North Maple Regional Park Master Plan

Volume 6: Ecological Framework Plan

2026

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Table of Contents

1 Introduction 3
2 Habitat 4
3 Restoration 6
4 Design Guidelines 19
5 Appendix 1 – Planting Zones Map 27
6 Appendix 2 – Ecological Framework 28
7 Appendix 3 – Target Wildlife Habitat Restoration and Preservation 29
8 Appendix 4 – Complete Planting Zone List with Descriptions 29

1 Introduction

This technical volume is part of the comprehensive planning documentation developed for the North Maple Regional Park (NMRP) Master Plan, an initiative undertaken by the City of Vaughan to transform 364 hectares (900 acres) of former landfills and open space into a nationally significant signature park and legacy project for future generations. The Master Plan establishes a framework for the park's ongoing and long-term development, programming, and management under three guiding principles: Restore, Engage, and Play.

The Master Plan suite consists of one public-facing master plan document and seven supporting technical volumes that provide detailed engineering, environmental, cultural, and operational guidance. This technical volume is one of eight discipline-specific documents that provide the technical foundation and implementation details necessary to realize the master plan vision.

The park represents an excellent opportunity to preserve, enhance, and expand wildlife habitat in connection with the Maple Nature Reserve, East Don River Watershed, and Oak Ridges Moraine. Restoring and enhancing wildlife habitat is in-line with the guiding principles of this Master Plan, which aim to conserve biodiversity and create a vision rooted in sustainability, ecological restoration, and climate resilience.

The ecological restoration approach for the park aims to assist recovery of degraded areas, conserve biodiversity, and create new habitats, all in-balance with the planned human recreational uses of the site. Through ecological visioning, the Master Plan has defined habitat zones to be utilized for future ecological restoration planning. It has also provided ecological design guidelines as a framework for translating the habitat vision and restoration objectives of the park into on-the-ground implementation.

2 Habitat

The park represents an excellent opportunity to preserve, enhance, and expand wildlife habitat in connection with the Maple Nature Reserve, East Don River Watershed, and Oak Ridges Moraine. Restoring and enhancing wildlife habitat is in-line with the guiding principles of this Master Plan which aim to conserve biodiversity and create a vision rooted in sustainability, ecological restoration, and climate resilience. The opportunity to preserve, enhance, and diversify wildlife habitat at the park is significant due to the site's extensive land area and the diversity of natural resources it already supports. The habitat value of the park will increase exponentially wherever connections can be made to link the habitat onsite with the larger natural heritage system in the surrounding landscape. The Green Corridors concept for the park maximizes the opportunity to improve wildlife habitats both at the site and through landscape-scale connections.

The value of conserving, enhancing, and restoring wildlife habitats can be explored by understanding what species the plan aims to support and why. Target wildlife species groups that have been explored for the park include:

Pollinators & Insects
Pollinators such as butterflies, moths, bees, and other insects are prized by nature-lovers and are critical to the functioning of ecological systems and agricultural food systems. Many species populations are currently threatened or downward trending so opportunities to support pollinator populations are extremely valuable at this moment in time. Insects are critical to the functioning of food chains as they are a food source for many other larger wildlife species. Habitat restoration and native gardens both present opportunities to support pollinators through the addition of specific plant species that pollinators utilize for nectar, pollen, larval food and shelter. There is increasing public knowledge and interest in pollinator protection and pollinator gardening, so inclusion of these elements into the Master Plan also represents an opportunity for education and community involvement.

