

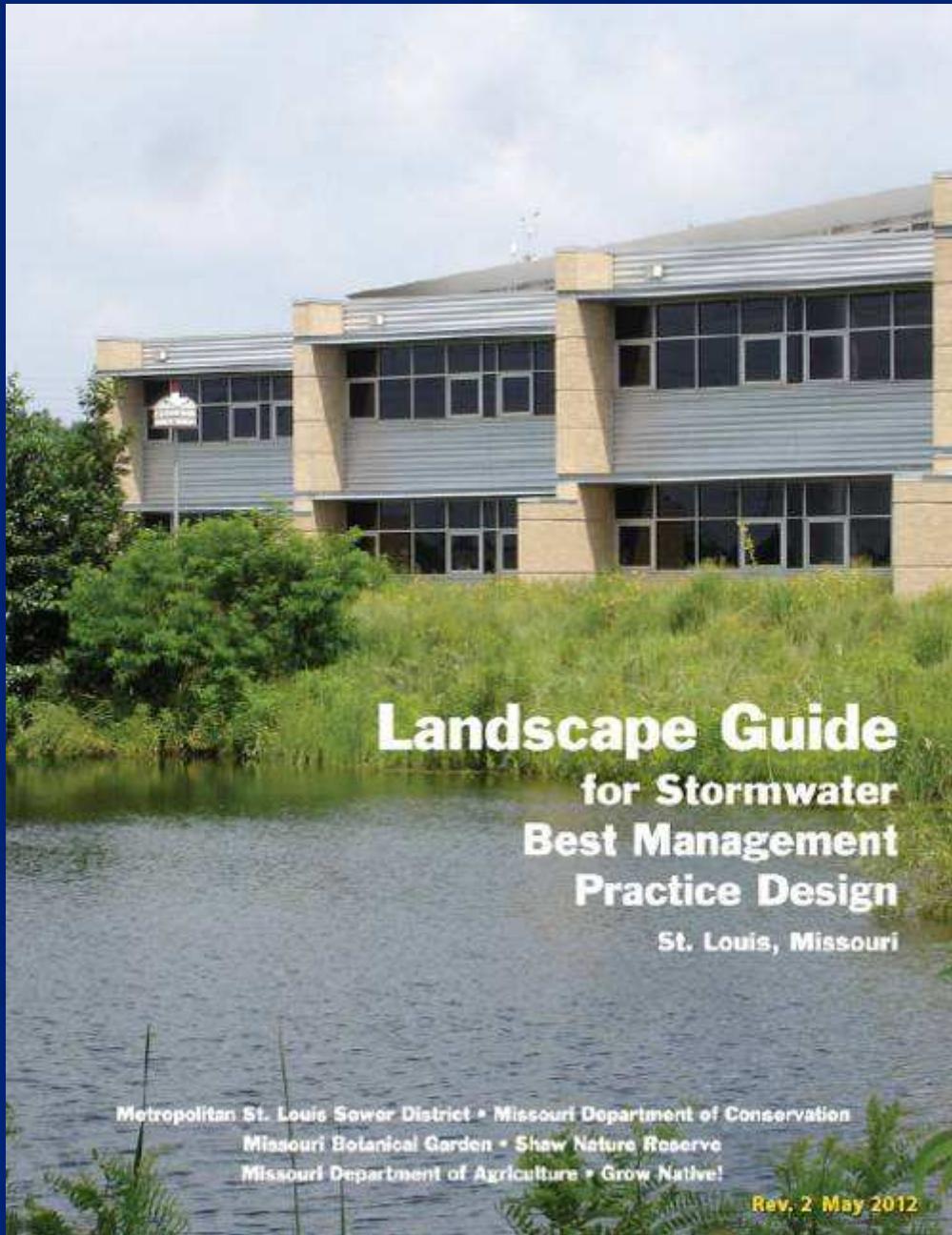
MSD BMP Landscape Guide, May 2012 Update - Native Prairie Seeding For Storm Water Flood Detention and Buffer Areas

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**QUALITY
SERVICE
ALWAYS**





Revised August
2010...

Revised May
2012...

and Still
Revising...

Chapter 3 will be
Weed ID and
Weed
Management



Native Plant Seeding – Chapter 2 NOW ADDED

Shorter, Less Diverse Mix – Dry Areas

Latin Name	Common Name	Seasonal Interest - Color and Months												Soil and Environmental Preferences															
		Height (feet)		Spacing (feet)		J	F	M	A	M	J	J	A	S	O	N	D	Sun	Pt Sun	Pt Shade	Shade	Birds	Butterflies	Fall Color	Winter Interest	Salt tolerance	Aggressiveness	Silt tolerance	Ounces per Acre
DRY AREA MIX																													
Grasses/Sedges																													
<i>Andropogon ternarius</i>	Splitbeard bluestem	1-2	1.5	silver	x	x					x	x	x	x	x	x	x	x	x	x	x	L	L	32					
<i>Andropogon virginicus</i>	Broomsedge	1-2	1.5	orange					x	x	x	x	x	x	x	x	x	x	x	x	M	L	32						
<i>Bouteloua curtipendula</i>	Sideoats grama	1-2	1	tan			x	x	x	x	x	x	x	x	x	x	x	x	x	x	L	L	64						
<i>Schizachyrium scoparium</i>	Little bluestem	2-3	1.5	bronze	x	x			x	x	x	x	x	x	x	x	x	x	x	x	M	L	L	64					
<i>Sporobolus heterolepis</i>	Prairie dropseed	2-3	1.5	tan				x	x	x	x	x	x	x	x	x	x	x	x	x	L		16						
Forbs																													
<i>Asclepias tuberosa</i>	Butterfly milkweed	1-2	1.5	orange				x	x	x					x			x		V	M			32					
<i>Aster oblongifolium</i>	Aromatic aster	1-3	1.5	lavender					x	x			x	x		x		x	x		M			12					
<i>Coreopsis lanceolata</i>	Lanceleaf coreopsis	1-2	1.5	yellow	x	x	x								x	x		x			L			20					
<i>Echinacea pallida</i>	Pale purple coneflower	2-3	1.5	violet				x	x					x	x		x			L				48					
<i>Ratibida pinnata</i>	Yellow/Grey coneflower	3-5	1.5	yellow				x	x	x				x	x		x	x		M	H	L		8					
<i>Solidago nemoralis</i>	Old field goldenrod	4-6	1.5	yellow				x	x	x	x			x	x		x			L	L			4					
<i>Zizia aurea</i>	Golden alexander	1-3	1.5	yellow		x	x							x	x	x	x	x		M	M	U		32					
Annuals (optional)																													
<i>Chamaecrista fasciculata</i>	Partridge pea	1-3	1	yellow					x	x	x			x	x		x	x						32					
<i>Coreopsis tinctoria</i>	Plains coreopsis	2-4	1	yellow				x	x	x	x			x			x		x					4					
<i>Palafoxia callosa</i>	Palafoxia	2-3	2	pink					x	x	x	x	x	x	x	x	x	x						4					
<i>Rudbeckia hirta</i>	Black-eyed Susan	2-3	1.5	yellow				x	x	x	x			x			x		x					4					

