

*Appendix RR – Woodland Restoration Specification to Meet Compensation Requirements*

## Woodland Restoration Specification to Meet Compensation Requirements

### 1.1 Planting Density and Size of Planting Stock

1.1.1 Trees (minimum 40 mm calliper size, at a density of at least 5 trees / 25 m<sup>2</sup>)

1.1.2 Shrubs (bare root or larger at a density of at least 10 / 25 m<sup>2</sup>)

1.1.3 Herbaceous (plugs or potted plants at a density of at least 25 plugs / 25 m<sup>2</sup>)

### 1.2 Mulched Beds

1.2.1 Mulch is to be used in the restoration areas to suppress weeds

1.2.2 Mulch to be of biodegradable material such as woodchips or flax straw

### 1.3 Species Diversity

1.3.1 Acceptable species diversity shall be attained through proactive management of species composition. Tables 1 and 2 show the preferred species diversity percentage. Individual planting site totals will be accumulated for an overall area and percentage.

Number of Trees or Shrubs On Site	Maximum Percentage of Any One Genus
1 – 15	75%
16 – 50	50%
51 – 100	25%
100+	20%

Area of Planting Site	Maximum Percentage of Any One Genus	Minimum Number of Species
25 m <sup>2</sup> or less	75%	2
25 – 250 m <sup>2</sup>	50%	5
250 – 1000 m <sup>2</sup>	25%	10
Greater than 1000 m <sup>2</sup>	20%	15

### 1.4 Design

1.4.1 The planting design shall aim to mimic patterns of native vegetation.

1.5 Termination of Maintenance Period

1.5.1 The Contract Administrator will terminate the maintenance period after the following criteria has been met:

- a) The tree planting methods meet the requirements specified herein.
- b) The planting area has been established into a healthy vigorous growing condition. 85% survival in the third year after planting.
- c) The planting area is free of bare and dead spots and without ten (10) weedy or invasive species per fifty (25) square meters.

1.6 Acceptable Species

1.6.1 Species planted must come from those listed in the following tables. Exceptions are subject to approval and will only be granted if the species is native.

<b>Table 1. Trees</b>
Manitoba maple <i>Acer negundo</i>
White birch <i>Betula papyrifera</i>
Hackberry <i>Celtis occidentalis</i>
Black ash <i>Fraxinus nigra</i>
Green ash <i>Fraxinus pennsylvanica</i>
Hop-hornbeam <i>Ostrya virginiana</i>
Balsam poplar <i>Populus balsamifera</i>
Cottonwood <i>Populus deltoides</i>
Large-toothed aspen <i>Populus grandidentata</i>
Trembling aspen <i>Populus tremuloides</i>
Bur oak <i>Quercus macrocarpa</i>
Peach-leaved willow <i>Salix amygdaloides</i>
Basswood <i>Tilia americana</i>
American elm <i>Ulmus americana</i>

<b>Table 2. Shrubs</b>
Green alder <i>Alnus crispa</i>
Speckled alder <i>Alnus rugosa</i>

Saskatoon <i>Amelanchier alnifolia</i>
Lead plant <i>Amorpha canescens</i>
False indigo <i>Amorpha fruticosa</i>
Fragrant false indigo <i>Amorpha nana</i>
Common bearberry <i>Arctostaphylos uva-ursi</i>
River birch <i>Betula occidentalis</i>
Swamp birch <i>Betula pumila</i> var. <i>glandulifera</i>
Alternate-leaved dogwood <i>Cornus alternifolia</i>
Red-osier dogwood <i>Cornus stolonifera</i>
American hazelnut <i>Corylus americana</i>
Beaked hazelnut <i>Corylus cornuta</i>
Round-leaved hawthorn <i>Crataegus chrysocarpa</i>
Bush-honeysuckle <i>Diervilla lonicera</i>
Twining honeysuckle <i>Lonicera dioica</i> var. <i>glaucescens</i>
Shrubby cinquefoil <i>Potentilla fruticosa</i>
American plum <i>Prunus americana</i>
Canada plum <i>Prunus nigra</i>
Pin cherry <i>Prunus pensylvanica</i>
Sand cherry <i>Prunus pumila</i>
Choke cherry <i>Prunus virginiana</i>
Wild black currant <i>Ribes americanum</i>
Skunk currant <i>Ribes glandulosum</i>
Smooth gooseberry <i>Ribes hirtellum</i>
Northern wild black currant <i>Ribes hudsonianum</i>

