

Planting Requirements for Land Disturbing Activities and Related Mitigation on M-NCPPC, Montgomery County Parkland

Revised April 2009

Park Planning and Stewardship Division
Natural Resources Stewardship Section



MONTGOMERY COUNTY DEPARTMENT OF PARKS
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION



ABSTRACT

Title

Planting Requirements for Land-Disturbing Activities and Related Mitigation on M-NCPPC
Montgomery County Parkland

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Abstract

This document provides standards and specifications for replanting of natural areas in Montgomery County parkland that have been disturbed as part of a repair, construction, or development project and require a park permit for construction. Areas may include vegetation communities such as meadows, scrub-shrub, or forest.

**PLANTING REQUIREMENTS FOR LAND-DISTURBING
ACTIVITIES AND RELATED MITIGATION ON M-NCPPC
MONTGOMERY COUNTY PARKLAND**

Revised April 2009



Montgomery County Department of Parks

**Park Planning and Resource Stewardship Division,
Natural Resources Stewardship Section**

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Revised April, 2009

(p.4, p.12)

I. Introduction

This document provides standards and specifications for replanting of natural areas in Montgomery County parkland that have been disturbed as part of a repair, construction, or development project and require a park permit for construction. Areas may include vegetation communities such as meadows, scrub-shrub, or forest. The primary goal of these planting requirements is to minimize the degradation or loss of native vegetation resulting from the implementation of approved projects within existing parkland or land approved by the Planning Board for dedication or acquisition. The actions/objectives to help achieve this goal are to:

- Quickly stabilize land that has been disturbed as part of the project.
- Establish or re-establish healthy native plant communities.
- Minimize or prevent the colonization and spread of non-native invasive plants.

A Planting Plan will be required as part of the park permitting process for any activity that will disturb vegetation on parkland. The M-NCPPC Parks Technical Reviewer must review planting plans for all proposed projects for approval in coordination with the M-NCPPC Parks forest ecologist and urban forester.

At a minimum, where reforestation is required for a project in parkland, M-NCPPC's requirements for replanting follow the Montgomery County Forest Conservation Law (Chapter 22A of the Montgomery County Code), the Forest Conservation Regulations (Montgomery County Planning Board Regulation No. 1-01AM (COMCOR 18-01AM)), and Trees Approved Technical Manual for Montgomery County, Maryland. In addition, there are requirements set forth in this document, such as those for non-native invasive management that exceeds those set in the law and regulations. Adherence to these requirements will be reviewed as part of the park permit process.

A project that is subject to the County Forest Conservation Law must submit the necessary documentation¹ to M-NCPPC Countywide Planning Division, Environmental Planning Section for review and approval. An approved FCP or FCP exemption must be received by MNCPPC Parks prior to the issuance of the park permit. If forest planting is not required to meet the County Forest Conservation Law, a planting plan must still be submitted for review and approval by MNCPPC Parks to meet the Revegetation requirements for parkland.

¹ One or more of the following documents, as applicable: *Natural Resources Inventory/Forest Stand Delineation (NRI/FSD)*, *Forest Conservation Plan*, *Forest Conservation Exemption Application*, *Tree Save Plan*.

II. General Requirements

Existing Conditions Inventory

- As part of the park permit application, a plan showing existing conditions for the area must be submitted. This will include all environmental buffers (as defined in the Planning Board's Environmental Guidelines) and specimen trees found within the disturbed area. If the proposed project is subject to the Forest Conservation Law, a valid, approved Natural Resources Inventory/Forest Stand Delineation (NRI/FSD) may be used as the existing conditions inventory.

Replacement Plantings

- Replanting will be required when natural areas are disturbed in parks unless otherwise specified by the M-NCPPC Parks Technical Reviewer.
- When a natural area is cleared the area must be replanted, after completion of construction, with native species to recreate the habitat that previously existed on the site or to create other habitat as prescribed by the M-NCPPC Parks Technical Reviewer. (Appendix, #3, supplies examples of appropriate grass/meadow mixes).

Native Species

- All species shown on the planting plans shall be native to the area and preferably of local genetic stock unless otherwise approved by the M-NCPPC Parks Technical Reviewer.
- The applicant shall notify M-NCPPC Parks Technical Reviewer whenever a species is unavailable, and the M-NCPPC Parks Technical Reviewer or Parks Inspector will specify an appropriate substitution.