Shorter, Less Diverse Mix – Wet Areas

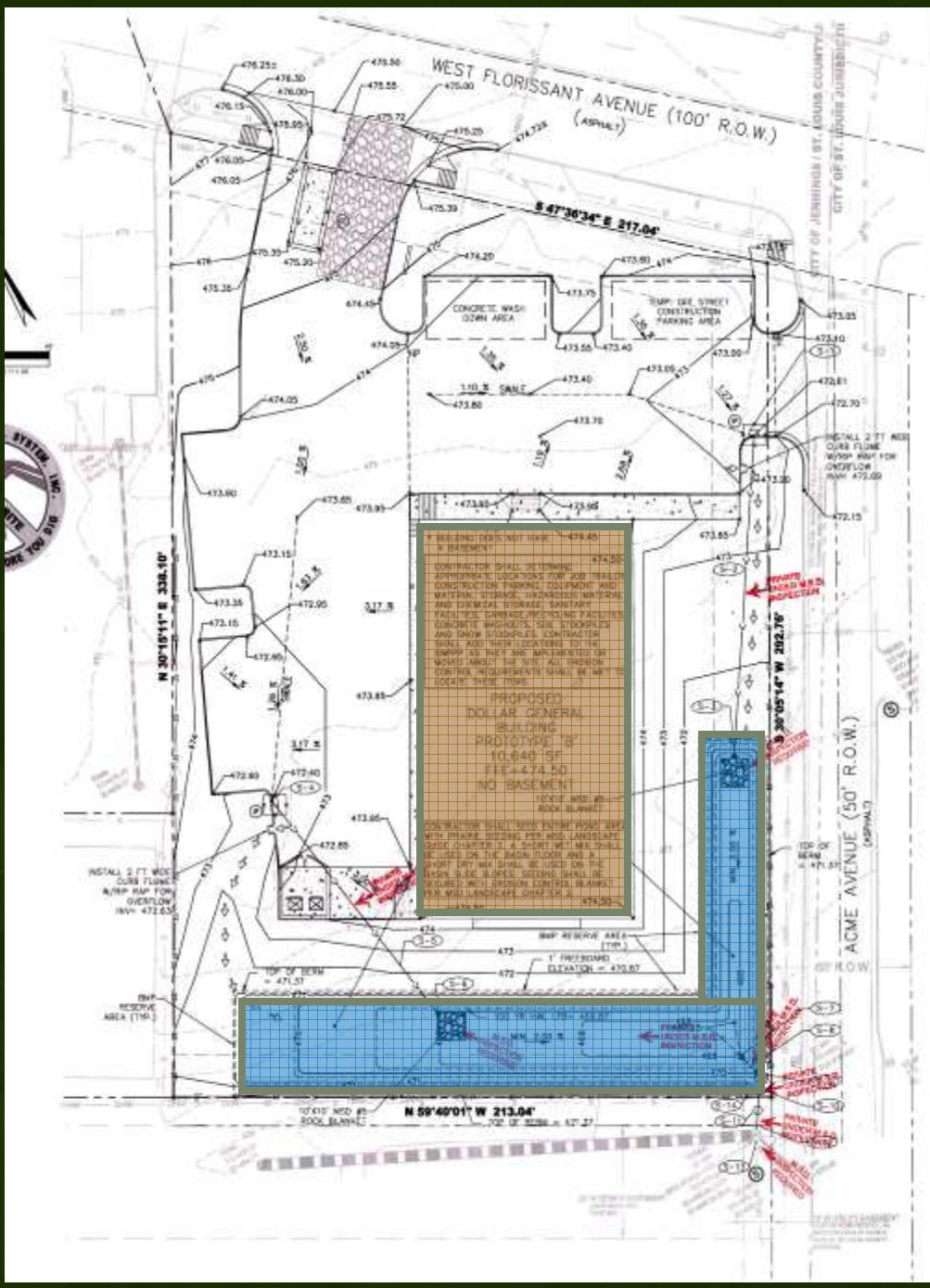
Taller, More Diverse Mix – Dry Areas

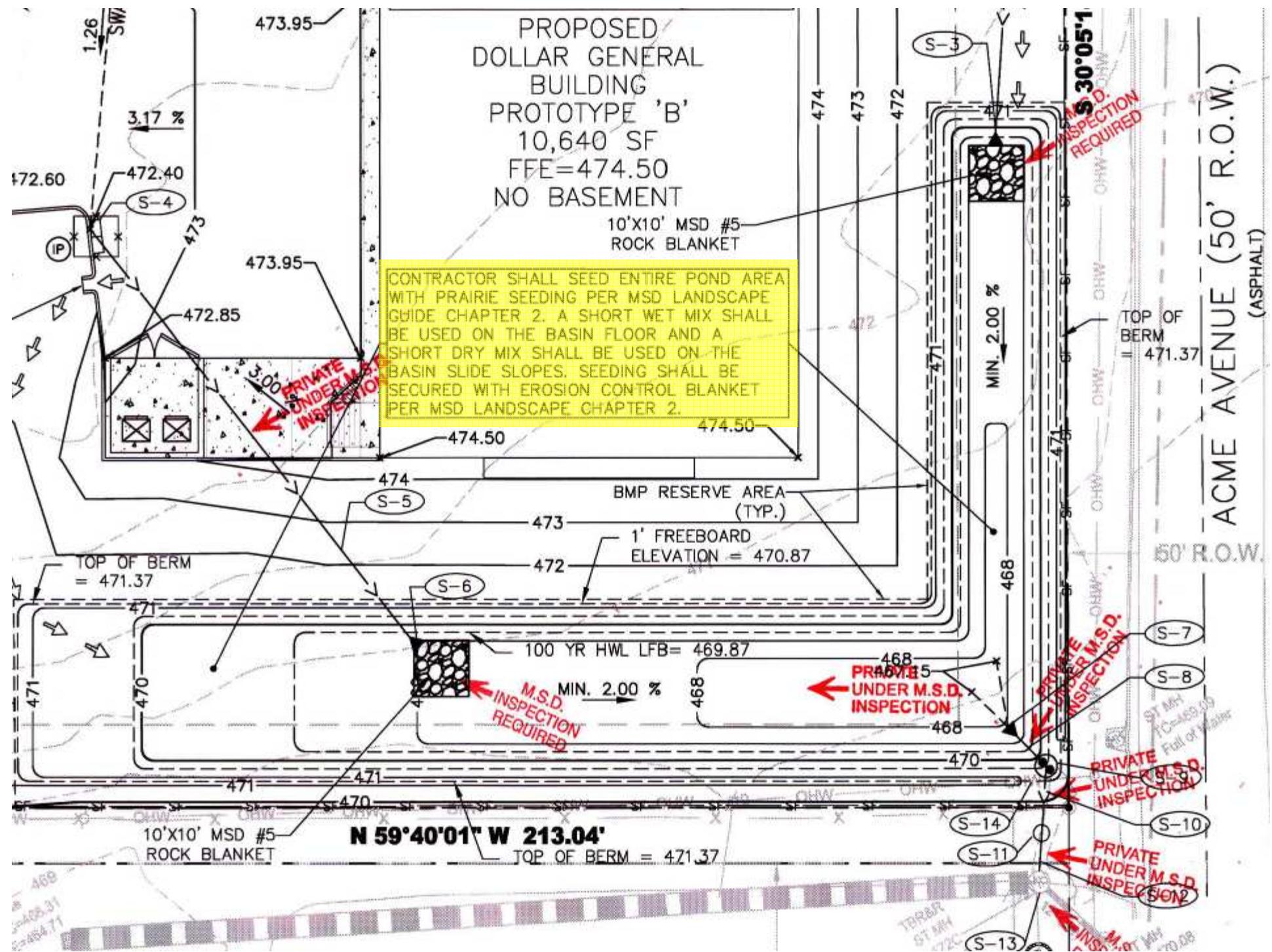
Latin Name	Common Name	Seasonal Interest - Color and Months												Ecological and Management Characteristics														
		Height (feet)		Spacing (feet)		J	F	M	A	M	J	J	A	S	O	N	D	Sun	Pt Sun	Pt Shade	Shade	Birds	Butterflies	Fall Color	Winter Interest	Salt tolerance	Aggressiveness	Silt tolerance
DRY AREA MIX																												
Grasses/Sedges																												
Andropogon gerardii	Big bluestem	4-6	2-5	plum	x	x							x	x	x	x	x		x	x	M	32						
Elymus canadensis	Canada wild rye	2-5	2	green							x	x	x				x		x	x		32						
Panicum virgatum	Switchgrass	3-6	2.5	pink	x	x					x	x	x	x	x	x	x	x	x	M	M M	16						
Schizachyrium scoparium	Little bluestem	2-3	1.5	bronze	x	x					x	x	x	x	x	x	x	x	x	M	L L	64						
Sorghastrum nutans	Indian grass	3-5	1.5	tan	x	x					x	x	x	x	x	x	x	x	x			16						
Sporobolus heterolepis	Prairie dropseed	2-3	1.5	tan							x	x	x	x	x	x	x	x	x	L		16						
Forbs																												
Asclepias syriaca	Common milkweed	2-3	1	pink					x	x	x				x			x		M	32							
Aster oblongifolius	Aromatic aster	1-3	1.5	lavender							x	x				x		x	x			12						
Baptisia australis	Blue wild indigo	3-4	3.5	blue				x	x	x	x				x	x	x	x		M	32							
Coreopsis lanceolata	Lanceleaf coreopsis	1-2	1.5	yellow		x	x	x							x	x		x		L	20							
