Credit Valley Conservation
inspired by nature

Plant Selection Guideline

Species List for Planting Plans within the Credit River Watershed

Document Contents:

Prepared by: Credit Valley Conservation
April 2018

Section 1: CVC Species List for Planting Plans within the Credit River Watershed

Version 2.0 – April 2017

Credit Valley Conservation (CVC) promotes native plant biodiversity. CVC mandates the use of native species that are common within CVC's jurisdiction in regulated areas and recommends them in non-regulated areas.

The following guideline is used to select species for planting plans for natural restoration projects, mitigation plans and stormwater management pond blocks. This list ensures that restoration plantings, required by the planning and development process, enhance the ecological function of the natural heritage system of the Credit River Watershed. The Plant Selection Guideline also includes a coefficient of wetness to provide guidance on the soil moisture preferences of each species. Please refer to Table 1 for further details on species coefficient of wetness codes.

Table 1: Coefficient of Wetness and Related Soil Moisture Regime Preferences

Coefficient of Wetness	Soil Moisture Regime Preference
5	Almost always occur on uplands
4 3 2	Usually occur on uplands
1 0 -1	Found on uplands and in wetlands
-2 -3 -4	Usually occur in wetlands
-5	Almost always in wetlands

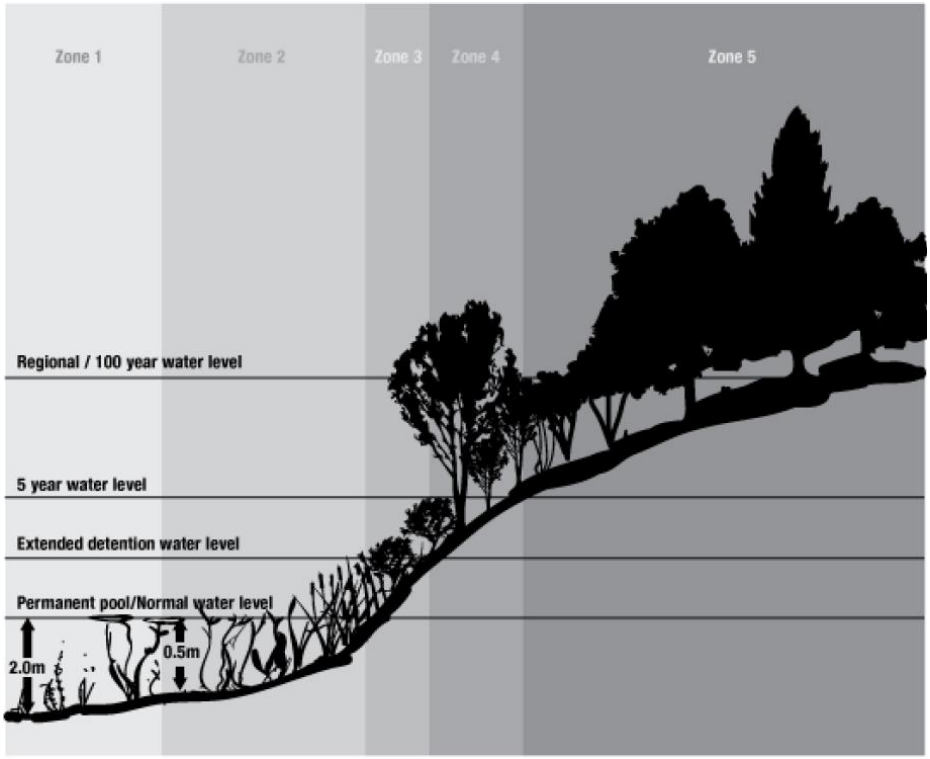
Note: Coefficient of Wetness taken from the Floristic Assessment System for Southern Ontario (Oldham et al, 1995).

There are two ecoregions within the Credit River Watershed: 6E - Lake Simcoe-Rideau Ecoregion and 7E – Lake Erie-Lake Ontario Ecoregion. Each ecoregion is characterized by a distinct biological response (i.e. species and communities) to environmental conditions (i.e. climate and geology) associated with that region. This list provides guidance on which species are appropriate for planting in each of these ecoregions. To simplify implementation and ensure consistency within individual municipalities, the watershed has been divided into two zones (upper and lower watershed) that roughly correspond to the boundaries of the ecoregions. Within this document, species identified with "**YES**" are suitable for planting in both the upper and lower watershed, "**U**" is suitable for **upper watershed only** and "**L**" is suitable for **lower watershed only**. The lower watershed includes the City of Mississauga, City of Brampton, Town of Oakville and Town of Milton. The upper watershed includes the Town of Halton Hills, Town of Caledon, Town of Orangeville, Town of Erin, Township of East Garafraxa, Township of Amaranth, and Town of Mono.

CVC staff have identified a selection of herbaceous, sedges, rushes, emergent and aquatic plants that appear to be successful in Stormwater Management (SWM) ponds, based on a review of SWM ponds within our watershed and the following reports: Performance Assessment of a Highway Stormwater Quality Detention Pond (SWAMP 2003) and Town of Aurora Stormwater Ponds Vegetation & Wildlife Study (Aurora Environmental Advisory Committee 2007). These species are **highlighted in green** in the Plant Selection Guideline List provided below. The column titled "SWM Pond Planting Zone" should be used in conjunction with Figure 1 to determine in which area of a SWM pond the species may be suitable. Species marked "NR" within this column are not recommended for planting in SWM ponds as a result of characteristics which deem them unsuitable (i.e. potential confusion with non-native species, site specific needs for growth). Please note that woody vines are not included in the calculation of shrub material to meet CVCs SWM Planting Guidelines but can be included to add diversity.

