

Vegetated Approaches for ESD Stormwater Management

Forever Maryland Conference

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**DEPARTMENT OF
ENVIRONMENTAL
PROTECTION**

MONTGOMERY COUNTY • MARYLAND

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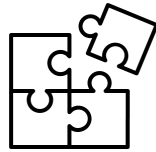
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Environmental Site Design (ESD) Disconnect Stormwater From Our Storm Drains



Decentralized Small Scale Design Approach = Slow it down, spread it out and soak it in ²



Important piece to the puzzle-sound horticultural principles for reducing maintenance costs and improving aesthetics (ESD Maintenance Public Program)



Residential tools in the toolbox

- Rain Gardens
- Treatment trains
- Conservation Landscapes



Changing mindsets-using native plants in residential landscapes

OVERCOMING CHALLENGES

1. Multi Agency Service Park
2. North Potomac Recreation Center
3. Holiday Park Senior Center
4. Green Streets

MULTI AGENCY SERVICE PARK



NOTE: All noted assets on this map are in a restricted area. Coordinate with Denise Wade for access.

Multi-Agency Service Park 1



NOTE: All noted assets on this map EXCEPT 31859, 31844, 31762, 31755 and 31740 are in a restricted area. Coordinate with Denise Wade for access.

Multi-Agency Service Park 2



8401 Turkey Thicket Dr, Montgomery Village, MD 20879

Multi-Agency Service Park 3



8301 Turkey Thicket Dr, Montgomery Village, MD 20879

Multi-Agency Service Park 4

MASP-85 vegetated BMP's



Weed Seed
Contaminated Media



CHALLENGES:

- Plant schedule-too small a container spaced too far apart (Qts 3' OC, 5 gal 7'OC)
- Restoration grade plant material installed
- No maintenance from initial plant installation
- Not mowing adjacent areas before weeds bloom



- Replanted with 1 gallon perennials
- Tighter spacing- 18-24" OC
- Mature heights 2-3' to reduce vegetation removal, cut back once a year in the spring

- Watered and routinely maintained from day one of installation
- Side slopes mowed regularly





NORTH POTOMAC REC CENTER



13850 Travilah Rd, Rockville, MD 20850

North Potomac Rec.



Deer pressure



CHALLENGES:

- No site visit prior to plant selection most plants eaten by deer
- Seed mix over 50% , slow to germinate weeds out competed
- No maintenance after plant installation for 2 years prior to permit closer