Echinacea pallida	Pale purple coneflower	2-3	1.5	violet				x	x	x				x	x		x			L	48							
Eryngium yuccifolium	Rattlesnake master	4-5	1.5	green				x	x	x	x	x			x		x	x	M	L	16							
Grindelia lanceolata	Gum weed	2-3	1.5	yellow			x	x	x	x	x			x					M		8							
Heliopsis helianthoides	False sunflower	3-6	3	yellow			x	x	x	x			x			x					16							
Lespedeza capitata	Roundheaded bush clover	2-4	1.5	cream				x	x	x			x	x	x					L	16							
Liatris pycnostachya	Prairie blazing star	2-5	1.5	lilac				x	x	x			x			x	x			L	16							
Monarda fistulosa	Wild bergamot	3-4	2	pink			x	x	x				x	x	x	x	x		M	M M	4							
Ratibida pinnata	Yellow/Grey coneflower	3-5	1.5	yellow			x	x	x	x			x	x		x	x		M	H L	8							
Rudbeckia hirta	Black-eyed Susan	2-3	1.5	yellow			x	x	x	x	x		x			x			M		4							
Solidago speciosa	Showy goldenrod	2-3	1.5	yellow					x	x	x	x		x	x	x	x	x	M	H L	4							
Verbesina helianthoides	Yellow wingstem	2-3	1.5	yellow			x	x	x				x	x	x	x	x	x	M	L	16							
Veronica arkansana	Arkansas ironweed	4-6	3.5	purple					x	x	x	x	x	x					M		8							
Veronicastrum virginicum	Culversroot	4-7	3	white			x	x	x	x			x			x			L		1							
Zizia aurea	Golden alexander	1-3	1.5	yellow			x	x	x				x	x	x	x	x		M	M U	32							
Annuals (optional)																												
Chamaecrista fasciculata	Partridge pea	1-3	1	yellow					x	x	x			x	x		x	x			32							
Coreopsis tinctoria	Plains coreopsis	2-4	1	yellow				x	x	x	x		x			x	x				4							
Palafoxia callosa	Palafoxia	2-3	2	pink					x	x	x	x		x	x						4							