For information on how Wildlife Use, Characteristic and LID Codes were determined please refer to the definitions at the end of this document. A list of acceptable cover crops is included at the end of the plant list. To obtain a workable version of this document in excel format please contact a CVC Planning Ecologist.

Figure 1: SWM Pond Planting Zones



This document and the recommendations provided herein were developed based on the most recent scientific research available to CVC as well as professional opinion and experience. Please note that this list is not exhaustive and other species may be suitable. As a result, CVC will review any proposed species and rationale for use provided by the proponent or their consultants in support of their specific project. If you have any questions regarding the guidelines, contact a CVC Planning Ecologist.

Plant Selection Guideline List - Version 2.0

Species Use Codes:

- Breeding and migratory birds
- Pollinators
- Mast species providing wildlife foraging opportunities

LID Codes:

BR Bioretention
DS Dry swale
ES Enhanced grass swale
F Filter strips

Characteristics Codes:

- Not recommended for planting due to recent population decline or confusion/ hybridization with non-native sources
- Prefers full sun
- Prefers shade
- Salt tolerant
- Drought tolerant
- Suitable for bioengineering
- Susceptible to wind throw damage; plant away from lot lines, infrastructure and trails

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Trees							
Abies balsamea	Balsam Fir	-3	**U**	3, 4			
Acer nigrum	Black Maple	3	Yes	5			
Acer rubrum	Red Maple	0	Yes	3, 4			BR, DS, F
Acer saccharinum	Silver Maple	-3	Yes	3, 4			F
Acer saccharum	Sugar Maple	3	Yes	5			BR, F
Acer x freemanii	Hybrid Maple	N/A	Yes	3, 4			BR, DS, F
Betula alleghaniensis	Yellow Birch	0	Yes	4			
Betula papyrifera	Paper Birch	2	Yes	4, 5			BR, DS
Carya cordiformis	Bitternut Hickory	0	Yes	4			F
Carya ovata	Shagbark Hickory	3	**L**	5			F
Fagus grandifolia	American Beech	3	Yes	NR			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Fraxinus americana	White Ash	3	Yes	NR			BR, DS
Fraxinus nigra	Black Ash	-4	Yes	NR			BR, DS, F
Fraxinus pennsylvanica	Green Ash	-3	Yes	NR			F
Juglans nigra	Black Walnut	3	**L**	5			BR, DS, F
Larix laricina	American Larch	-3	**U**	3, 4			BR, DS, F
Ostrya virginiana	Eastern Hop-hornbeam	4	Yes	5			
Picea glauca	White Spruce	3	**U**	5			BR, F
Pinus strobus	Eastern White Pine	3	Yes	5			F
Populus balsamifera	Balsam Poplar	-3	Yes	3, 4			BR, DS
Populus deltoides ssp. *deltoides*	Eastern Cottonwood	-1	Yes	4			BR, DS, F
Populus grandidentata	Large-toothed Aspen	3	Yes	5			BR, DS, F
Populus tremuloides	Trembling Aspen	0	Yes	4			BR,DS
Prunus serotina	Black Cherry	3	Yes	5			BR, DS, F
Quercus alba	White Oak	3	Yes	5			BR, DS, F
Quercus macrocarpa	Bur Oak	1	Yes	4, 5			BR, DS
Quercus rubra	Northern Red Oak	3	Yes	5			BR, DS, F
Salix amygdaloides	Peach-leaved Willow	-3	Yes	3,4			BR, DS,

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Salix nigra	Black Willow	-5	**L**	NR		⊘	
Thuja occidentalis	Eastern White Cedar	-3	Yes	3, 4			BR, F
Tilia americana	American Basswood	3	Yes	5			F
Tsuga canadensis	Eastern Hemlock	3	Yes	NR			
Ulmus americana	American Elm	-2	Yes	NR		⊘	
Ulmus rubra	Slippery Elm	0	Yes	NR		⊘	
Shrubs							
Acer spicatum	Mountain Maple	3	Yes	NR			
Alnus incana	Speckled Alder	-5	**U**	NR			
Amelanchier arborea	Downy Serviceberry	3	Yes	5			
Amelanchier laevis	Smooth Serviceberry	5	Yes	5			BR, DS
Aronia melanocarpa	Black Chokeberry	-3	**U**	NR		⊘	
Carpinus caroliniana	Blue-beech	0	Yes	4			
Cornus alternifolia	Alternate-leaved Dogwood	5	Yes	5			DS
Cornus canadensis	Bunchberry	0	**U**	NR			
Cornus obliqua	Pale Dogwood	-4	**U**	3,4			
Cornus racemosa	Gray Dogwood	-2	Yes	4			BR, DS, F
Cornus rugosa	Round-leaved Dogwood	5	Yes	5			
Cornus sericea	Red-osier Dogwood	-3	Yes	3,4			
Corylus cornuta	Beaked Hazelnut	5	Yes	5			F