Birds
Birds are an important part of the natural systems of Southern Ontario. The sound of bird song is a special element to the human experience of being in nature. Bird populations are often observed as indicators of the overall health of an ecosystem and provide services such as seed dispersal and insect control. The benefits of habitat restoration efforts can be optimized through consideration of the plant species and habitat structures that support birds. The forested portions of the park already offer habitat to forest-dwelling bird species. Shrub thickets along forest edges can be extremely beneficial to birds as a place of protective shelter and are doubly valuable when they include berry-producing shrubs that double as a food source. The open canopy fields represent an opportunity to enhance habitat to better support open country birds, including those with declining populations known to exist in the nearby landscape. Bobolink and Eastern Meadowlark for example, each have their own specific habitat preferences, relying on certain vegetation species, vegetation height, and ratio of grasses-to-wildflowers. Other bird species such as hummingbirds may be supported by strategically incorporating their preferred food source plants (e.g. Cardinal Flower, Hairy Beardtongue, Wild Bergamot etc). Migratory birds may be supported through the provision of available food, water, and protective vegetation cover that they may access during stopovers.

Bats
Southern Ontario is home to 8 species of bats, many of which have declining populations and are considered Species at Risk. Preserving and enhancing habitat to support bats is a valuable contribution towards biodiversity conservation efforts in the province. Bats play an integral role in food chains and the functioning of ecological systems. They consume large numbers of insects, helping keep insect populations in balance. Bats also play a role in plant pollination and seed dispersal. The forests at the park are home to mature trees with the potential to function as bat maternity roosts. Additional efforts to support bats are already underway; bat boxes have been installed along the forest edge to offer additional roosting accommodations.

Reptiles & Amphibians
Reptiles and amphibians such as snakes, turtles, frogs, toads and salamanders are an important part of the biodiversity of Southern Ontario. Their ideal habitats typically consist of a combination of aquatic, wetland,

and upland vegetation communities. These species act as both predator and prey within their specific niche habitats. Reptiles and amphibians are particularly sensitive to human disturbance, pollutants, and climate change so their ability to survive and thrive into the future may depend on intentional efforts to preserve and buffer existing habitat and create / enhance new habitat. The ponds and wetlands at the park offer specialized habitat for turtle nesting and amphibian breeding. Several Species at Risk, including Snapping Turtle and Eastern Ribbon Snake have been recorded utilizing habitats in and around the park.

Mammals & Other Wildlife

Restoration and enhancement of wildlife habitats at the park will not only benefit the target species and species-groups described above, but the benefits will extend to a much wider variety of wildlife. Other species that are likely to benefit, for example may include deer, rabbit, porcupine, raccoon, mice, and voles. By enhancing habitat with an intention to set them on a trajectory towards self-sustaining natural systems, and creating connections with other natural features in the surrounding landscape, it is likely that future wildlife monitoring will reveal the presence of many species beyond those specifically targeted in restoration plans.

3 Restoration

The Society for Ecological Restoration (SER), defines ecological restoration as '*the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed*'. The restoration approach for the park, observes this and aims to optimize every opportunity to assist the recovery of degraded portions of the site. The restoration approach also seeks opportunities to go above-and-beyond, not only assisting recovery of degraded areas, but preserving, linking, and enhancing ecological features, protecting ecological functions, conserving biodiversity, and creating new habitats, all in-balance with the planned human recreational uses of the site.

In general, restoration planning for this site should:

- Honour the restoration and Species at Risk (SAR) compensation work that has already been completed in and around the pond
- Connect natural features both onsite and within the larger landscape wherever possible
- Incorporate vegetated buffers between human land uses and natural features (especially sensitive water features and wetlands)
- Prioritize native species plantings to bolster biodiversity, ecosystem resilience, and wildlife habitat values,
- Include habitat features or structures where appropriate, such as basking logs, bird-perch standing snags, or bat boxes.
- Incorporate invasive species removal/ management,
- Consider integration within the larger site concept and expected future land uses (e.g. integration of plantings with existing and future trails)
- Distinguish between restoration planting areas versus formal planting areas…
    - *Restoration planting areas* would have specific planting lists, habitat structures, and recommended maintenance regimes intended to emulate reference vegetation community types, whereas
    - *Formal planting areas* such as gardens, would include different planting lists, habitat structures, and recommended maintenance regimes intended to create a more formal aesthetic, while offering a different type of habitat value.
        - Consider logistics of site preparation, planting, and maintenance (short and long-term) to ensure success of restoration efforts (e.g. long-term maintenance of open canopy habitats may require regular disturbance such as controlled burns, grazing, or mowing)