Taller, More Diverse Mix – Wet

Areas







Section E.1.4 Sheetflow to Buffer Credit

Sheetflow to Buffer Credit

This credit is given when stormwater runoff is effectively treated by a natural buffer to a stream or forested area. Effective treatment is achieved when pervious and impervious area runoff is discharged to a grass or forested buffer through overland flow. The use of a filter strip is also recommended to treat overland flow in the green space of a development site.

The credits include:

1. The area draining by sheet flow to a buffer is subtracted from the total site area in the WQ_v calculation.
2. The area draining to the buffer contributes to the recharge requirement, R_v.
3. A wooded CN can be used for the contributing area if it drains to a forested buffer.

Criteria for Sheetflow to Buffer Credit

The credit is subject to the following conditions:

- *The minimum buffer width shall be 50 feet as measured from bankfull elevation or centerline of the buffer,*
- *The maximum contributing length shall be 150 feet for pervious surfaces and 75 feet for impervious surfaces,*
- *Runoff shall enter the buffer as sheet flow. Either the average contributing overland slope shall be 5.0% or less, or a level spreading device shall be used where sheet flow can no longer be maintained (see Detail No. 9 in Appendix D.8),*
- *Not applicable if rooftop or non rooftop disconnection is already provided (see Credits 2 & 3),*
- *Buffers shall remain unmanaged other than routine debris removal, and*
- *Shall be protected by an acceptable conservation easement or other enforceable instrument that ensures perpetual protection of the proposed area. The easement must clearly specify how the natural area vegetation shall be managed and boundaries will be marked [Note: managed turf (e.g., playgrounds, regularly maintained open areas) is not an acceptable form of vegetation management].*

Figure E.1.2 illustrates how a buffer or filter strip can be used to treat stormwater from adjacent pervious and impervious areas.