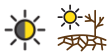
Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Crataegus punctata	Dotted Hawthorn	5	Yes	NR			
Diervilla lonicera	Northern Bush-honeysuckle	5	Yes	5			DS,F
Euonymus obovatus	Running Strawberry Bush	5	**L**	NR			
Gaultheria procumbens	Eastern Teaberry	3	Yes	NR			
Hamamelis virginiana	American Witch-hazel	3	**L**	5			DS,F
Ilex verticillata	Black Holly	-4	**U**	3			
Lonicera canadensis	Canada Fly Honeysuckle	3	Yes	5			
Mitchella repens	Partridge-berry	2	**U**	NR			
Prunus pensylvanica	Pin Cherry	4	Yes	5			BR,DS
Prunus virginiana	Choke Cherry	1	Yes	4, 5			BR,DS, F
Rhus typhina	Staghorn Sumac	5	Yes	5			BR, DS, F
Ribes americanum	Wild Black Currant	-3	Yes	3,4			
Ribes cynosbati	Prickly Gooseberry	5	Yes	5			DS, F
Ribes triste	Swamp Red Currant	-5	**U**	3			F
Rosa blanda	Smooth Rose	3	Yes	5			F
Rubus allegheniensis	Allegheny Blackberry	2	Yes	4, 5			DS, F
Rubus idaeus ssp. *strigosus*	Wild Red Raspberry	-2	Yes	4			BR, DS, F
Rubus occidentalis	Black Raspberry	5	Yes	5			
Rubus odoratus	Purple-flowering Raspberry	5	Yes	5			BR, DS