Bristly black currant <i>Ribes lacustre</i>
Bristly wild gooseberry <i>Ribes oxycanthoides</i>
Wild red currant <i>Ribes triste</i>
Prickly rose <i>Rosa acicularis</i>
Smooth rose <i>Rosa blanda</i>
Wood's rose <i>Rosa woodsii</i>
Beaked willow <i>Salix bebbiana</i>
Pussy willow <i>Salix discolor</i>
Sandbar willow <i>Salix exigua</i>
Shining Willow <i>Salix lucida</i>
Yellow willow <i>Salix lutea</i>
Canada buffaloberry <i>Shepherdia canadensis</i>
Meadowsweet <i>Spiraea alba</i>
Snowberry <i>Symphoricarpos albus</i>
Western snowberry <i>Symphoricarpos occidentalis</i>
Nannyberry <i>Viburnum lentago</i>
Highbush-cranberry <i>Viburnum opulus</i> var. <i>americanum</i>
Downy arrow-wood <i>Viburnum rafinesquianum</i>
Riverbank grape <i>Vitis riparia</i>

**Table 3. Herbaceous Species**

Common yarrow <i>Achillea millefolium</i>
Red baneberry <i>Actaea rubra</i>
Giant blue hyssop <i>Agastache foeniculum</i>
Nodding onion <i>Allium cernuum</i> Roth

Pink-flowered onion <i>Allium stellatum</i>
Hog peanut <i>Amphicarpa bracteata</i>
Canada anemone <i>Anemone canadensis</i>
Prairie crocus <i>Anemone patens</i>
Wood anemone <i>Anemone quinquefolia</i>
Common pussy-toes <i>Antennaria neodioica</i>
Spreading dogbane <i>Apocynum androsaemifolium</i>
Indian-hemp <i>Apocynum cannabinum</i>
Canadian columbine <i>Aquilegia canadensis</i>
Wild sarsaparilla <i>Aralia nudicaulis</i>
Grove sandwort <i>Arenaria lateriflora</i>
Prairie sagewort <i>Artemisia frigida</i>
Western mugwort <i>Artemisia ludoviciana</i>
Swamp milkweed <i>Asclepias incarnata</i>
Dwarf milkweed <i>Asclepias ovalifolia</i>
Showy milkweed <i>Asclepias speciosa</i>
Lindley's aster <i>Aster ciliolatus</i>
Heath aster <i>Aster ericoides</i>
Smooth aster <i>Aster laevis</i>
New England aster <i>Aster novae-angliae</i>
White upland aster <i>Aster ptarmicoides</i>
Small blue aster <i>Aster simplex</i>
Marsh marigold <i>Caltha palustris</i>
Harebell <i>Campanula rotundifolia</i>

Field chickweed <i>Cerastium arvense</i>
Hornwort <i>Ceratophyllum demersum</i>
Bastard toadflax <i>Comandra umbellata</i>
Bunchberry <i>Cornus canadensis</i>
Small yellow lady's-slipper <i>Cypripedium calceolus</i> var. <i>parviflorum</i>
Large yellow lady's-slipper <i>Cypripedium calceolus</i> var. <i>pubescens</i>
Showy lady's-slipper <i>Cypripedium reginae</i>
White prairie clover <i>Dalea candida</i>
Purple prairie clover <i>Dalea purpurea</i>
Shooting-star <i>Dodecatheon meadia</i>
Purple coneflower <i>Echinacea angustifolia</i>
Wild cucumber <i>Echinocystis lobata</i>
Fireweed <i>Epilobium angustifolium</i>
Common horsetail <i>Equisetum arvense</i>
Swamp horsetail <i>Equisetum fluviatile</i>
Common scouring rush <i>Equisetum hyemale</i>
Philadelphia fleabane <i>Erigeron philadelphicus</i>
Joe-pye-weed <i>Eupatorium purpureum</i>
Smooth wild strawberry <i>Fragaria virginiana</i>
Great-flowered gaillardia <i>Gaillardia aristata</i>
Northern bedstraw <i>Galium boreale</i>
Sweet-scented bedstraw <i>Galium triflorum</i>
Oblong-leaved gentian <i>Gentiana affinis</i>
Closed gentian <i>Gentiana andrewsii</i>