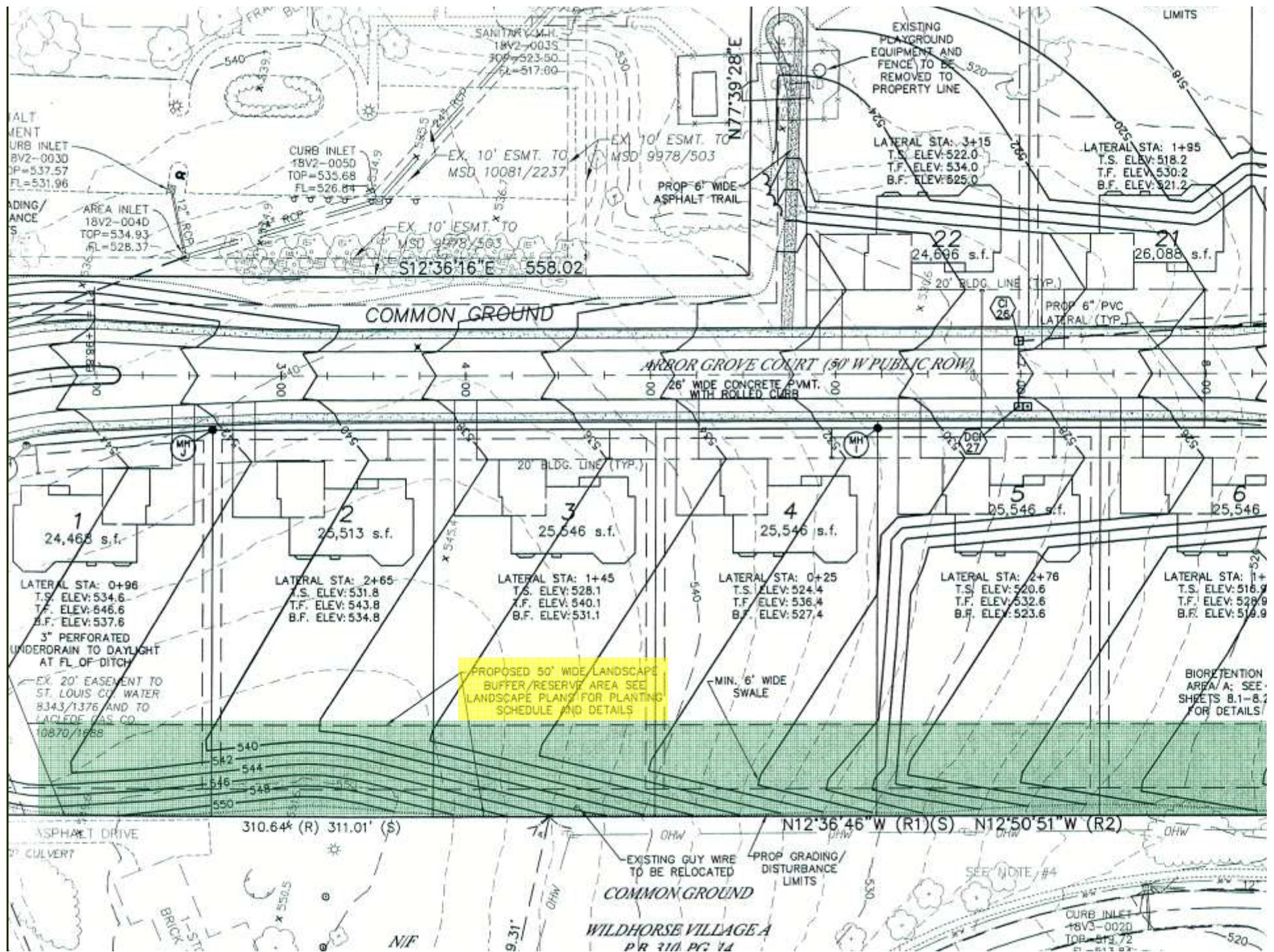
Stormwater Credits

**Source: Maryland
Stormwater Design
Manual, Appendix E.1**

Prairie Seeded Stormwater Buffers

The Arbors
at Wildhorse
Creek, 17560
Wildhorse
Creek Road,
Chesterfield,
McBride &
Son Homes
Subdivision





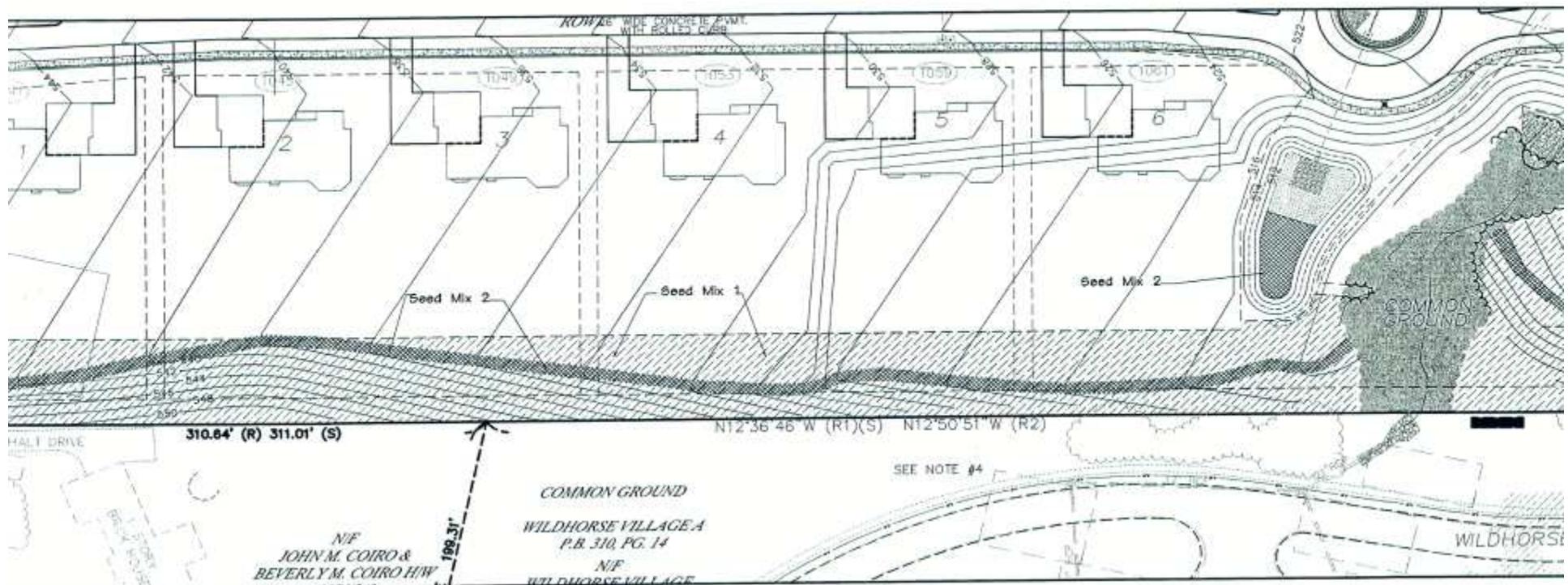
PRESERVATION EASEMENT

NATIVE PRAIRIE
RESTORATION AREA

PRESERVATION AREA/LANDSCAPE
BUFFER IDENTIFICATION SIGN

NOTES:

1. STANDARD 24"x 12"x 0.080" ALUMINUM
SIGN FACE WITH BLACK TEXT ON WHITE
BACKGROUND WITH 1" LETTERING.
2. SIGN TO BE MOUNTED ON 9'-6" LONG
GALVANIZED STEEL POST.
3. SET BOTTOM OF SIGN 5'-0" ABOVE
GRADE.
4. SET BOTTOM OF POST 3'-0" BELOW
GRADE.



NATIVE PLANT BUFFERYARD

1
L-3

SCALE: 1"=50'

*SHOP DRAWING
REQUIRED:*

"DEEP SOIL MIX" by Missouri Wildflower Nursery Contains the Following Species:

Butterfly Weed, an aster, White Wild Indigo, Royal Catchfly, Lanceleaf Coreopsis, Pale Purple Coneflower, Purple Coneflower, Rattlesnake Master, Western Sunflower, Rough and Prairie Blazing Star, Wild Bergamot, Palafoxia, Wild Quinine, Penstemon digitalis, White and Purple Prairie Clover, Gray-head Coneflower, Blackeyed Susan, Sweet Coneflower, Brown-eyed Susan, Blue Sage, Joe-pye Weed, and Golden Alexanders. "Deep Soil Mix" to be seeded at a rate of 9lbs per acre.