Non-Native Invasive Species

- If the replanting site has non-native invasive plant species (NNIs) present, a control program for invasive species must be part of the Planting Plan; control of non-native invasive plants must be initiated before any planting is done. Invasive removal shall conform to the M-NCPPC Parks specification for invasive species removal.
- NNI control is required as part of the two-year maintenance requirement on all plantings covered by this document.

Timely Completion

- All replanting projects, (with the exception of special cases as noted under Reforestation Standards), shall be completed within 12 months of the conclusion of project construction/disturbance.

Financial Security

- A project that must meet the requirements of the Montgomery County Forest Conservation Law must provide financial security as stipulated in the law.
- Any planting required by this document for a project that is not subject to the County Forest Conservation Law will be enforced through the park permit process.

Noncompliance with any planting requirements stipulated in the park permit will be enforced as a violation of the permit.

III. Reforestation Standards

Site Preparation

- If the reforestation site has non-native invasive plant species present, a control program for invasive species must be initiated before any planting is done.
- Non-native invasive management will have to go beyond the area of disturbance in sites with heavy levels of infestation. Sites will be individually assessed by M-NCPPC Park staff; control methods may need to occur in a 10 to 50 foot border around the perimeter of the site.
- Proposed NNI control methods must be described in detail as part of the replanting and/or forest conservation plan that is submitted for M-NCPPC review and approval.
- If disturbance results in major changes to the soil structure, fertility, pH, etc. (as with trenching for large sewer lines that essentially removes all topsoil) soil testing and amendments may be required as part of site preparation measures implemented prior to planting. This will be determined by M-NCPPC on a case-by-case basis and those specific requirements will be added to the Park Permit.

Installation and Planting Specifications

- Reforestation projects are to be installed within 12 months of project completion, consistent with the County Forest Conservation Law. If the reforestation project will not take place immediately following the end of the construction/disturbance period, an appropriate grass/meadow cover mix must be planted on site for erosion control purposes until the reforestation planting is completed. While native grass species should form the bulk of the mixture planted, annual cereal grains (oats, barley) may form up to 20% of the mix to ensure quick coverage for erosion control purposes.
- Trees and shrubs will be planted using the following minimum guidelines*:

Tree/Shrub Size	Number Required (Per acre)	Approximate Spacing (feet on center)
Trees		
.75 - 1” caliper, B&B or container grown (minimum 5-7 gallon, height 6-8 feet)	200	12-15
1.5 – 2” caliper	100	20
Shrubs		
Container grown, 18-24 inch height	33	Distribute evenly and among trees

* In the majority of situations, the guidelines given on the above chart will be followed. However, in limited instances on a case by case basis (examples: in situations with extremely steep slopes, or where steep slopes need to be replanted in a stream valley), 3-6 foot trees in 3 to 5 gallon containers can be planted at a rate of 400 per acre with the approval of M-NCPPC Parks Technical Reviewer.

- Planting materials are to be inspected by qualified personnel upon delivery to the site before planting to determine that plants meet species and size specifications.
- At least 6 different species of native trees and shrubs appropriate to the site conditions shall be planted at each project. Example Reforestation Species Lists for differing site conditions and a Comprehensive List of Species native to this geographic region are given in the Appendix, #1.
- Deer protection must be installed on all MNCPPC reforestation plantings to protect from both deer browse and buck rubbing. (Please see Appendix, #2, for the preferred methods).
- Trees shall be planted “off-center” unless otherwise directed by the M-NCPPC Parks Inspector. In order to control for non-native invasive species, plantings may be spaced in “mower-width” rows for better maintenance purposes.
- If the reforestation field is covered with a mat of grass or other low vegetation, a 5 foot diameter “planting circle” must be established for each tree. This can be done by cutting out the sod with a shovel, or by “burning a circle” with a Weed Trimmer. This will give the tree a better competitive chance (water, weeds).
- (revised April 2009)
- Planting and aftercare shall conform to M-NCPPC Park’s specifications and details.