Resulting in media weed seed infestation



Magnolia virginiana

Carex stricta

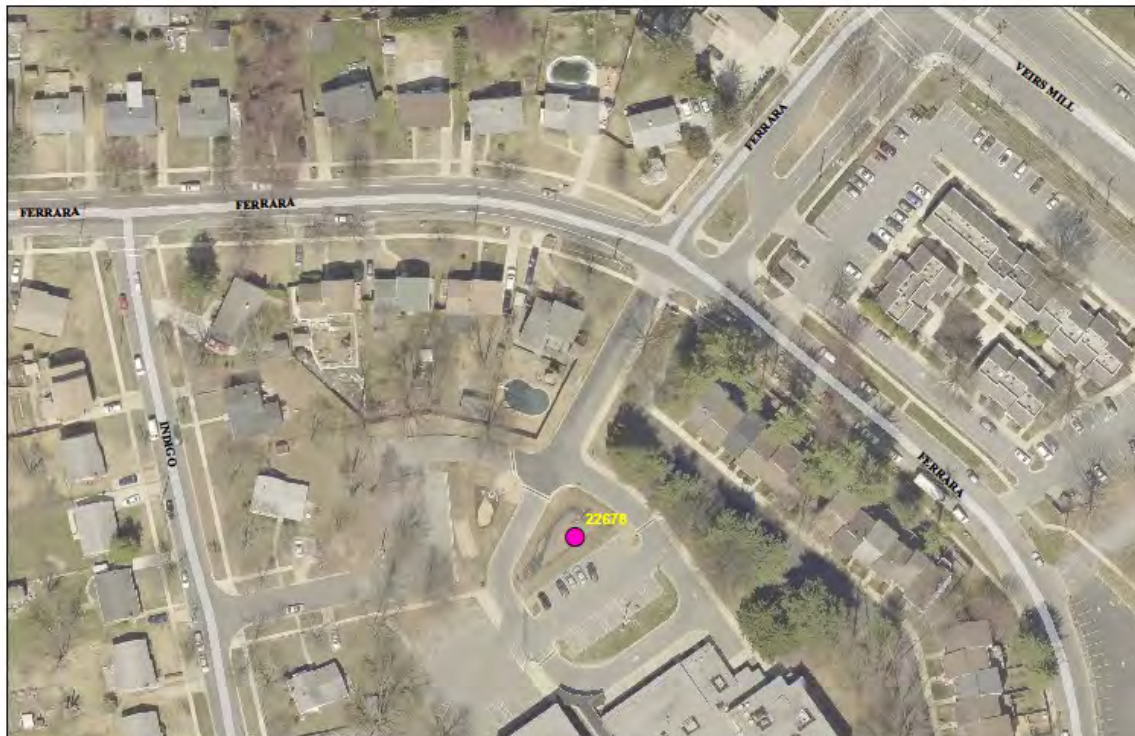
*Amsonia
hubrichtii*

Rudbeckia fulgida



Packera aurea

HOLIDAY PARK SENIOR CENTER



One large BMP in a highly visible public setting

CHALLENGES:

- Plant Schedule-qts spaced 2' OC
- Plants unreliable in surviving in BMP's (Lobelia cardinalis)
- No routine maintenance prior to permit closure



Every time you pull a weed from a contaminated media situation, you bring new weed seeds to the surface, they get sun and moisture and germinate.



Juniperus 'Grey Owl'

Itea 'Little Henry'

Iris versicolor

Packera aurea

Phlox subulata



Spring 2019





March 2021

GREEN STREETS



CHALLENGES:

- Aesthetics
- Small Footprint



Expand plantings to soften the look or plant the area around the facility to make it “part of a garden”

Juniperus c.
'Blue Pacific'



Penstemon
'Husker Red'



Physostegia
'Pink Manners'

Rudbeckia fulgida

Echinacea 'Kim's
Knee High'



Site conditions-Consider an Initial Site Visit Check List:

- ✓ Deer Pressure
- ✓ Salt and Sediment load
- ✓ Water Velocity
- ✓ Soil Type and Draw Down Time
- ✓ Sun/Shade
- ✓ Location:
 - Adjacent to steep slopes
 - Adjacent to weedy vegetation, naturalized areas or middle of a parking lot
 - Line of site issues



Suggested Maintenance Detail on Planting Schedules

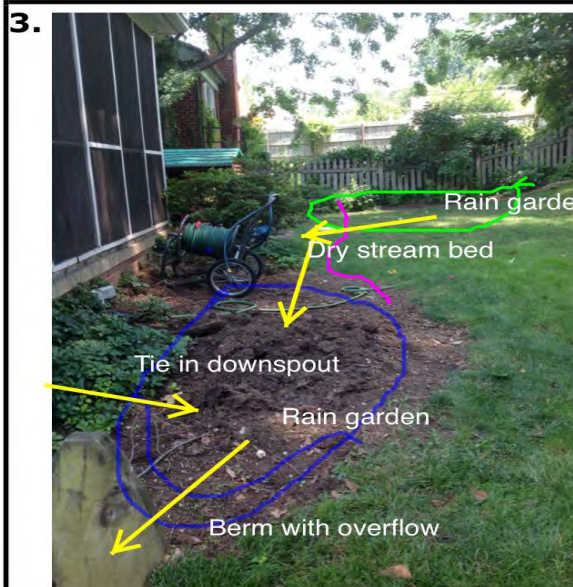
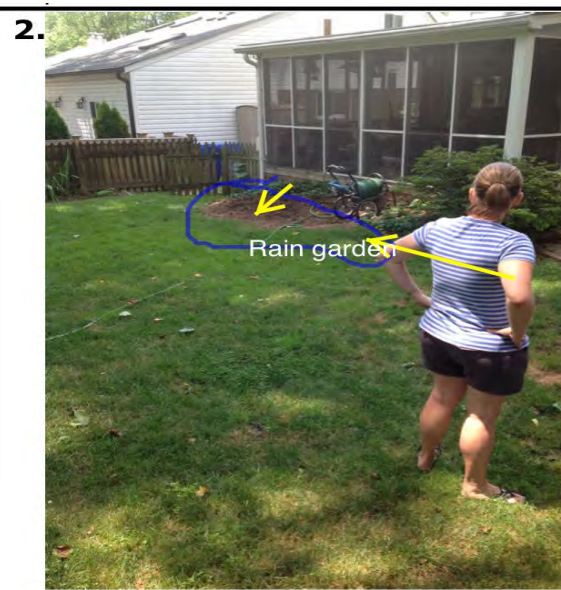
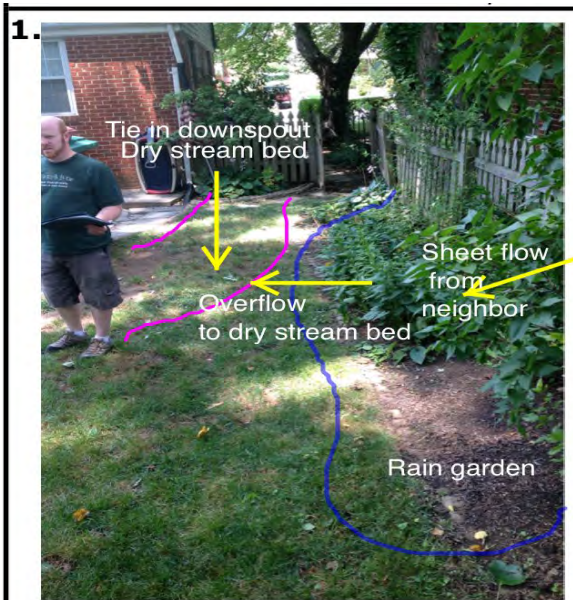
- Schedule for BMP's to be maintained after plant installation and regularly during plant establishment phase/warranty period to ensure a weed free soil environment and plant survivability.
- Plant coverage at least 75 % after plant establishment period
- Adjacent green open space and side slopes mowed regularly before weeds/flower go to seed infecting the BMP
- Direct mowed cuttings away from the BMP
- Details Inlet protection until construction is finished if needed
- Details what phase of construction for the plants to be installed
- Details what season to prune back plants
- Initial watering schedule outlined