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Rubus pubescens	Dewberry	-4	Yes	NR			F
Salix bebbiana	Bebb's Willow	-4	Yes	3			DS
Salix discolor	Pussy Willow	-3	Yes	3,4			BR,DS, F
Salix eriocephala	Heart-leaved Willow	-3	Yes	3,4			BR, DS
Salix interior	Sandbar Willow	-5	Yes	3,4			BR, F
Salix lucida	Shining Willow	-4	**U**	3,4			F
Salix petiolaris	Meadow Willow	-4	**U**	3			BR, DS, F
Sambucus canadensis	Common Elderberry	-2	Yes	4			DS, F
Sambucus racemosa	Red Elderberry	2	Yes	4, 5			BR, DS, F
Spiraea alba	White Meadowsweet	-4	**U**	3			
Symphoricarpos albus ssp.. *albus*	Common Snowberry	4	Yes	5			
Taxus canadensis	Canadian Yew	3	Yes	NR			
Viburnum acerifolium	Maple-leaved Viburnum	5	Yes	5			
Viburnum lentago	Nannyberry	-1	Yes	4			BR, DS, F
Viburnum opulus ssp. *trilobum*	Highbush Cranberry	-3	Yes	NR			
Woody Vines							
Celastrus scandens	Climbing Bittersweet	3	Yes	NR			
Clematis Virginiana	Virginia Virgin's-bower	0	Yes	4			BR
Lonicera dioica	Limber Honeysuckle	3	Yes	5			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Parthenocissus quinquefolia	Virginia Creeper	3	Yes	5			
Parthenocissus viacea	Thicket Creeper	3	Yes	5			
Smilax tamnoides	Hispid Greenbrier	0	Yes	4			
Vitis riparia	Riverbank Grape	-2	Yes	4			
Ferns							
Adiantum pedatum	Northern Maidenhair Fern	1	**U**	NR			
Athyrium filix-femina ssp.. *angustum*	Northeastern Lady Fern	0	Yes	NR			
Botrypus virginianus	Rattlesnake Fern	3	**U**	NR			
Cystopteris bulbifera	Bulblet Fern	-2	Yes	NR			
Cystopteris tenuis	Mackay's Bladder Fern	5	**U**	NR			
Dendrolycopodium dendroideum	Round-branched Tree-clubmoss	0	**U**	NR			
Diphasiastrum digitatum	Southern Ground-cedar	5	**U**	NR			
Dryopteris carthusiana	Spinulose Wood Fern	-2	Yes	NR			
Dryopteris cristata	Crested Wood Fern	-5	**U**	NR			
Dryopteris intermedia	Evergreen Wood Fern	0	Yes	NR			
Dryopteris marginalis	Marginal Wood Fern	3	Yes	NR			
Equisetum arvense	Field Horsetail	0	Yes	NR			
Equisetum hyemale	Common Scouring-rush	-2	Yes	NR			
Gymnocarpium dryopteris	Common Oak Fern	0	**U**	NR			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Huperzia lucidula	Shining Firmoss	-1	**U**	NR			
Matteuccia struthiopteris	Ostrich Fern	-3	Yes	3,4			F
Onoclea sensibilis	Sensitive Fern	-3	Yes	NR			F
Osmundastrum cinnamomeum	Cinnamon Fern	-3	Yes	NR			
Polystichum acrostichoides	Christmas Fern	5	Yes	NR			
Pteridium aquilinum	Bracken Fern	3	Yes	5			
Thelypteris palustris	Marsh Fern	-4	Yes	NR			F
Herbaceous							
Acalypha rhomboidea	Common Three-seeded Mercury	3	Yes	5			
Actaea pachypoda	White Baneberry	NR	Yes				
Actaea rubra	Red Baneberry	NR	Yes				
Ageratina altissima	White Snakeroot	3	Yes	5			
Agrimonia gryposepala	Hooked Agrimony	2	Yes	4, 5			
Allium tricoccum ssp.. *tricoccum*	Wild Leek	2	Yes	NR			
Ambrosia artemisiifolia	Annual Ragweed	3	Yes	NR			
Ambrosia trifida	Great Ragweed	-1	Yes	NR			
Anaphalis margaritacea	Pearly Everlasting	5	**U**	5			
Anemone acutiloba	Sharp-lobed Hepatica	5	Yes	NR			
Anemone canadensis	Canada Anemone	-3	Yes	3,4			BR, DS, F
Anemone quinquefolia	Wood Anemone	0	**L**	NR			
Anemone virginiana ssp.. *virginiana*	Tall Anemone	5	Yes	5			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Antennaria neglecta	Field Pussytoes	5	Yes	Yes			
Apocynum androsaemifolium	Spreading Dogbane	5	Yes	4			
Apocynum cannabinum ssp.. *cannabinum*	Hemp Dogbane	0	Yes	4			
Aquilegia canadensis	Wild Columbine	1	Yes	NR			DS, F
Aralia nudicaulis	Wild Sarsaparilla	3	Yes	NR			
Arisaema triphyllum	Jack-in-the-pulpit	-2	Yes	NR			
Asarum canadense	Canada Wild-ginger	5	Yes	NR			
Asclepias incarnata	Swamp Milkweed	-5	Yes	3			BR, DS
Asclepias syriaca	Common Milkweed	5	Yes	5			
Bidens cernua	Nodding Beggarticks	-5	Yes	3			BR
Bidens frondosa	Devils Beggarticks	-3	Yes	3,4			BR
Boehmeria cylindrica	False Nettle	-5	Yes	3			
Calystegia sepium ssp. *americana*	American False Bindweed	0	Yes	4			
Cardamine concatenata	Cut-leaved Toothwort	3	Yes	NR			
Cardamine diphylla	Two-leaved Toothwort	5	Yes	NR			
Cardamine pensylvanica	Pennsylvania Bittercress	-4	**U**	NR			
Caulophyllum giganteum	Giant Blue Cohosh	5	Yes	NR			
Chelone glabra	White Turtlehead	-5	Yes	3			
Chenopodiastrum simplex	Maple-leaved Goosefoot	5	Yes	5			
Circaea alpina	Small Enchanters Nightshade	-3	**U**	NR			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Circaea canadensis	Broad-leaved Enchanters Nightshade	3	Yes	5			
Claytonia virginica	Narrow-leaved Spring Beauty	3	**L**	NR			
Clinopodium vulgare	Field Basil	5	Yes	5			
Clintonia borealis	Blue Bead-lily	-1	**U**	NR			
Coptis trifolia	Goldthread	-3	**U**	NR			
Cryptotaenia canadensis	Canada Honewort	0	Yes	4			
Dicentra canadensis	Squirrel-corn	5	**U**	NR			
Epifagus virginiana	Beechdrops	5	Yes	NR			
Epilobium ciliatum ssp. *ciliatum*	Northern Willowherb	3	Yes	5			
Erigeron annuus	Annual Fleabane	1	Yes	4, 5			
Erigeron canadensis	Canada Horseweed	1	Yes	4, 5			
Erigeron philadelphicus	Philadelphia Fleabane	-3	Yes	3,4			
Erigeron strigosus	Rough Fleabane	1	Yes	4, 5			
Erythronium americanum	Yellow Trout-lily	5	Yes	NR			
Eupatorium perfoliatum	Common Boneset	-4	Yes	3			F
Eurybia macrophylla	Large-leaved Aster	5	Yes	NR			
Euthamia graminifolia	Grass-leaved Goldenrod	-2	Yes	4			BR, DS, F
Eutrochium maculatum ssp.. *maculatum*	Spotted Joe Pye Weed	-5	Yes	3			
Fragaria vesca ssp. *americana*	American Woodland Strawberry	4	Yes	NR			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Fragaria virginiana	Wild Strawberry	1	Yes	4, 5			BR, DS
Galium asprellum	Rough Bedstraw	-5	Yes	NR			
Galium palustre	Marsh Bedstraw	-5	Yes	NR			
Galium triflorum	Three-flowered Bedstraw	2	Yes	NR			
Geranium maculatum	Spotted Geranium	3	**L**	NR			ES
Geum aleppicum	Yellow Avens	-1	Yes	4			
Geum canadense	White Avens	0	Yes	4			
Geum fragarioides	Barren Strawberry	5	Yes	NR			
Geum laciniatum	Rough Avens	-3	**L**	3,4			
Hackelia virginiana	Virginia Stickseed	1	Yes	4, 5			
Hydrocotyle americana	American Water-pennywort	-5	**U**	NR			
Hydrophyllum virginianum	Virginia Waterleaf	-2	Yes	NR			F
Impatiens capensis	Spotted Jewelweed	-3	Yes	3,4			
Lactuca canadensis	Canada Lettuce	2	Yes	NR			
Laportea canadensis	Wood Nettle	-3	Yes	NR			
Lilium michiganense	Michigan Lily	-1	**L**	4			
Lobelia inflata	Indian-tobacco	4	Yes	5			
Lobelia siphilitica	Great Blue Lobelia	-4	Yes	3			F
Lycopus americanus	American Water-horehound	-5	Yes	3			
Lycopus uniflorus	Northern Water-horehound	-5	Yes	3			
Lysimachia borealis	Northern Starflower	-1	Yes	NR			
Lysimachia ciliata	Fringed Loosestrife	-3	Yes	3,4			F