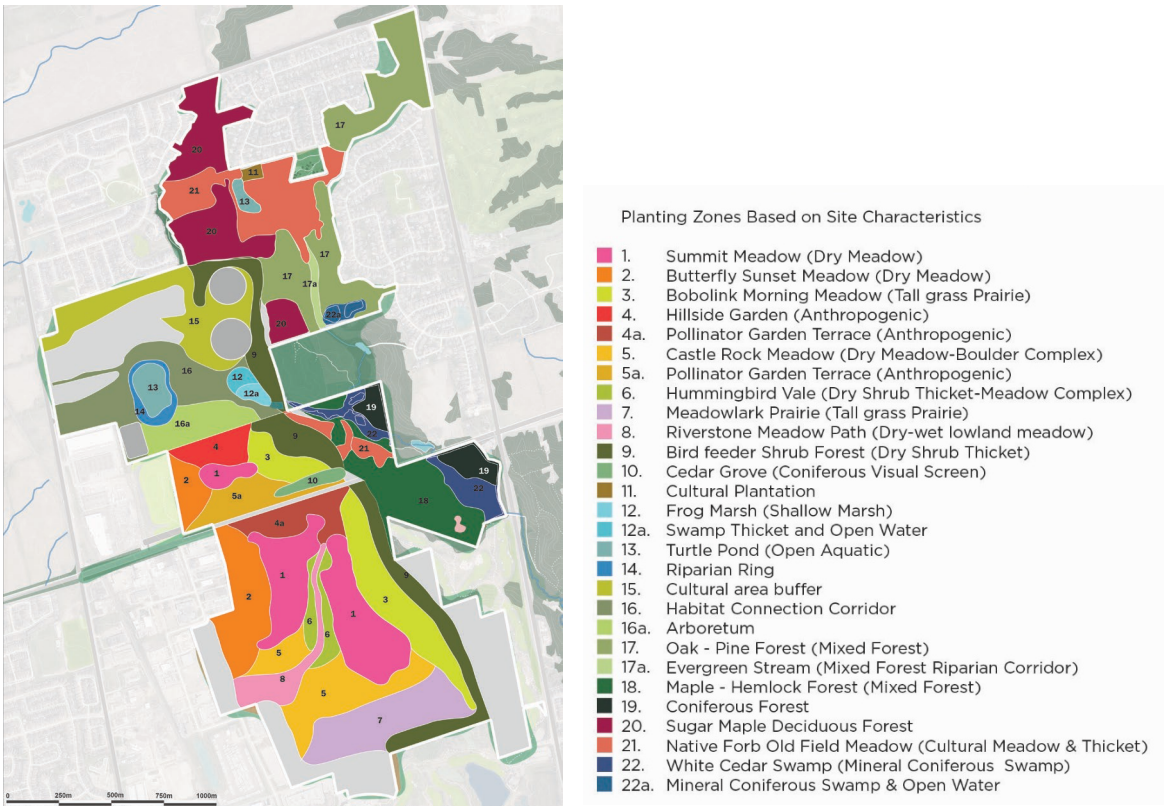
Ecological Features & Corridors

The Green Corridors concept for the park maximizes the opportunity to improve wildlife habitats both at the site and through landscape-scale connections. Habitat values will be preserved and enhanced with efforts to increase buffers around the existing natural features. The pond and wetland in the north end of the site are sensitive habitat features that need to be carefully integrated into the larger plan to protect their functions / habitat values and the recognize the restoration & SAR compensation work already completed. The Green Corridors concept achieves this, increasing buffers around these features and incorporating them into a larger east-west corridor that will link the two features together and connect them to offsite habitats. Clean water features are particularly valuable to wildlife, and these will support a myriad of species residing in and migrating through the surrounding landscape. To the west, the larger habitat corridor is more disturbed due to the noise and activity associated with Keele St. Although roads can deter the movement of wildlife species, they do not deter all wildlife. Birds and insects for example may still utilize a habitat corridor broken by a road such as Keele St. The westward corridor is still likely to facilitate wildlife movement to the larger TRCA Natural Heritage System via a cemetery and railway line on the west side of Keele St.