RESIDENTIAL TOOLS IN THE TOOL BOX



- Rain Gardens
- Treatment trains
- Conservation Landscapes

Residential Site Assessment



4.

Possible rain garden location = perk test

CALL MISS UTILITY FIRST

Stormwater is entering the property and exiting the property in its natural flow path

You may need to move the down spout water to the rain garden.



Lot to lot drainage should oversize your rain garden



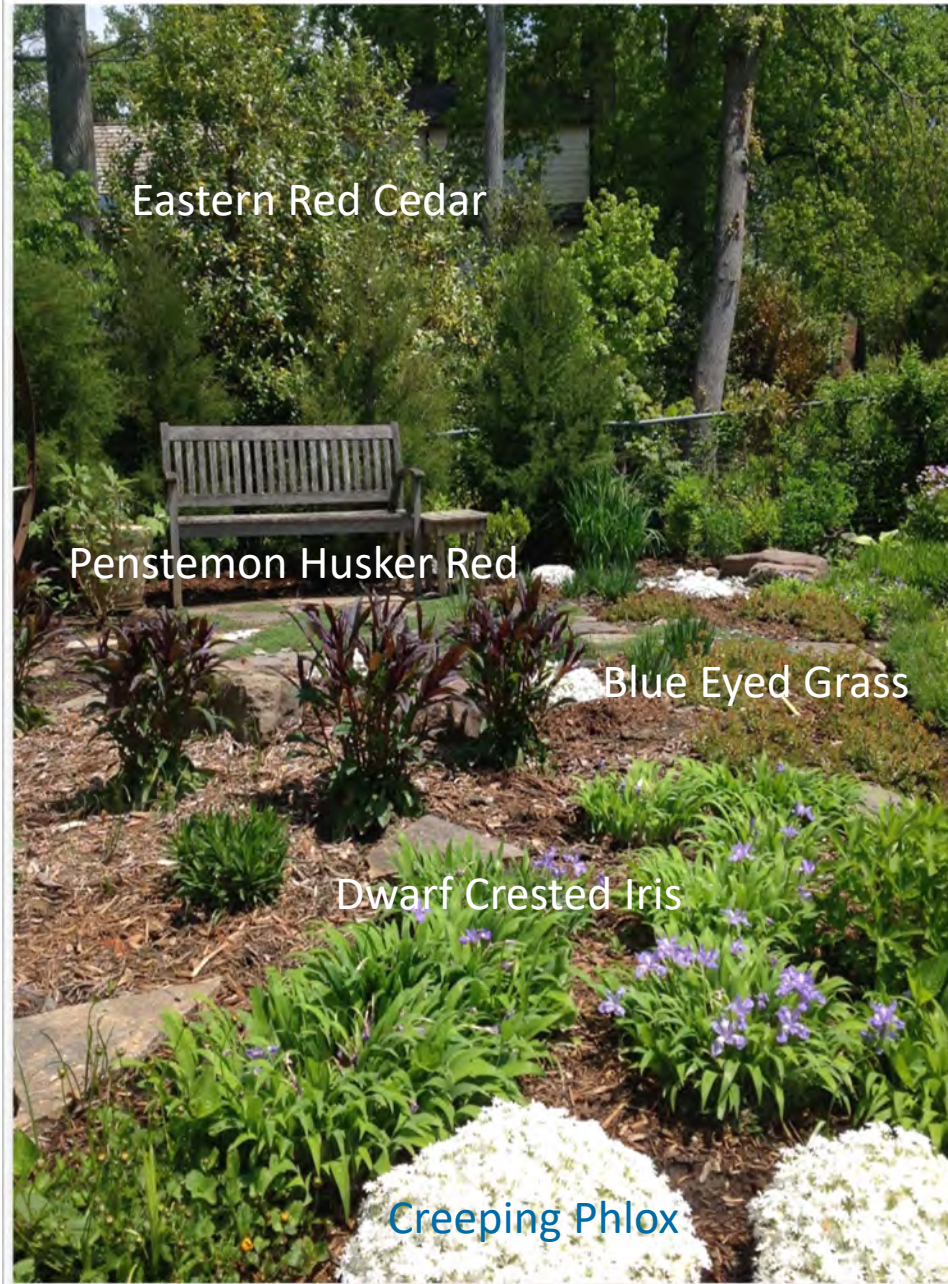
Rain Planter

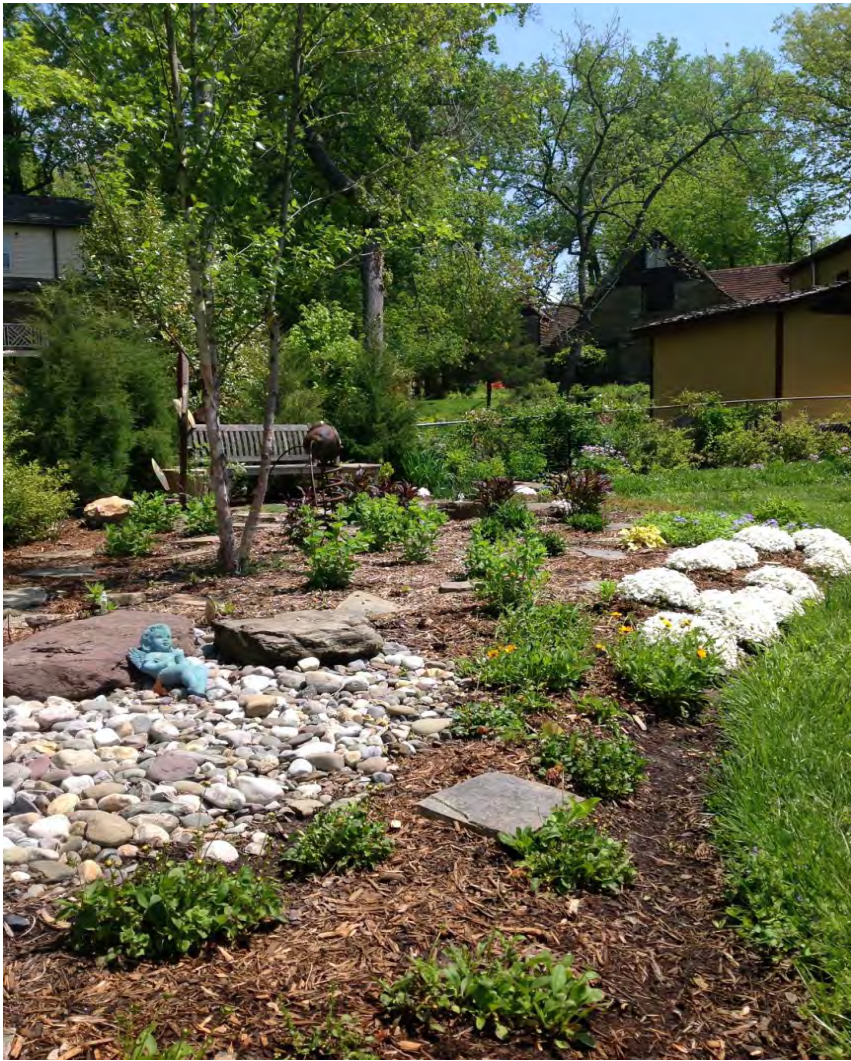


Site has many mature trees, Site did not pass a perk test,
Underground utilities running through the site