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Maianthemum canadense	Wild Lily-of-the-valley	0	Yes	NR			
Maianthemum racemosum	False Solomons-seal	3	Yes	NR			
Maianthemum stellatum	Star-flowered False Solomons-seal	1	Yes	NR			
Mentha canadensis	Canada Mint	-3	Yes	3,4			
Mimulus ringens	Square-stemmed Monkeyflower	-5	Yes	3			
Mitella diphylla	Two-leaved Mitrewort	2	Yes	NR			
Mitella nuda	Naked Mitrewort	-3	Yes	NR			
Monarda fistulosa ssp.. *fistulosa*	Wild Bergamot	3	Yes	5			BR, F
Monotropa uniflora	Indian-pipe	3	Yes	NR			
Myosotis laxa	Small Forget-me-not	-5	Yes	NR			
Nabalus albus	White Rattlesnake-root	3	Yes	NR			
Nabalus altissimus	Tall Rattlesnake-root	3	Yes	NR			
Oenothera biennis	Common Evening Primrose	3	Yes	5			
Oenothera parviflora	Small-flowered Evening Primrose	3	Yes	5			
Osmorhiza claytonii	Hairy Sweet Cicely	4	Yes	NR			
Penthorum sedoides	Ditch-stonecrop	-5	Yes	3			
Persicaria lapathifolia	Pale Smartweed	-4	Yes	3			
Phryma leptostachya	Lopseed	5	Yes	5			
Pilea pumila	Canada Clearweed	-3	Yes	NR			
Plantago rugelii	Rugels Plantain	0	Yes	NR			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Platanthera aquilonis	Tall Northern Green Orchid	-4	**U**	NR			
Podophyllum peltatum	May-apple	3	Yes	NR			F
Polygaloides paucifolia	Gay-wing Milkwort	3	**U**	NR			
Polygonatum pubescens	Hairy Solomons Seal	5	Yes	NR			
Potentilla norvegica	Norwegian Cinquefoil	0	Yes	4			
Prunella vulgaris ssp. *lanceolata*	Lance-leaved Self-heal	5	Yes	NR			
Pyrola asarifolia	Pink Pyrola	-3	**U**	NR			
Pyrola elliptica	Shinleaf	5	Yes	NR			
Ranunculus abortivus	Kidney-leaved Buttercup	-2	Yes	NR			
Ranunculus hispidus ssp.. *caricetorum*	Northern Swamp Buttercup	-5	Yes	3			
Ranunculus recurvatus	Hooked Buttercup	-3	Yes	3,4			
Rorippa palustris ssp. *hispida*	Hispid Marsh Yellowcress	-5	Yes	3			
Rudbeckia hirta	Black-eyed Susan	3	Yes	5			BR, DS
Rudbeckia laciniata	Cut-leaved Coneflower	-4	**L**	3			BR, DS,F
Sanguinaria canadensis	Bloodroot	4	Yes	NR			
Sanicula marilandica	Maryland Sanicle	3	Yes	5			
Scutellaria galericulata	Hooded Skullcap	-5	Yes	3			
Scutellaria lateriflora	Mad Dog Skullcap	-5	Yes	3			
Solanum ptychanthum	Black Nightshade	5	Yes	NR			
Solidago altissima ssp.. *altissima*	Eastern Tall Goldenrod	3	Yes	5			BR, DS, F

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Solidago caesia	Blue-stemmed Goldenrod	3	Yes	NR			
Solidago canadensis ssp.. *canadensis*	Canada Goldenrod	3	Yes	5			BR, DS,F
Solidago flexicaulis	Zigzag Goldenrod	3	Yes	NR			BR, DS
Solidago gigantea	Giant Goldenrod	-3	Yes	3,4			
Solidago juncea	Early Goldenrod	5	Yes	5			
Solidago nemoralis ssp. *nemoralis*	Gray-stemmed Goldenrod	5	Yes	5			BR, DS
Solidago rugosa ssp. *rugosa*	Northern Rough-stemmed Goldenrod	-1	**U**	4			BR, DS,F
Streptopus lanceolatus ssp.. *lanceolatus*	Eastern Rose Twisted-stalk	0	**U**	NR			
Symphyotrichum cordifolium	Heart-leaved Aster	5	Yes	NR			BR, DS
Symphyotrichum ericoides ssp.. *ericoides*	White Heath Aster	4	Yes	5			BR
Symphyotrichum lanceolatum ssp. *lanceolatum*	Panicled Aster	-3	Yes	3,4			BR, DS
Symphyotrichum lateriflorum	Calico Aster	-2	Yes	4			
Symphyotrichum novae-angliae	New England Aster	-3	Yes	3,4			BR, DS,F
Symphyotrichum puniceum	Swamp Aster	-5	Yes	3			BR, DS, F
Thalictrum dioicum	Early Meadow-rue	2	Yes	NR			
Thalictrum pubescens	Tall Meadow-rue	-2	Yes	4			BR, DS, F
Tiarella cordifolia	Heart-leaved Foam-flower	1	Yes	NR			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Trientalis borealis	Northern Starflower	-1	Yes	NR			
Trillium erectum	Red Trillium	1	Yes	NR			
Trillium grandiflorum	White Trillium	5	Yes	NR			
Urtica dioica ssp. *gracilis*	Slender Stinging Nettle	-1	Yes	4			
Uvularia grandiflora	Large-flowered Bellwort	5	Yes	NR			
Verbena hastata	Blue Vervain	-4	Yes	3			BR, DS
Verbena urticifolia	White Vervain	-1	Yes	4			BR, DS, F
Veronica americana	American Speedwell	-5	**U**	NR			
Viola affinis	Le Conte's Violet	-3	Yes	NR			
Viola blanda	Sweet White Violet	-2	**U**	NR			
Viola canadensis ssp.. *canadensis*	Canada Violet	5	Yes	NR			
Viola labradorica	Labrador Violet	-2	Yes	NR			
Viola pubescens	Yellow Violet	4	Yes	5			
Viola rostrata	Long-spurred Violet	3	**U**	NR			
Viola sororia	Woolly Blue Violet	1	Yes	4, 5			
Xanthium strumarium	Rough Cocklebur	0	Yes	4			
Grasses							
Bromus ciliatus	Fringed Brome	-3	**U**	3,4			
Bromus latiglumis	Broad-glumed Brome	-2	**L**	4			BR, DS, F
Calamagrostis canadensis ssp.. *canadensis*	Bluejoint Reedgrass	-5	Yes	3			BR, DS, F
Danthonia spicata	Poverty Oatgrass	5	Yes	5			BR, ES, DS