Maintenance Period

- Maintenance during the early years following planting is key to reforestation success. Watering planted stock is essential for the first year following installation. “Gator-bag” installation is preferable and will help with ensuring high survival rates.
- M-NCPPC Parks shall inspect the project two years after planting has been completed. If the density and species composition are acceptable, M-NCPPC will relieve the applicant of all responsibility for the replanted area. The acceptable level of survival at the end of the minimum Maintenance Period is no less than 75% survival for the 0.75 – 1 “ caliper and 100% survival for the 1.5 – 2” caliper trees.
- If the level of survival is less than 75% for the .75 – 1” caliper, or less than 100% for the 1.5 – 2” caliper at the end of the minimum 2-year Maintenance period, the applicant will have to plant back up to the 100% level (with possible requirements to add or modify original planting specifications by using larger stock, or better deer protection, etc.). The site will be re-inspected at the end of the growing season following replanting. If survival rates are acceptable, the applicant will be relieved of all responsibility for the replanted area. Projects with need for extensive corrections may require an additional maintenance

period by the applicant and subsequent inspection by M-NCPPC Parks before the applicant is relieved of responsibility.

- In designated Special Protection Areas (SPA), “the applicant will provide a five-year maintenance program in forest planting areas to better ensure forest survival, with emphasis to be placed on control of invasive species”, per the Planning Board Environmental Guidelines.
- Non-native invasive species control must be maintained within the area of disturbance and for a distance of 10 to 50 feet beyond—distance to be determined by the MNCPPC Parks Technical Reviewer on case-by-case basis depending on habitat quality, surrounding habitat, level of disturbance and overall likelihood for NNI infestation. Control methods must be approved by the M-NCPPC Parks Technical Reviewer. Invasive species removal shall comply with M-NCPPC Parks specifications.
- Non-native invasives species control must be acceptable at the end of the 2-year maintenance period or further management will be required.

Special situations

- The loss of vegetation of particularly high natural value, as determined by the M-NCPPC Parks Technical Reviewer on a case-by-case basis, will require additional replanting (some examples are mature upland forests, wetlands).
- A specimen tree is a tree that is a particularly impressive or unusual example of a species due to its size, shape, age, or any other trait that epitomizes the character of the species, as defined in the most recent version of Trees: Approved Technical Manual for Montgomery County, Maryland. Replacement of that tree will be determined by the M-NCPPC Parks Technical Reviewer on a case by case basis.

IV. Native Grass/Meadow Planting Standards

Site Preparation

- If the meadow site has non-native invasive plant species present, a control program for invasive species must be initiated before any planting is done. Proposed NNI control methods must be described in detail as part of the replanting plan that is submitted for the M-NCPPC Parks Technical Reviewer's review and approval.
- Non-native invasive management will have to go beyond the area of disturbance in sites with heavy levels of infestation. Sites will be individually assessed; control methods may need to occur in a 10 to 50 foot border around the perimeter of the site.
- If disturbance results in major changes to the soil structure, fertility, pH, etc. (as with trenching for large sewer lines that essentially removes all topsoil) soil testing and amendments may be required prior to planting. Planting and aftercare shall conform to M-NCPPC Parks specifications and details.

Installation and Planting Specifications

- Disturbed areas will be replanted using a mixture of native grass seed appropriate to the site conditions. The M-NCPPC Parks Technical Reviewer will review all seed mixes in coordination with the Parks Dept. Natural Resource Stewardship Section. Appendix #3 has example mixtures.
- If the final meadow re-planting can not take place immediately following the end of the construction/disturbance period, an appropriate grass cover mix using a high proportion of annual cereal grains (oats, barley) must be planted to ensure quick coverage for erosion purposes.

Maintenance Period

- M-NCPPC Parks shall inspect the project after two years. If the density and species composition are acceptable, M-NCPPC Parks will relieve the applicant of all responsibility for the replanted area. The acceptable level of survival at the end of the minimum Maintenance Period is no less than 90% coverage with targeted species diversity.
- If the level of survival is less than acceptable at the end of the minimum 2-year Maintenance period, the applicant will have to re-seed or plant missing species. The site will be re-inspected at the end of the growing season following replanting. If survival rates are acceptable, the applicant will be relieved of all responsibility for the replanted area. Projects with need for extensive corrections may require an additional maintenance period by the applicant and subsequent inspection by M-NCPPC Parks before the applicant is relieved of responsibility. Two or more extensions of the maintenance period may constitute a violation of the park permit and will be handled accordingly.
- Non-native invasive species control must be maintained within the area of disturbance and for a distance of 10 to 50 feet beyond—distance to be determined by Parks Technical

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Reviewer on case-by-case basis depending on habitat quality, surrounding habitat, level of disturbance and overall likelihood for NNI infestation. Control methods must be approved by the M-NCPPC Parks Technical Reviewer. Invasive species removal shall comply with M-NCPPC Parks specifications.