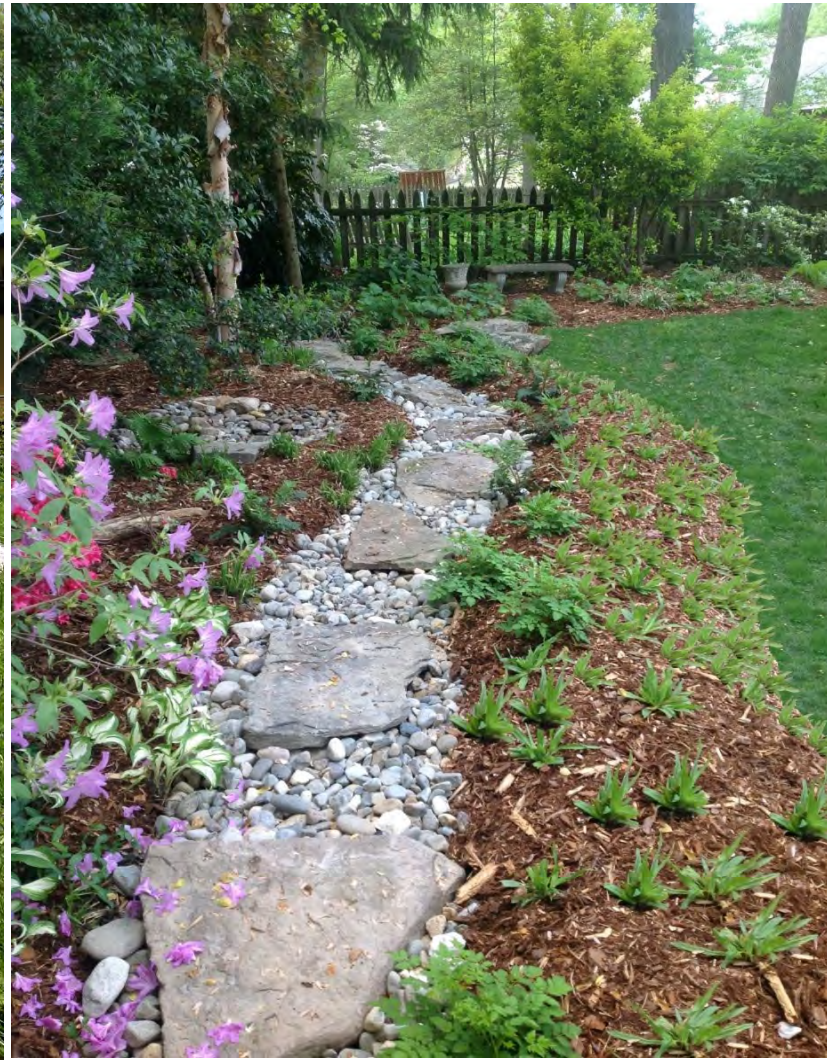


Conservation Landscapes





Modified dry well



Level spreader or linear dry well

Conservation Landscapes for steep sloped areas and sites with slopes and trees need Check Dams



Check Dams-How big, how many and how far apart?

Depends on water volume and velocity

CHANGING MINDSETS NATIVE PLANTS IN RESIDENTIAL LANDSCAPES



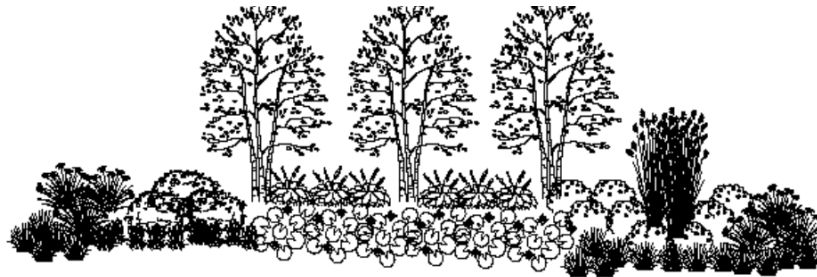
Challenges:

- Educating the public of the importance of native plants and changing their perceived image-unkept/weedy
- Educating the landscape design industry how to use native plants that meets the aesthetic needs of the public-old school thinking, learn about native plant growth habits
- Re-thinking the need for large open lawn spaces-old school thinking-“Organized meadow look?” Mow once a year? Plant more trees!!
- Lawn alternatives if no need for lawn use (pets and children)-create a green space that does not require the intense maintenance of grass (Carex species, clover)

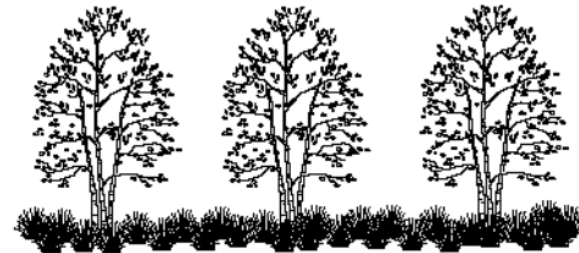
What plant arrangement will meet the aesthetic goals?

Critical step that includes understanding plants physical attributes and mature size

Layered look, formal, organized



Minimalist look/commercial look



Meadow look



Artsy look

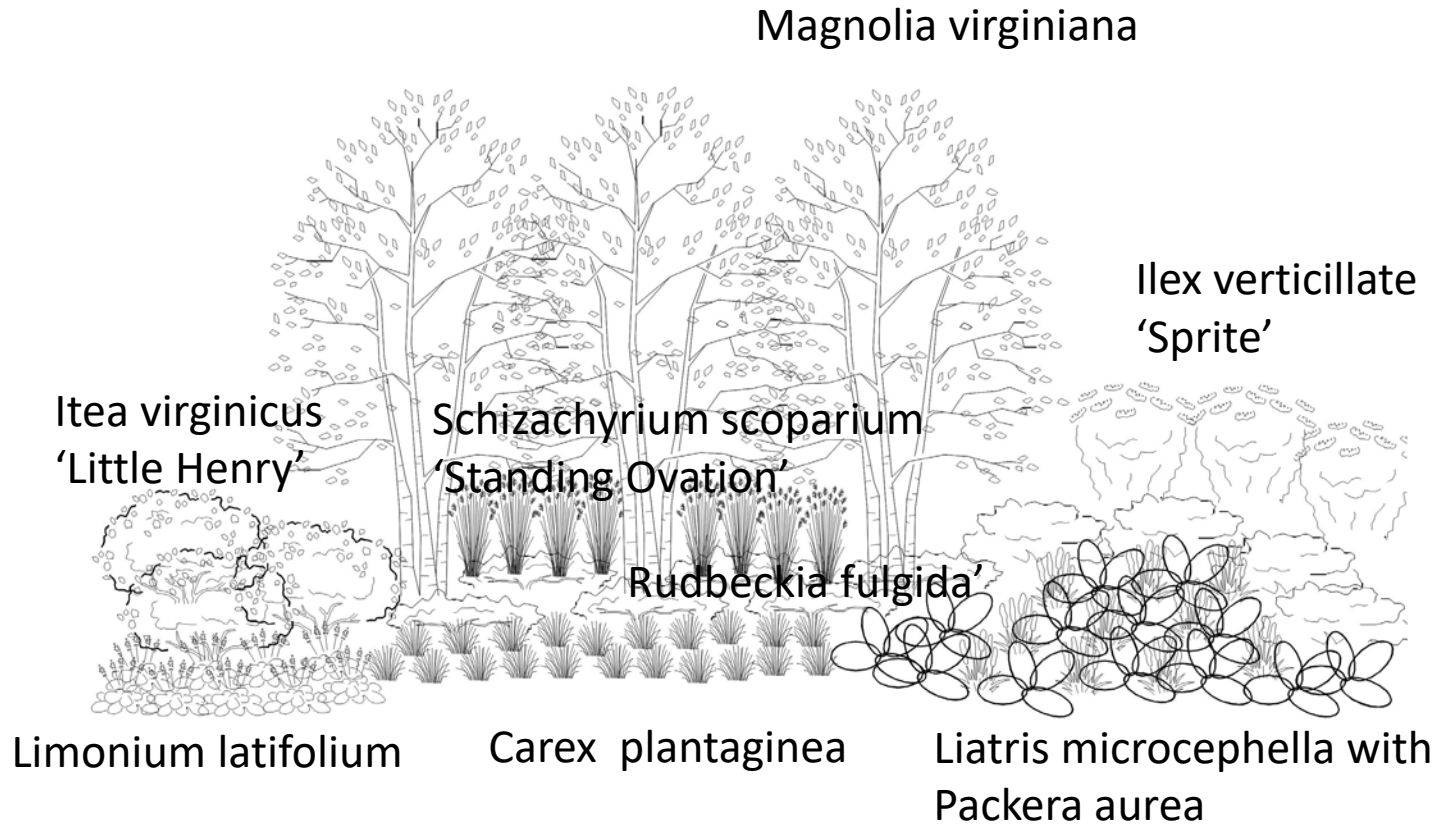


Repeating groupings maybe a large mow facility, no shrubs, intermingle shorter growing species for a less bulky look

Dry stream bed/boulders

ARRANGING THE PLANTS TO MEET THE AESTHETIC NEEDS
OF THE SPACE/CLIENT

EXAMPLE : PLANT LAYOUT/DESIGN=LAYERED LOOK



EXAMPLE - PLANT COMBINATIONS MIXING HEIGHTS, TEXTURES AND COLOR

Magnolia virginiana
Vertical growth, small tree



Schizachyrium
scoparium
'Standing Ovation'



Ilex v. 'Sprite'