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Dichanthelium acuminatum	Hairy Panicgrass	N/A	Yes	4			
Elymus hystrix	Bottlebrush Grass	5	Yes	5			
Elymus riparius	Eastern Riverbank Wildrye	-3	**U**	3,4			BR, ES, DS, F
Elymus virginicus ssp.. *virginicus*	Virginia Wildrye	-2	Yes	4			BR, DS
Festuca subverticillata	Nodding Fescue	2	Yes	NR			
Glyceria striata	Fowl Mannagrass	-5	Yes	3			
Leersia oryzoides	Rice Cutgrass	-5	Yes	3			
Muhlenbergia mexicana ssp.. *mexicana*	Mexican Muhly	-3	Yes	3,4			BR, DS
Oryzopsis asperifolia	White-grained Mountain-ricegrass	5	Yes	NR			
Panicum acuminatum ssp.. *acuminatum*	Tapered Rosette Grass	0	Yes	4			
Panicum capillare	Common Panicgrass	5	Yes	5			
Phalaris arundinacea ssp.. *arundinacea*	Reed Canary Grass	-4	Yes	NR			
Poa palustris	Fowl Bluegrass	-4	Yes	3			
Schizachne purpurascens	Purple False Melic	2		NR			
Sphenopholis intermedia	Slender Wedge Grass	0	Yes	4			
Sedges							
Carex arctata	Drooping Woodland Sedge	5	Yes	5			
Carex aurea	Golden Sedge	-4	Yes	3			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Carex bebbii	Bebbs Sedge	-5	Yes	3			BR, DS, F
Carex blanda	Woodland Sedge	0	Yes	NR			
Carex communis	Fibrous-root Sedge	5	Yes	5			
Carex crinita	Fringed Sedge	-4	**U**	3			ES
Carex cristatella	Crested Sedge	-4	Yes	3			
Carex deweyana	Deweys Sedge	4	Yes	5			
Carex disperma	Two-seeded Sedge	-5	**U**	3			
Carex gracillima	Graceful Sedge	3	Yes	5			
Carex granularis	Limestone Meadow Sedge	-4	Yes	3			
Carex hystericina	Porcupine Sedge	-5	Yes	3			BR,ES, DS
Carex interior	Inland Sedge	-5	**U**	3			
Carex intumescens	Bladder Sedge	-4	Yes	3			F
Carex leptalea	Bristle-stalked Sedge	-5	**U**	3			
Carex lupulina	Hop Sedge	-5	Yes	3			F
Carex peckii	Pecks Sedge	5	Yes	NR			
Carex pedunculata	Long-stalked Sedge	5	Yes	NR			
Carex pensylvanica	Pennsylvania Sedge	5	Yes	NR			BR, ES, DS
Carex plantaginea	Plantain-leaved Sedge	5	Yes	NR			
Carex platyphylla	Broad-leaved Sedge	5	Yes	NR			
Carex pseudocyperus	Cyperus-like Sedge	-5	Yes	3			
Carex radiata	Eastern Star Sedge	5	Yes	5			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Carex retrorsa	Retrorse Sedge	-5	Yes	3			
Carex rosea	Rosy Sedge	5	Yes	NR			
Carex sparganioides	Burreed Sedge	0	Yes	4			
Carex stipata	Awl-fruited Sedge	-5	Yes	3			BR, ES
Carex vulpinoidea	Fox Sedge	-5	Yes	3			DS
Eleocharis erythropoda	Red-stemmed Spikerush	-5	Yes	3			
Eleocharis obtusa	Blunt Spikerush	-5	**U**	3			
Scirpus atrovirens	Dark-green Bulrush	-5	Yes	3			BR
Scirpus microcarpus	Red-tinged Bulrush	-5	Yes	3			
Rushes							
Juncus articulatus	Jointed Rush	-5	Yes	3			
Juncus dudleyi	Dudleys Rush	0	Yes	4			
Juncus effusus	Soft Rush	-5	Yes	3			BR, F
Juncus nodosus	Knotted Rush	-5	Yes	3			
Juncus tenuis	Path Rush	0	Yes	4			BR, DS, F
Juncus torreyi	Torreys Rush	-3	Yes	3,4			
Emergents							
Alisma triviale/subcordatum (A. plantago-aquatica)	Water-plantain species	-5	Yes	2, 3			BR, F
Calla palustris	Wild Calla	-5	**U**	NR			
Caltha palustris	Yellow Marsh Marigold	-5	Yes	NR			F
Carex lacustris	Lake Sedge	-5	Yes	2, 3			
Carex stricta	Tussock Sedge	-5	**U**	2, 3			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Cicuta bulbifera	Bulb-bearing Water-hemlock	-5	**U**	NR			
Cicuta maculata ssp.. *maculata*	Spotted Water-hemlock	-5	Yes	NR			
Glyceria grandis	Tall Mannagrass	-5	Yes	2, 3			
Iris versicolor	Harlequin Blue Flag	-5	Yes	2, 3			
Sagittaria latifolia	Broad-leaved Arrowhead	-5	Yes	2, 3			
Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	-5	Yes	2, 3			BR, DS, F
Scirpus cyperinus	Cottongrass Bulrush	-5	Yes	2, 3			BR, DS, F
Sium suave	Hemlock Water-parsnip	-5	Yes	2, 3			
Sparganium emersum	Green-fruited Burreed	-5	**U**	2, 3			
Sparganium eurycarpum	Broad-fruited Burreed	-5	Yes	2, 3			BR, DS
Typha latifolia	Broad-leaved Cattail	-5	Yes	FB*			BR
Submergent Aquatics							
Ceratophyllum demersum	Common Hornwort	-5	Yes	1			
Elodea canadensis	Broad Waterweed	-5	Yes	1			
Myriophyllum sibiricum	Siberian Water-milfoil	-5	Yes	1			
Najas flexilis	Slender Naiad	-5	Yes	1			
Potamogeton foliosus	Leafy Pondweed	-5	Yes	1			
Potamogeton pusillus ssp. *pusillus*	Small Pondweed	-5	Yes	1			
Potamogeton pusillus ssp. *tenuissimus*	Narrow-leaved Small Pondweed	-5	Yes	1			

