public Works and Parks departments. 17 community volunteers also donated their time to install plants and spread mulch on the site.

Attachments:

- Planting plan & plant list
- AutoCAD drawings of garden
- Event flyer

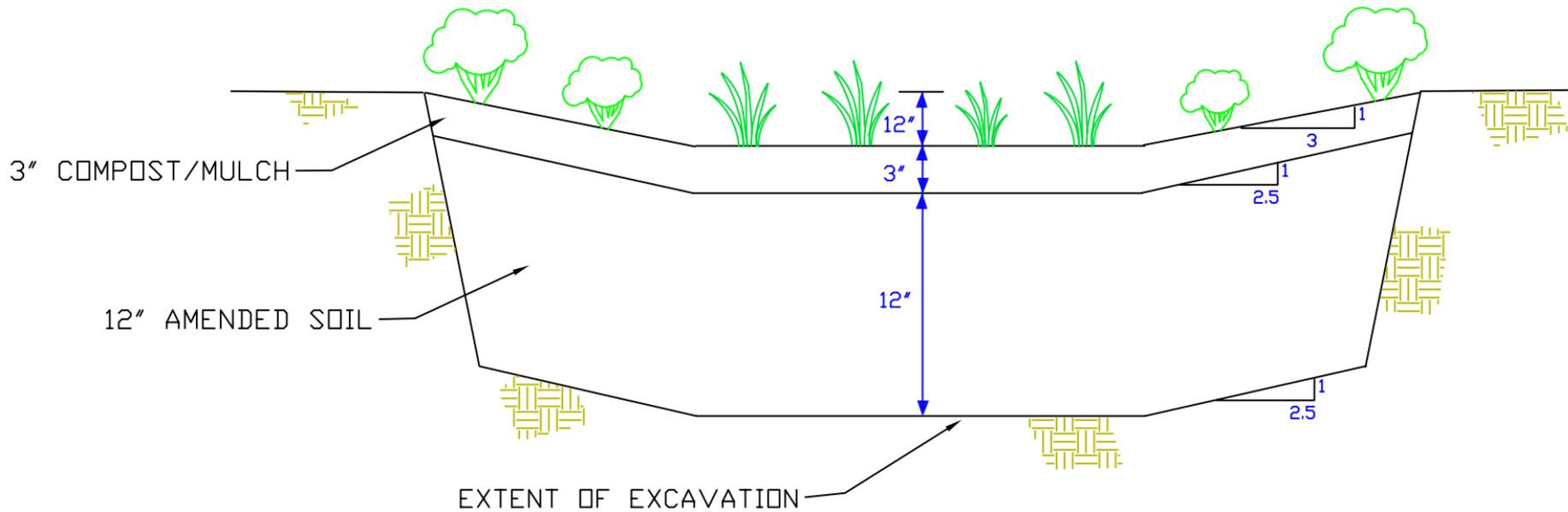


27'



Overflow

SCALE 1 in = 3ft
3 squares = ~ 1ft



NOTES:

- 1) NW GARDEN MULCH USED,
50% COMPOST/50% FINE BARK
- 2) BOTTOM OF RAIN GARDEN IS
FLAT.

RAIN GARDEN SIZE
15' X 22' = 330 SQ FT

HELP BUILD A RAIN GARDEN!

Is a rain garden right for your property? Do you want to learn about rain garden installation and how they improve water quality? Then you don't want to miss this hands-on opportunity to learn more about rain gardens!

What do you need to bring?

- Weather-appropriate work clothes.
- Gloves.
- A water bottle.
- A trowel &/or shovel for planting.

Light refreshments and beverages will be provided.

What are we going to do?

Kirkland's Parks and Public Works Departments are installing a demonstration rain garden at Juanita Beach Park.

We need volunteers to help plant this rain garden with shrubs and perennials. Come join us!

Questions? Want to volunteer?

Contact Betsy Adams, 425-587-3858,
badams@ci.kirkland.wa.us

Saturday, October 18, 2008

9:00am - 2:00pm

Forbes House, Juanita Beach Park
11829 - 97th Ave NE



What are rain gardens?

Rain gardens are attractive landscaped area in shallow depressions. They catch runoff from rooftops, driveway, roads, and other areas that don't allow water to soak in. Rain gardens are planted with deep rooted, water and drought tolerant plants. They can be shaped and sized to fit your lot and can be landscaped with a variety of plants to fit the surroundings.

How do they work?

Rain gardens allow runoff from rainwater to naturally soak into the ground. They help to slow and reduce runoff from storms. Pollutants carried from runoff are collected in the rain garden and are filtered through the plants' root systems and soil.

Benefits of Rain Gardens:

- Reduce flooding on neighboring property, overflow in sewers, and erosion in streams by absorbing water from impervious surfaces.
- Filter oil and grease from driveways and roads, pesticides and fertilizer from lawns, and other pollutants from rainwater runoff before they reach the storm drain and eventually streams, wetlands, and lakes.
- Provide habitat for beneficial insects and birds
- Increase the amount of water that soaks into the ground to recharge local groundwater.