- Non-native invasive species control must be acceptable at the end of the 2-year maintenance period or further management will be required.

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V. Appendices

APPENDIX 1: Native Tree and Shrub Species

Example “Planting Plan” species lists of native trees and shrubs appropriate for differing upland and floodplain restoration sites on Parkland:

Upland-cleared, dry site location

Virginia pine	<i>Pinus virginiana</i>
Eastern Red Cedar	<i>Juniperus virginiana</i>
Red Maple	<i>Acer rubrum</i>
Tulip poplar	<i>Liriodendron tulipifera</i>
Persimmon	<i>Diospyros virginiana</i>
Red oak	<i>Quercus rubra</i>
Blackhaw viburnum	<i>Viburnum prunifolium</i>
Sassafras	<i>Sassafras albidum</i>
Serviceberry	<i>Amelanchier arborea</i>

Upland-edge of established forest and/or “fill-in” projects on dry to moist site

White oak	<i>Quercus alba</i>
Red oak	<i>Quercus rubra</i>
American beech	<i>Fagus grandifolia</i>
Pignut hickory	<i>Carya glabra</i>
Mockernut hickory	<i>Carya tomentosa</i>
Low-bush blueberry	<i>Vaccinium vacillans</i>
Blackhaw viburnum	<i>Viburnum prunifolium</i>
Pinxter flower azalea	<i>Rhododendron periclymenoides</i>

Floodplain-cleared, moist site location

Red maple	<i>Acer rubrum</i>
Sycamore	<i>Platanus occidentalis</i>
Tulip poplar	<i>Liriodendron tulipifera</i>
Spicebush	<i>Lindera benzoin</i>
Arrow-wood viburnum	<i>Viburnum dentatum</i>
River birch	<i>Betula nigra</i>
Pin oak	<i>Quercus palustris</i>
Ulmus americana	American elm

Floodplain-sunny/open, wet/stream-side location

Black willow	<i>Salix nigra</i>
Red maple	<i>Acer rubrum</i>
Sycamore	<i>Platanus occidentalis</i>
Spicebush	<i>Lindera benzoin</i>
Silky dogwood	<i>Cornus amomum</i>
Buttonbush	<i>Cephalanthus occidentalis</i>
Arrow-wood viburnum	<i>Viburnum dentatum</i>
River birch	<i>Betula nigra</i>
Alder	<i>Alnus serrulata</i>

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Floodplain-edge of established forest and/or "fill-in" projects on moist to wet site

Sycamore	<i>Platanus occidentalis</i>
Red oak	<i>Quercus rubra</i>
Black gum	<i>Nyssa sylvatica</i>
River birch	<i>Betula nigra</i>
Spicebush	<i>Lindera benzoin</i>
Musclewood	<i>Carpinus caroliniana</i>
Red maple	<i>Acer rubrum</i>
Blackhaw viburnum	<i>Viburnum prunifolium</i>

Expanded comprehensive countywide native tree and shrub species lists appropriate for planting in Montgomery County parks.