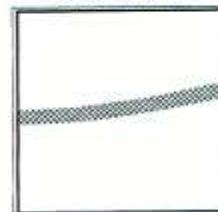
HATCH SYMBOL KEY

SEED MIX 1

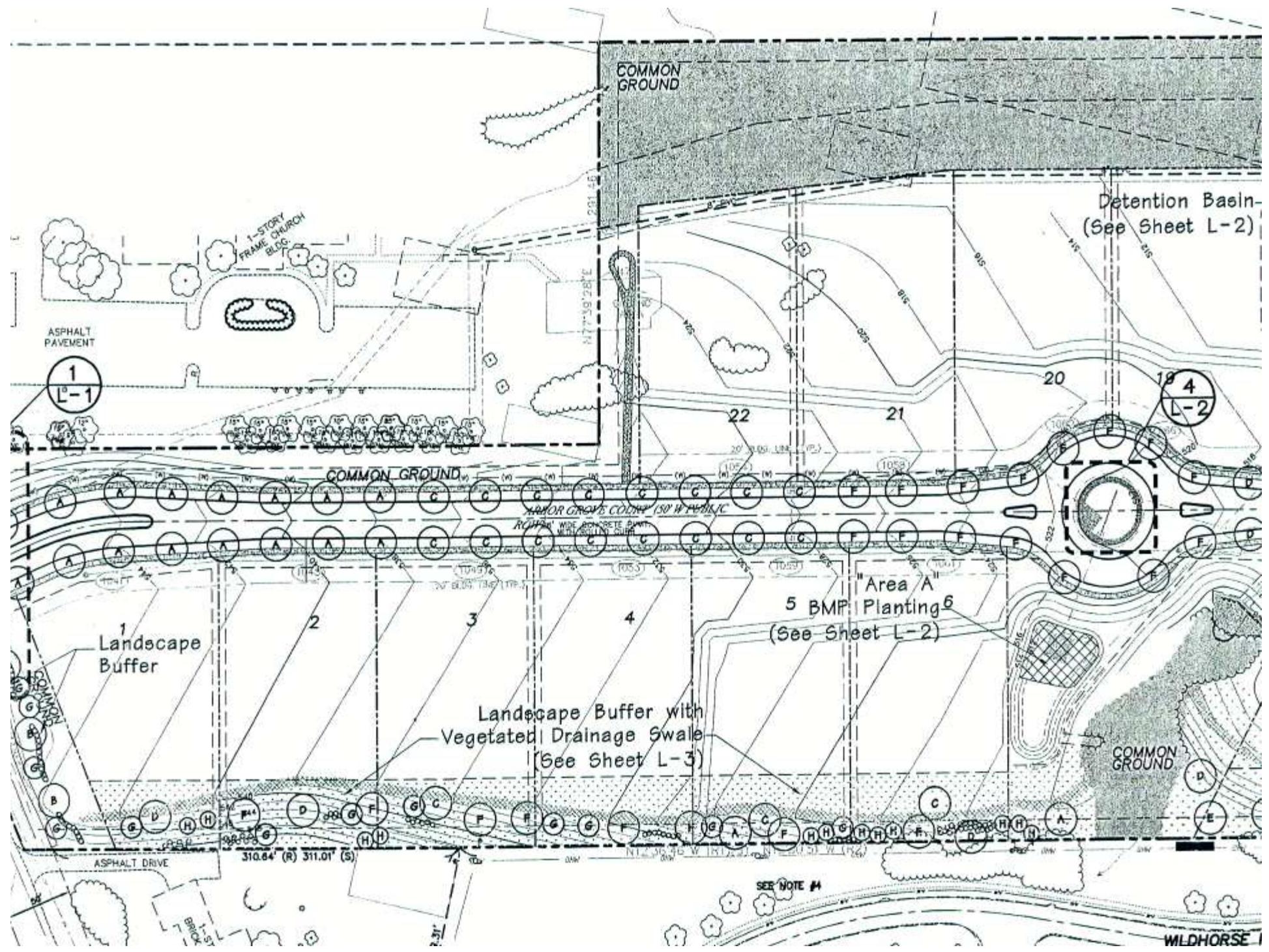


"DEEP SOIL MIX" by
Missouri Wildflower
Nursery
(or approved equal)