Three-flowered avens <i>Geum triflorum</i>
Wild licorice <i>Glycyrrhiza lepidota</i>
Common sneezeweed <i>Helenium autumnale</i>
Beautiful sunflower <i>Helianthus laetiflorus</i>
Narrow-leaved sunflower <i>Helianthus maximiliani</i>
Alumroot <i>Heuchera richardsonii</i>
Mare's-tale <i>Hippuris vulgaris</i>
Common hop <i>Humulus lupulus</i>
Jewelweed <i>Impatiens capensis</i>
Pale vetchling <i>Lathyrus ochroleucus</i>
Wild peavine <i>Lathyrus venosus</i>
Meadow blazingstar <i>Liatris ligulistylis</i>
Dotted blazingstar <i>Liatris punctata</i>
Wood lily <i>Lilium philadelphicum</i>
Blue flax <i>Linum lewisii</i>
Hoary puccoon <i>Lithospermum canescens</i>
Kalm's lobelia <i>Lobelia kalmii</i>
Fringed loosestrife <i>Lysimachia ciliata</i>
Two-leaved Solomon's-seal <i>Maianthemum canadense</i>
Ostrich fern <i>Matteuccia struthiopteris</i>
Moonseed vine <i>Menispermum canadense</i>
Common mint <i>Mentha arvensis</i>
Tall lungwort <i>Mertensia paniculata</i>
Mitrewort <i>Mitella nuda</i>



Wild bergamot <i>Monarda fistulosa</i>
Seneca snakeroot <i>Polygala senega</i>
Hairy Solomon's-seal <i>Polygonatum biflorum</i>
Tall cinquefoil <i>Potentilla arguta</i>
Pink pyrola <i>Pyrola asarifolia</i>
Small-flowered buttercup <i>Ranunculus abortivus</i>
Prairie buttercup <i>Ranunculus rhomboideus</i>
Long-headed coneflower <i>Ratibida columnifera</i>
Wild red raspberry <i>Rubus idaeus</i>
Dewberry <i>Rubus pubescens</i>
Black-eyed Susan <i>Rudbeckia hirta</i>
Snakeroot <i>Sanicula marilandica</i>
Common blue-eyed grass <i>Sisyrinchium montanum</i>
Star-flowered Soloman's-seal <i>Smilacina stellata</i>
Carrion-flower <i>Smilax lasioneura</i>
Canada goldenrod <i>Solidago canadensis</i> L.
Stiff goldenrod <i>Solidago rigida</i>
Woundwort <i>Stachys palustris</i>
Tall meadow-rue <i>Thalictrum dasycarpum</i>
Veiny meadow-rue <i>Thalictrum venulosum</i>
Nodding trillium <i>Trillium cernuum</i>
Culver's-root <i>Veronicastrum virginicum</i>
Common vetch <i>Vicia americana</i>
Early blue violet <i>Viola adunca</i>

Canada violet <i>Viola canadensis</i>
Northern bog violet <i>Viola nephrophylla</i>
Purple prairie violet <i>Viola pedatifida</i>
Downy yellow violet <i>Viola pubescens</i>
Heart-leaved alexanders <i>Zizia aptera</i>
Golden alexanders <i>Zizia aurea</i>

**Grasses**

Tickle-grass <i>Agrostis hyemalis</i>
Slough grass <i>Beckmannia syzigachne</i>
Fringed brome <i>Bromus ciliatus</i>
Northern reed grass <i>Calamagrostis inexpansa</i>
Tufted hair grass <i>Deschampsia caespitosa</i>
Canada wild rye <i>Elymus canadensis</i>
Fowl blue grass <i>Poa palustris</i>
Prairie cord grass <i>Spartina pectinata</i>
Marsh reed grass <i>Calamagrostis canadensis</i>