Need 1 'Jim Dandy'
Dwarf, winter interest



Itea v. 'Little
Henry'
Spring flower,
Exceptional fall
color



Rudbeckia fulgida
long bloom time, winter
basal foliage



Limonium latifolium
Long bloom time,
great texture



Carex plantaginea



Liatris microcephella
Dwarf, butterfly magnet,
long bloom



Packera aurea
Evergreenground
cover



CREATE SMALL TREES



Ilex Verticillata 'Sprite'



Viburnum nudum 'Winterthur'

MEADOW PLANTINGS



Rudbeckia and Echinacea too!

FIT NATIVES IN WHERE YOU CAN

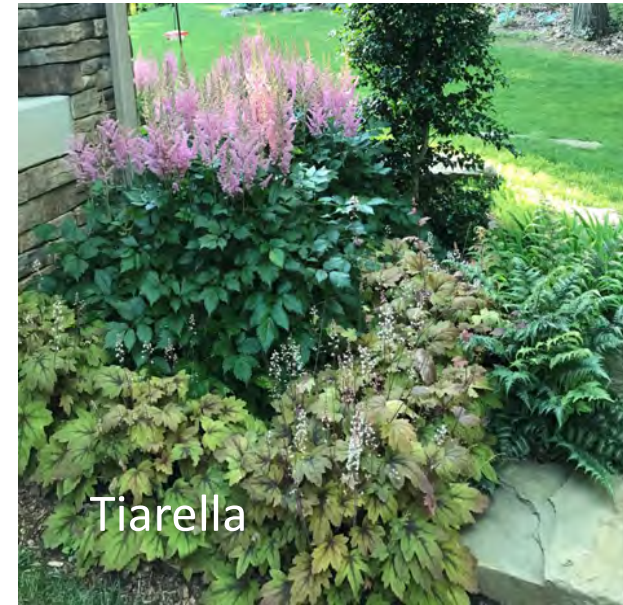


Iris cristata



Amelanchier

Polystichum
acrostichoides



Tiarella



Hydrangea q.
'Ruby Slippers'



Schizachyrium s. 'Standing
Ovation'

Physostegia 'Pink Manners'

SCREENING



Iris cristata

GROUND COVER LAYER

Carex plantaginea



Asarum canadense



Sporobolus heterolepis 'Tara'



Phlox subulata



Sisyrinchium angustifolium



Aronia 'Ground Hog'



Packera aurea



Antennaria plantaginifolia



WINTER INTEREST/EVERGREENS



Cornus sericea

Itea virginica



Ilex Glabra



Side slope
Juniperus c. 'Blue Pacific'



Schizachyrium
scoparium



Side slope
Juniperus 'Grey Owl'



Packera aurea



Phlox subulata
side slope



Ilex verticillata



DWARF/CLUMP GROWING NATIVE CULTIVARS

Penstemon
'Husker Red'



Basal
winter
foliage



Solidago
'Little Lemon'
Ground cover?