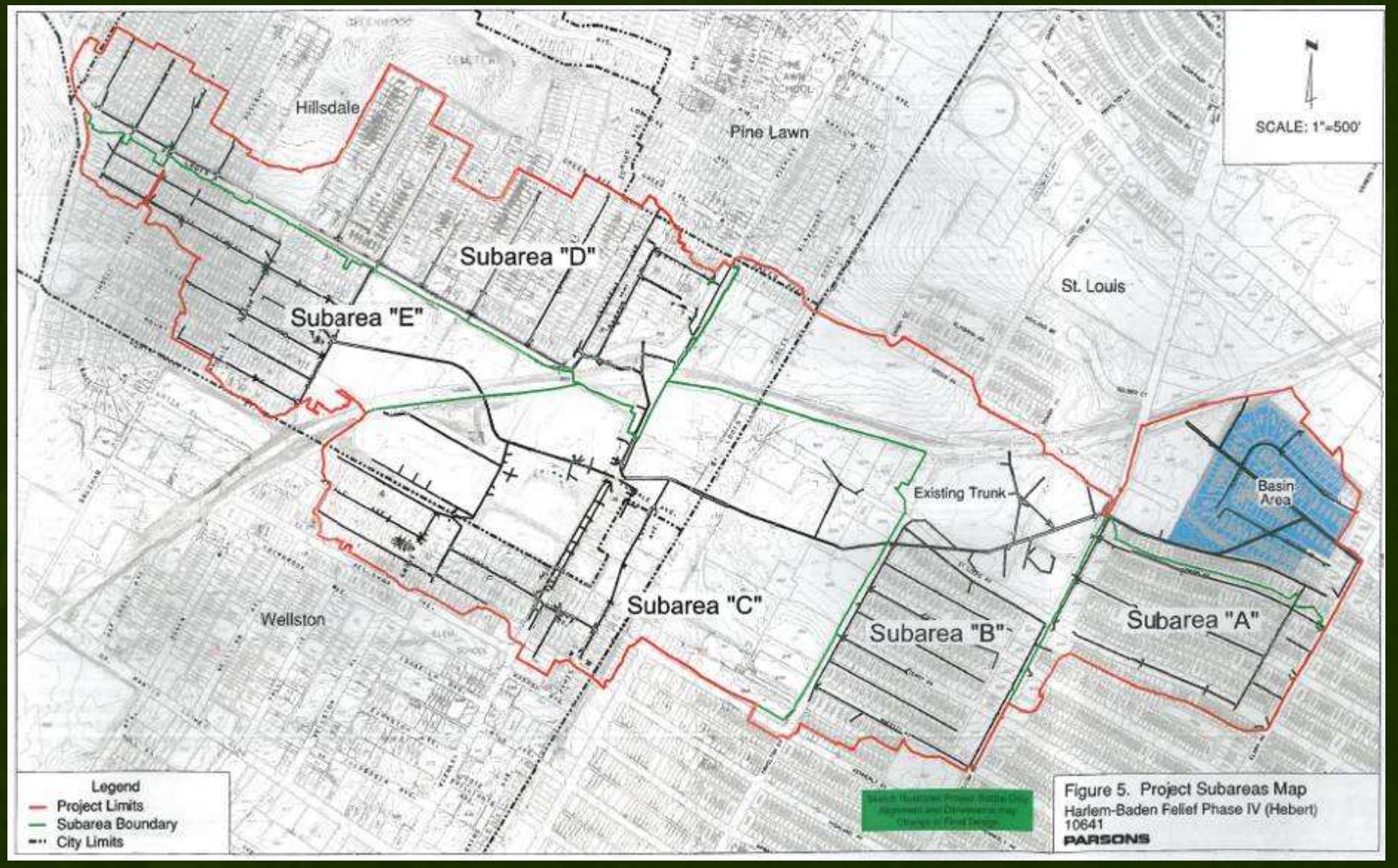
SEED MIX 2



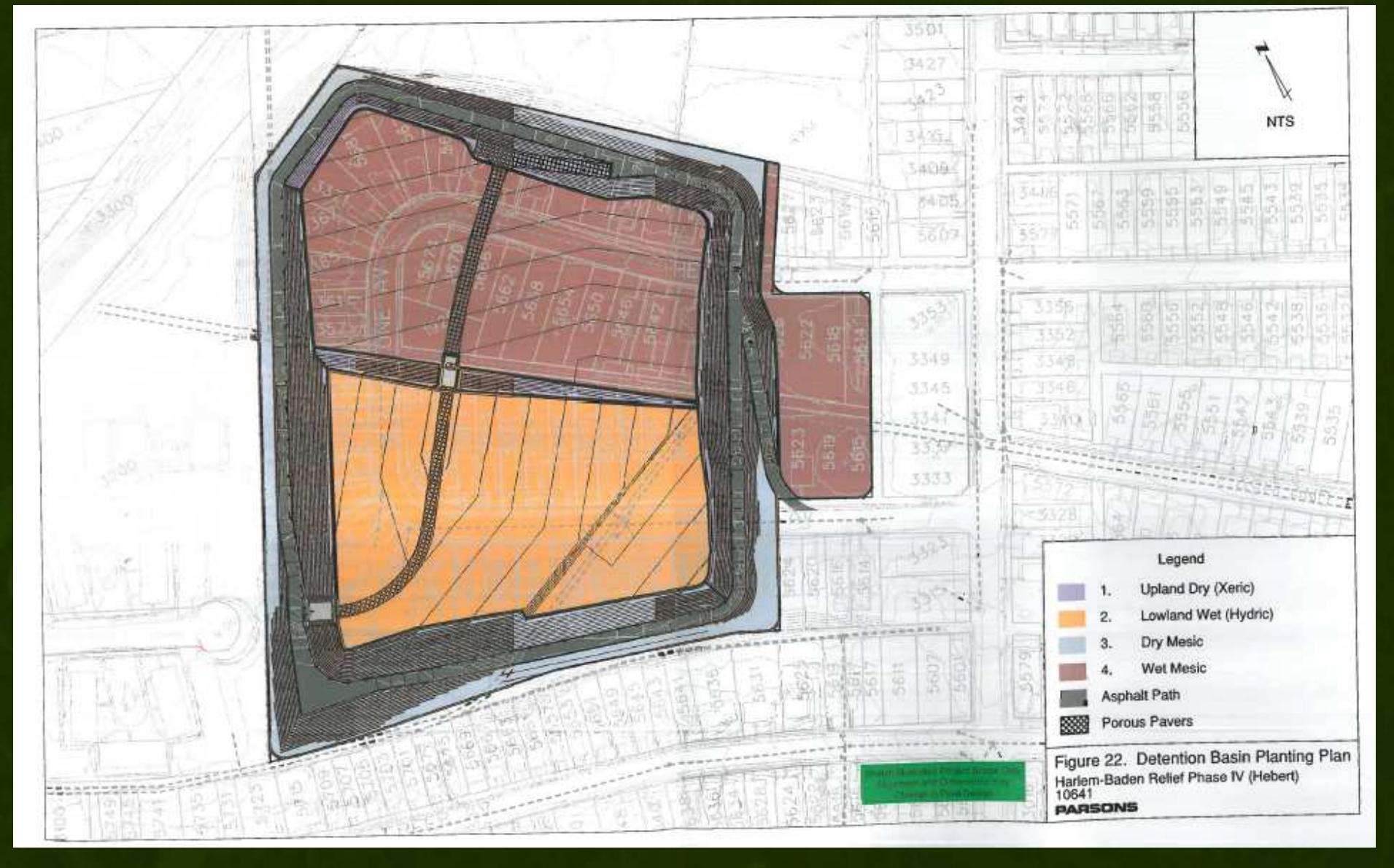
60% Prairie Cord Grass
20% Switch Grass
20% Little Bluestem
Seed rate of 10lbs per acre