UPLAND SITE REFORESTATION SPECIES

Scientific Name	Common Name	Type
<i>Acer rubrum</i>	red maple	tree
<i>Amelanchier arborea</i>	serviceberry	shrub
<i>Carya cordiformis</i>	bitternut hickory	tree
<i>Carya glabra</i>	pignut hickory	tree
<i>Carya tomentosa</i>	mockernut hickory	tree
<i>Castanea pumila</i>	chinquapin	tree
<i>Cercis canadensis</i>	eastern redbud	tree
<i>Cornus florida</i>	flowering dogwood	tree
<i>Diospyros virginiana</i>	persimmon	tree
<i>Fagus grandifolia</i>	American beech	tree
<i>Gaylussacia baccata</i>	black huckleberry	shrub
<i>Hamamelis virginiana</i>	witch-hazel	shrub
<i>Ilex opaca</i>	American holly	tree
<i>Juniperus virginiana</i>	eastern red-cedar	tree
<i>Kalmia latifolia</i>	mountain laurel	shrub
<i>Lindera benzoin</i>	spicebush	shrub
<i>Liriodendron tulipifera</i>	tuliptree/ tulip-poplar	tree
<i>Nyssa sylvatica</i>	black-gum	tree
<i>Ostrya virginiana</i>	ironwood/hop hornbeam	tree
<i>Pinus virginiana</i>	Virginia pine	tree
<i>Quercus alba</i>	white oak	tree
<i>Quercus falcata</i>	southern red oak	tree
<i>Quercus palustris</i>	pin oak	tree
<i>Quercus prinus</i>	chestnut oak	tree
<i>Quercus rubra</i>	northern red oak	tree
<i>Quercus velutina</i>	black oak	tree
<i>Rhododendron periclymenoides</i>	pinxter-flower	shrub
<i>Rhus copallina</i>	shining sumac	shrub
<i>Rhus glabra</i>	smooth sumac	shrub
<i>Rhus typhina</i>	staghorn sumac	shrub
<i>Sassafras albidum</i>	sassafras	tree
<i>Vaccinium stamineum</i>	deerberry	shrub

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Scientific Name	Common Name	Type
<i>Vaccinium vacillans</i>	lowbush blueberry	shrub
<i>Viburnum acerifolium</i>	maple-leaved viburnum	shrub
<i>Viburnum dentatum</i>	arrow-wood	shrub
<i>Viburnum prunifolium</i>	black-haw	shrub

t/s = species that may appear as a tree or a shrub

FLOODPLAIN SITE REFORESTATION SPECIES

Scientific Name	Common Name	Type
<i>Acer rubrum</i>	Red maple	tree
<i>Acer saccharinum</i>	silver maple	tree
<i>Alnus serrulata</i>	alder	tree/shrub
<i>Amelanchier arborea</i>	serviceberry	tree/shrub
<i>Aronia arbutifolia</i>	red chokeberry	shrub
<i>Asimina triloba</i>	pawpaw	tree/shrub
<i>Betula nigra</i>	river birch	tree
<i>Carpinus caroliniana</i>	musclewood/hornbeam	tree
<i>Carya cordiformis</i>	bitternut hickory	tree
<i>Cephalanthus occidentalis</i>	buttonbush	shrub
<i>Cercis canadensis</i>	eastern redbud	tree
<i>Chionanthus virginicus</i>	fringetree	tree/shrub
<i>Cornus amomum</i>	silky dogwood	shrub
<i>Corylus americana</i>	American hazelnut	shrub
<i>Euonymus americanus</i>	strawberry bush	shrub
<i>Hamamelis virginiana</i>	witch-hazel	shrub
<i>Ilex verticillata</i>	winterberry holly	shrub
<i>Juglans nigra</i>	black walnut	tree
<i>Lindera benzoin</i>	spicebush	shrub
<i>Liriodendron tulipifera</i>	tuliptree/ tulip-poplar	tree
<i>Nyssa sylvatica</i>	black-gum	tree
<i>Platanus occidentalis</i>	American sycamore	tree
<i>Quercus bicolor</i>	swamp white oak	tree
<i>Quercus palustris</i>	pin oak	tree
<i>Quercus phellos</i>	willow oak	tree
<i>Rhus glabra</i>	smooth sumac	shrub
<i>Rhus typhina</i>	staghorn sumac	shrub
<i>Salix nigra</i>	black willow	tree/shrub
<i>Sambucus canadensis</i>	elderberry	shrub
<i>Ulmus americana</i>	American elm	tree
<i>Ulmus rubra</i>	slippery elm	tree
<i>Viburnum acerifolium</i>	maple-leaved viburnum	shrub
<i>Viburnum dentatum</i>	arrow-wood	shrub
<i>Viburnum prunifolium</i>	black-haw	shrub

t/s = species that may appear as a tree or a shrub

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STORMWATER POND RESTORATION SPECIES