Ecological Visioning

An ecological visioning exercise has been undertaken to imagine and define specific opportunities that exist to conserve and restore wildlife habitats at the site (refer to Planting Zones Map). In the wild, habitats generally consist of a plant assemblage (a.k.a vegetation community) as the basic framework. Vegetation communities are generally defined by the climates in which they reside, soil texture and moisture, and the diversity of plant species that grow there. Each unique vegetation community provides a niche that supports various wildlife species such as fish, mammals, birds, bats, butterflies, bees, reptiles, amphibians and more. The ecological visioning exercise involved defining distinct habitat zones within which specific opportunities could be considered (e.g. target vegetation community types, target wildlife species groups, potential natural linkages/ corridors. The Plan Drawing: Planting Zones Map illustrates the zone types. Multiple options have been considered for each habitat zone, aiming for the best ecological outcomes that are logistically possible to achieve. Development of the habitat vision options considered existing ecological conditions, policy constraints, practical constraints, existing conditions, and anticipated future land uses. Broader opportunities related to ecological connectivity, green/blue infrastructure, stormwater management, ecological restoration, and climate change resilience were also considered as part of the ecological framework for the site (refer to Appendix 2 – Ecological Framework).One major consideration, for example, was the practical constraint posed by the shallow landfill cap; target vegetation community types over the landfill cap should be limited primarily to open canopy habitat types, avoiding deep-rooted plant species with the potential to breach the landfill cap.

The habitat zones have been numbered for discussion purposes; see the Plan Drawing: Planting Zones Map below. For a high-resolution version of the Planting Zones Map, refer to Appendix 1. Each zone may be considered individually for future restoration planning purposes in terms of restoration and management goals, target vegetation community types and wildlife species.



Planting Zones Map. The property has been conceptually divided into planting zones based on an in-depth understanding of site conditions. The Planting Zones Map is intended to be used as the guiding framework for future ecological restoration planning.

Target Vegetation Community Types

The ecological visioning exercise yielded a short list of target vegetation community types that may be appropriate within the various habitat zones at the park. Targeted vegetation community types considered to date are primarily associated with the are described in the following tables.

Tallgrass Prairie & Dry Native Meadow





1. Summit Meadow



2. Butterfly Sunset Meadow



3. Bobolink Morning Meadow



4. Garden Maze

Potential Habitat Zone Locations: 1) Summit Meadow, 2) Butterfly Sunset Meadow, 3) Bobolink Morning Meadow, 4) Tobogganing Hill/Garden Maze, 4a) Pollinator Garden Terrace, 5) Castle Rock Meadow, 5a) Pollinator Garden Terrace, 7) Meadowlark Prairie

Southern Ontario landscapes exhibit a range of vegetation community types in areas where tree and shrub cover is absent: sand barrens and tallgrass prairie are at the dry end of the moisture spectrum with specialized (and often rare) flora and fauna; native meadow exists in moderately moist areas with a combination of grasses and forbs; transitioning to marsh communities where substrates are wetter and wetland indicator species such as sedges begin to replace upland grasses and forbs. There are also old field cultural meadows with a history of disturbance to the soil profile, and where non-native opportunistic grass and herbaceous species have become dominant; these areas have lower biodiversity and relatively less value for wildlife habitat.