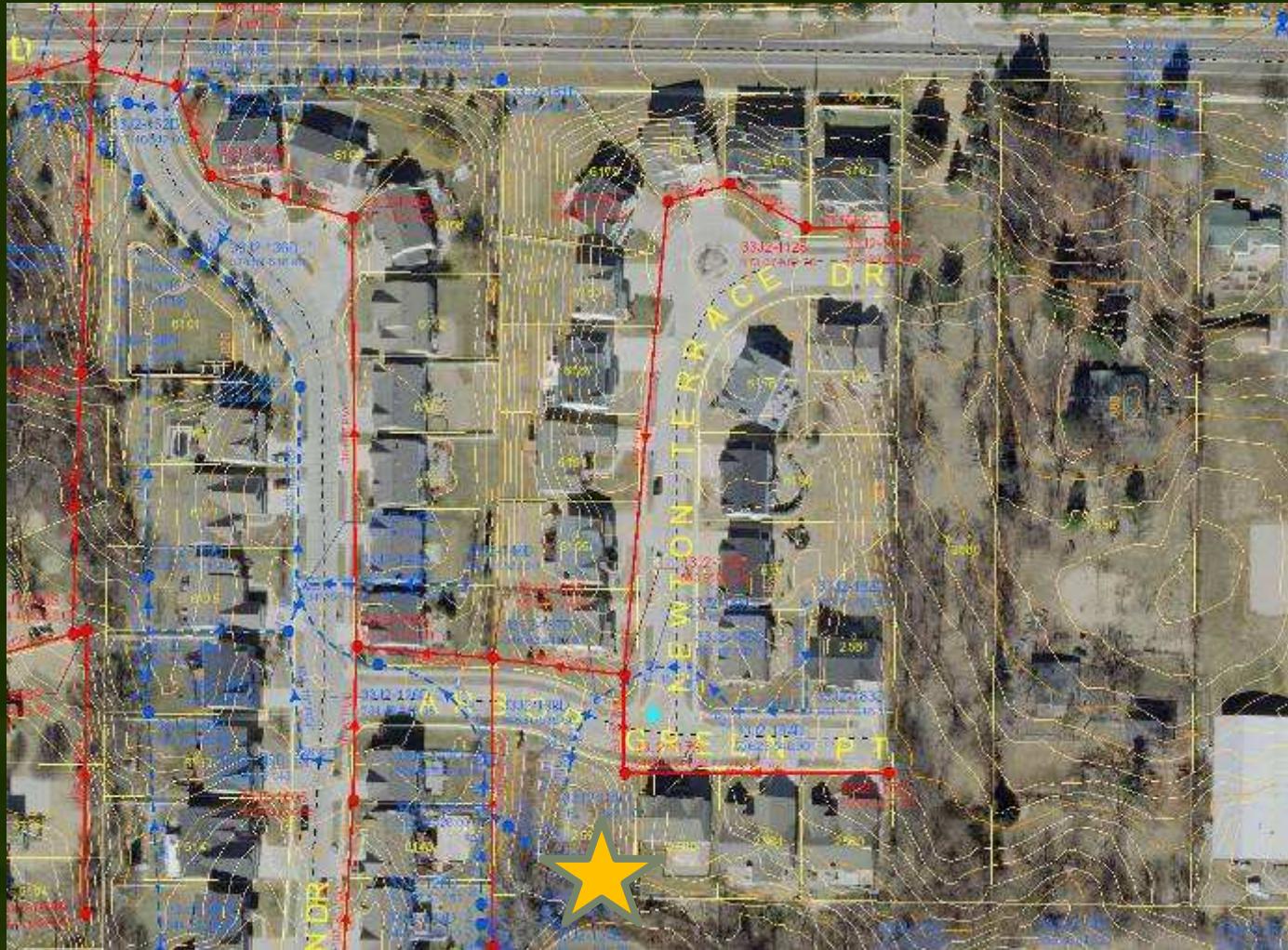
MSD Harlem Baden Sewer Relief Project, City of St. Louis, Harlem Watershed, Natural Bridge & Goodfellow Area



Flood Buyouts, Storm Sewer Separation Projects, and Construction of an 11 Acre Prairie Seeded Detention Basin



Erb Crossing Subdivision, Newton Terrace Dr. at Arbor Green Point, South St. Louis County





October 2007

11 4:55 PM



February 2009



March 2009

May 2009



June 2010



April 2011





July 2011, Greater Than
500-Year Rain Event

October 2011





Early February 2012



Late February 2012 - Check for Erosion
After Annual Mowing/Burning



**Mowing for our site,
1/4 acre basin**



April 2012



June 2012



June 2012



Some Important Points:

- Lower long term maintenance costs (subdivision assessment dropped from \$200/year to \$150/year)
- Different type of maintenance, but it is still required
- Turf edge borders help define the space
- Use educational signage
- Infiltration benefits - deep rooted plantings
- Wildlife/Ecological benefits
- Use a nurse crop

Some Important Points:

- To prevent erosion, do not remove existing dead vegetation when converting existing turf areas
- To prevent erosion, do use erosion mat for all bare soil area installations, and in basin bottoms of turf conversion projects
- Inspect sewer structures, dams, embankments after yearly mowing, and also after heavy rains
- Mowing is critical in year 1 (6x?) and year 2 (3x?), also spot treat/pull weeds, ongoing
- Can supplement seeded areas with plug planted areas for faster establishment in more visible areas