Scientific Name	Common Name	Type	Habitat
Acer rubrum	red maple	t	U, F, S
Alnus serrulata	hazel alder	s	F, S
Amelanchier arborea	serviceberry	t/s	U, F, S
Betula nigra	river birch	t	F, S
Cephalanthus occidentalis	buttonbush	s	F, S
Cercis canadensis	eastern redbud	t/s	U
Cornus amomum	silky dogwood	s	F, S
Corylus americana	hazelnut	s	F
Hamamelis virginiana	witch-hazel	s	U, F, S
Ilex opaca	American holly	s	U, F
Ilex verticillata	winterberry	s	F, S
Juniperus virginiana	eastern red-cedar	t	U
Lindera benzoin	spicebush	s	U, F, S
Liriodendron tulipifera	tuliptree/tulip-poplar	t	U, F
Nyssa sylvatica	black-gum	t	U, F
Platanus occidentalis	American sycamore	t	F, S
Quercus alba	white oak	t	U
Quercus falcata	southern red oak	t	U
Quercus palustris	pin oak	t	U, F
Quercus prinus	chestnut oak	t	U
Quercus rubra	red oak	t	U
Quercus velutina	black oak	t	U
Rhus copallina	shining sumac	s	U
Rhus glabra	smooth sumac	s	U, F
Rhus typhina	staghorn sumac	s	U, F
Salix nigra	black willow	t	F, S
Sambucus canadensis	elderberry	s	F, S
Viburnum acerifolium	maple-leaved viburnum	t	U, F
Viburnum dentatum	arrow-wood	s	U, F
Viburnum prunifolium	black-haw	s	U, F

t = tree; s= shrub

U= upland; F= floodplain; S= stream or pond bank

APPENDIX 2: Deer Protection Devices

- **For Trees:** Tree sleeves. Heavy-duty plastic of an open weave mesh, 4’ tall, 6” diameter. Tree sleeve must be anchored in the ground (sod stakes can be used) to keep the deer from nudging the cage up during “buck rubbing” periods. (revised 4/09) This type of device can be purchased from AM Leonard Catalog at <http://www.amleo.com/index/item.cgi?cmd=view&Words=bg48>
- **For Tree or Shrubs:** 4-foot tall, 1-3 foot in diameter (1 foot for trees, 3 feet for shrubs), wire-fence cage erected around each plant. One stake should be used to anchor each cage in place, and 2 twist ties employed to attach the stake to the cage.

APPENDIX 3: Native Grass Meadow Species

Example “Planting Plan” species lists of native grasses appropriate for differing upland and floodplain restoration sites on Parkland:

Mesic, Short Grass, Sunny Meadow Mix

(for sites with well to moderately drained soils)

Name	
broomsedge	Andropogon virginicus
Virginia wildrye	Elymus virginicus
little Bluestem	Schizachyrium scoparium
deertongue	Dichanthelium clandestinum
purple top	Tridens flavus
cereal grain	(oats or barley)

Mesic, Mixed Height Grass, Open Meadow Mix

(sites with well to moderately drained soils)

Name	
big bluestem	Andropogon gerardii
little bluestem	Schizachyrium scoparium
switchgrass	Panicum virgatum
indiangrass	Sorghastrum nutans
purple top	Tridens flavus
cereal grain	(oats or barley)

Wet, Mixed Height Grass, Open Meadow Mix

(sites with poorly drained soils)

Name	
Virginia wildrye	Elymus virginicus
switchgrass	Panicum virgatum
eastern gamagrass	Tripsacum dactyloides
riverbank wild rye	Elymus riparius
deer tongue	Dichanthelium clandestinum
cereal grain	

Wet, Short to Medium Height, Shady

(sites with poorly drained soils)

Name	
Virginia wild rye	<i>Elymus virginicus</i>
Bottle-brush	<i>Elymus hystrix</i>
riverbank wild rye	<i>Elymus riparius</i>
deer tongue	<i>Dichanthelium clandestinum</i>
purple top	<i>Tridens flavus</i>

The species lists above are for informational purposes. If an applicant is required to replant a meadow area on Park Property, M-NCPPC will work with the applicant to establish exact percentages and pounds PLS/acre on a site by site basis. While cereal grain cover crops (oats, barley) are not native species, they are often included in a mix in order to have a quickly germinating, (non-perennial) species for erosion control purposes.

**Planting Requirements for Land-Disturbing Activities and Related
Mitigation on M-NCPPC Montgomery County Parkland**



**Montgomery County Department of Parks,
Park Planning and Resource Stewardship Division,
Natural Resources Stewardship Section**