Scientific Name	Common Name	Coefficient of Wetness	Upper/Lower Watershed	SWM Pond Planting Zone	Wildlife Use Codes	Characteristic Codes	LID Codes
Potamogeton richardsonii	Richardsons Pondweed	-5	Yes	1			
Ranunculus aquatilis	White Water Buttercup	-5	Yes	1			
Stuckenia pectinata	Sago Pondweed	-5	Yes	1			
Floating Aquatics							
Lemna minor	Lesser Duckweed	-5	Yes	1			
Nuphar ssp.iegata	Ssp.iegated Pond-lily	-5	Yes	1			
Nymphaea odorata ssp. *odorata*	Fragrant Water-lily	-5	Yes	1			
Persicaria amphibia	Water Smartweed	-5	**U**	1			
Potamogeton natans	Floating Pondweed	-5	Yes	1			
Spirodela polyrhiza	Great Duckweed	-5	**U**	1			

*Please note *Typha latifolia* (broad-leaved cattail) is only recommended within the forebay of SWM ponds only.

Species use and characteristic codes were developed using current research and expert knowledge. This list is not intended to be exhaustive and is subject to change as a result of evolving information. A general description of the criteria that went into the assessment of each species use or characteristic code is as follows:

1. **Breeding and Migratory Birds**: Adapted from *CVC Native Plant List for Breeding and Migratory Birds*. These reflect ideal species for native bird breeding, nesting and foraging. Please note that other species of trees and shrubs may also provide nesting opportunities and utilization. If vegetation removals are required for a project, the absence of species identified on the above list does not negate the need for proper nesting surveys and assessments.

2. **Pollinators:** Includes species that attract or are utilized by various types of insect pollinators (bees, butterflies, moths etc.) during various life stages. This may include food and/ or habitat for larvae or adults.

3. **Mast Species:** Mast is considered the edible reproductive part (i.e. nuts and berries) produced by woody species of plants which are consumed by wildlife. Species on the list were identified to provide mast and foraging opportunities to native wildlife.

4. **Salt Tolerance**: Identifies species that can withstand some salinity in the soil around their root system. Please note that no species within the list is considered a halophyte (ability thrive in high salinity). All species listed are susceptible to decline or mortality in highly saline conditions. As a result, urban and roadside plantings may require additional mitigation measures to limit potential impacts of salt exposure.

5. **Drought Tolerance**: Identifies species that can tolerate dry to average-dry soil conditions. This may include mid to upper slopes, exposed flat sites, roadside edges and sites with shallow or highly modified soils (e.g. mixed with non-native material such as gravel). Please note that some species identified can tolerate dry periods, but do not prefer dry soils as a long-term growing condition.

6. **Light Tolerance:** Identifies species that prefer full sun (SU) or fully shaded sites (SH). The list does not presently indicate species which are tolerant to both sun and shade or part shade conditions.

7. **LID Codes**: Species identified for various LID features were adapted directly from the CVC *Low Impact Development Stormwater Management Planning and Design Guide, Appendix B: Landscape Design Guide for LID.*

Section 2: CVC Seed Mixes

Version 2 – April 2018

In partnership with Ontario Seed Company (OSC), CVC has developed a selection of seed mixes that are appropriate for use within the Credit River watershed. These seed mixes are suitable for restoration and naturalization projects, as well as for planting plans for stormwater management facilities. For complex sites a qualified professional should review the site conditions to determine an appropriate seed mix.