Echinacea
'Kim's Knee High'



Cephalanthus
'Sugar Shack'
(shrub)



Physostegia
'Miss Manners'
'Pink Manners'



Clump grower

Itea 'Little Henry'
(shrub)



Panicum
'Cape Breeze'



Liatris
microcephala



LOW MEADOW

Schizachyrium scoparium
'Standing Ovation'



Limonium



Chelone lyonii 'Tiny Tortuga'



Amsonia hubrichtii



Rudbeckia fulgida



Solidago 'Little Lemon'
Ground cover?



Eupatorium 'Baby Joe'



Asclepias tuberosa



Allium 'Millenium'



New! Templates for Conservation Landscapes

Montgomery County RainScapes Conservation Landscape Planting Design Templates

Sunny Meadow • Slope

250sq. ft. SLOPE

10'-0"

25'-0"

1 inch = 1 foot

PLANT LIST

Type	Qty.	Name
SHRUB	4	Rhus aromatica 'Sea Leaf'
PERENNIAL	3	Solidago rigida 'Fireworks'
	1	Symplocos caroliniana
	13	Asclepias tuberosa
	11	Albistis spicata
	11	Desmodium illinoense
	18	Rudbeckia hirta
	17	Erigeron spectabilis
	23	Penstemon virginicus 'Shenandoah'
	13	Schizanthus lycopodium 'Slate'

Montgomery County RainScapes Conservation Landscape Planting Design Templates

Shady Glade • Slope

250sq. ft. SLOPE

10'-0"

25'-0"

1 inch = 1 foot

PLANT LIST

Type	Qty.	Name
SHRUB	2	Andromeda
PERENNIAL	1	Hydrangea arborescens
	27	Erythraea flavicentris
	13	Muscota dipens
	13	Conoclinium coelestinum
	25	Solidago nemoralis
	32	Carex amphioxys
	25	Polystichum acrostichoides
	32	Elymus hystrix
	32	Carex radicata

Montgomery County RainScapes Conservation Landscape Planting Design Templates

Plants for Sunny Meadow SLOPE

Plant Type	Scientific Name	Common Name	Height	Spreading	Characteristics	Observation
Shrub	Rhus aromatica 'Sea Leaf'	Trayplant Sumac	15-20'	30"	A shrub, low growing bushiness with small green leaves, some that are dark and glossy. Some are small and upright.	Light green (dwarf) 1/2" tall, stems, present with large yellow flowers.
Perennial	Solidago rigida 'Fireworks'	High Solidago	2.5'-3.0'	20"	A tall, erect, upright herb with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.	Physicoides (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.
Perennial	Symplocos caroliniana 'Slate'	Atlantic Holly	1.5'	1.0'	In some cultures with an upright habit and a dense habit of dark blue leaves in early summer.	Symplocos (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.
Perennial	Asclepias tuberosa	Butterflyweed	1.5'-2.5'	15"	Medium height perennial with upright stems in early summer.	Asclepias tuberosa (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.
Perennial	Albistis spicata	Washington	2.0'-4.0'	10"	Medium height perennial with upright stems in early summer.	Albistis spicata (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.
Perennial	Desmodium illinoense	Sunshine	1.5'-1.8'	10"	Short stems form terminal spikes of bright yellow flowers in early spring. 'Sunshine' has a more upright habit.	Desmodium illinoense (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.
Perennial	Rudbeckia hirta	Orange Coneflower	2.0'-3.0'	1.0'	Native, often flowering perennial (dwarf) has a more upright habit.	Rudbeckia hirta (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.
Perennial	Erigeron spectabilis	Purple Lempert	1.0-2.0'	10"	Short stems, spreading with long, upright stems in early summer.	Erigeron spectabilis (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.
Perennial	Penstemon virginicus 'Shenandoah'	Penstemon	3.0'-4.0'	10"	Medium height perennial with upright stems in early summer.	Penstemon virginicus (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.
Perennial	Schizanthus lycopodium 'Slate'	Little Bluebell	1.0'-1.5'	4.0'	Medium height, upright spreading habit of upright, flat, blue bell-shaped flowers, yellow centers and white stems.	Schizanthus lycopodium (dwarf) 1/2" tall. This is a very upright plant with a compact habit and dense 2" long arching flowering stems that branch from the crown and mid.

Montgomery County RainScapes Conservation Landscape Planting Design Templates

Plant Index



And....Native plants are beautiful!

Baptisia australis (Greens)

Heliopsis h. 'Bleeding Hearts'

Asclepias tuberosa

Eriogonum allenii 'Little Rascal'

Questions?

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