These mixes have been designed to be used in a variety of soil and moisture conditions. Proponents can select any supplier to purchase their seed mixes but CVC recommends proponents select suppliers who obtain/ source seeds locally.

If specific habitat or ecological community targets are being pursued for a project (e.g. grasslands, prairie, pollinator habitat or a specific wetland community type), contact a CVC Planning Ecologist for additional input.

Application Rate
These seed mixes should be applied at a rate of 22 - 25 kg/ha (21-23 lbs/acre) or at a rate of 250g/90m2 (1/2lb/1000 sq. ft) for smaller areas. Seed mixes should be used in conjunction with an appropriate cover crop (refer to Section 3 below)

CVC 1 – Upland Mix

Generally moist to dry upper slope and tableland sites and soils or SWM pond zones 3 to 5.

Scientific Name	Common Name	%
Anemone canadensis	Canada Anemone	1
Asclepias syriaca	Common Milkweed	2
Carex granularis	Limestone Meadow Sedge	15
Elymus virginicus var. virginicus	Virginia Wildrye	40
Euthamia graminifolia	Grass-leaved Goldenrod	1
Monarda fistulosa var. fistulosa	Wild Bergamot	1
Oenothera biennis	Common Evening Primrose	25
Rudbeckia hirta	Black Eyed Susan	10
Solidago canadensis var. canadensis	Canada Goldenrod	1
Solidago juncea	Early Goldenrod	1
Solidago nemoralis ssp. nemoralis	Gray-stemmed Goldenrod	1
Symphyotrichum novae-angliae	New England Aster	1
Verbena urticifolia	White Vervain	1

CVC 2 – Lowland Mix

Generally wet to moist sites and soils including floodplain/ riparian areas or SWM pond zones 2-3.

Scientific Name	Common Name	%
Carex vulpinoidea	Fox Sedge	25
Elymus virginicus var. virginicus	Virginia Wildrye	35
Juncus tenuis	Path Rush	5
Poa palustris	Fowl Bluegrass	25
Scirpus atrovirens	Dark-green Bulrush	5
Verbena hastata	Blue Vervain	5

CVC 3 – Lowland Restoration Mix

Wet to moist sites and soils including riparian areas where restoration or enhancement of an existing natural community is required. Typically not required for SWM ponds.

Scientific Name	Common Name	%
Anemone canadensis	Canada Anemone	1
Bidens cernua	Nodding Beggarticks	1
Carex vulpinoidea	Fox Sedge	25
Elymus virginicus var. virginicus	Virginia Wildrye	25
Eutrochium maculatum var. maculatum	Spotted Joe Pye Weed	1
Juncus effusus ssp. solutus	Soft Rush	5
Juncus tenuis	Path Rush	5
Poa palustris	Fowl Bluegrass	25
Scirpus atrovirens	Dark-green Bulrush	5
Symphyotrichum novae-angliae	New England Aster	1
Symphyotrichum puniceum	Swamp Aster	1
Verbena hastata	Blue Vervain	5

*% of seed mix refers to % by weight

Section 3: CVC Cover Crop Selection Guideline

Version 1.0 – April 2018

The following cover crop species recommendations were developed in consultation with Ontario Seed Company (OSC), review of relevant scientific information and expert knowledge. The purpose of this guideline is to provide direction on the selection of cover crop species for use in development and restoration projects within the Credit River watershed. Cover crop application is an important aspect of development and restoration projects, providing multiple ecological functions including soil stabilization and erosion prevention as well as soil compaction reduction. When applied with an appropriate native seed mix, the recommended cover crops may also act as a nurse crop; suppressing weed species and providing nutrient supply to the soil for improved native seed mix establishment and growth. Alternative non-invasive cover crop species that are not in the guideline may be suitable to meet project specific goals. Further consultation with CVC, prior to submission of restoration plans, is recommended in such cases.

Exposed sites should be stabilized as soon after completion of land disturbance as possible. Please refer to applicable municipal guidelines for stabilization requirements of exposed sites. Please note that cover crop and native seed mix application is not recommended in mid-summer (July-August) unless appropriate maintenance (i.e. regular watering in dry conditions) can be provided. Interim erosion protection may be required for some projects.

Site preparation and assessment is also recommended prior to application. Ensuring that soils are of sufficient quality and depth (i.e. a healthy topsoil layer is present, top and sub soils are not heavily compacted) to receive cover crop and seed mix application is imperative for supporting growth and establishment. Management of cover crop plantings is also integral to the success of naturalization, restoration and compensation efforts. Improper management can result in increased mortality of planted shrub, herbaceous and tree species which may increase project costs as a result of stock replacement or reseeding efforts. Management recommendations are provided in the cover crop selection tool below. Please refer to the Cover Crop Selection Tool below to determine which cover crop species or species mix is suitable for project specific requirements and goals. The list below is provided to ensure accurate sourcing of cover crop species based on scientific and common names:

Common Name	Scientific Name
Oats	*Avena sativa*
Barley	*Hordeum vulgare*
Canada Wild Rye	*Elymus canadensis*
Winter Wheat	*Triticum aestivum*

CVC Cover Crop Selection Tool