The park, particularly the lands over the decommissioned landfill, represent an excellent opportunity for restoration of tallgrass prairie and native meadow ecosystems because:

- this approach contributes to larger-scale ecological restoration efforts already ongoing in Southern Ontario,
- the existing conditions in the south end of the site are suitable to support these vegetation community types,
- historically, this area of the province supported tallgrass prairie and native meadow/ grassland systems,
- these lands will need to remain free from woody vegetation to maintain the integrity of the landfill cap,
- Added benefits include ***aesthetic and habitat value*** - providing a multi-season show of colourful wildflowers, supporting a variety of birds, bats, butterflies, moths, small mammals, bees and other insects, and maintaining a shorter vegetation profile will capitalize on viewsheds across the vast hilly landscape in the south end of the site, keeping sightlines open where park visitors can enjoy the view or watch the sunset/sunrise.

Tallgrass prairie is a globally rare vegetation community type dominated by specialized tall grass species such as Big Bluestem (Andropogon gerardii), Little Bluestem (*Schizachyrium scoparium*), and Switch Grass (*Panicum virgatum*), intermixed with herbaceous species like Blazing Star (*Liatris* spp.), Butterfly Milkweed (*Asclepias tuberosa*), and Round-head Bush-clover (*Lespedeza capitata*). With a unique vegetation assemblage, naturally-occurring Tallgrass Prairie communities also host a unique community of wildlife species such as American Badger (*Taxidea taxus*), Mottled Duskywing (*Erynnis martialis*), and Eastern Foxsnake (*Elaphe vulpina gloydi*).

Native meadows are upland open-canopy vegetation community types dominated by herbaceous wildflowers and grasses. Species may include, for example, Milkweeds (*Asclepias* spp.), Asters (*Symphyotrichum* spp.), Goldenrods (*Solidago* spp.), Indian Grass (*Sorghastrum nutans*), Switch Grass (*Panicum virgatum*), Wild

Bergamot (*Monarda fistulosa*), Black-eyed Susan (*Rudbeckia hirta*), Hairy Beardtongue (*Penstemon hirsutus*), and Wild Rye (*Elymus* spp.). Meadows provide key nesting, migratory stopover, and overwintering habitats, as well as food sources for a variety of birds, butterflies, moths, and other pollinators. Native meadows also support a variety of Species at Risk such as Monarch (*Danaus plexippus*), Eastern Meadowlark (*Sturnella magna*), and Bobolink (*Dolichonyx oryzivorus*) that are known to reside in and around the park.

Restoration efforts targeting tallgrass prairie, native meadows, or a complex of the two, should select species for planting with consideration for microhabitat conditions (e.g. Canada Wild Rye (*Elymus canadensis*) will thrive in mesic substrates, whereas Sand Dropseed (*Sporobolus cryptandrus*) will thrive in areas with the driest soil conditions). Ratio of grass species: forbs should be considered with respect to supporting target wildlife species (e.g. Eastern Meadowlark and Bobolink prefer specific ratios of grasses:forbs as detailed further in Appendix 3 & 4). Natural occurrences of tallgrass prairie and native meadows are dependent on regular disturbance cycles and long-term maintenance will be a key part of restoration planning (e.g. regular burning, mowing, or goat grazing to mimic natural disturbance cycles).

Dry Meadow – Boulder Complex





5. Castle Rock



6. Hummingbird Vale



5. Castle Rock



6. Hummingbird Vale

Potential Habitat Zone Locations: 5) Castle Rock Meadow, 6) Hummingbird Vale

This target vegetation community was conceived specifically for habitat zones 5 and/or 6, although it could potentially be applied elsewhere. These are sunny valley-like slopes. This area could be planted with native meadow forbs and grasses, gearing species lists towards supporting butterflies, moths and other pollinators. The introduction of large boulders into the area would both invite human free-play in the area, and act as habitat structures for wildlife (e.g. butterflies utilize flat sunny rocks for basking, and small mammals or snakes may utilize them for shelter etc). If desired, the strategic addition of deadfall logs/branches may provide additional cover and nesting locations for bees. Anticipating human presence in the area, species lists should consider low-growing ground cover plants that can withstand some level of trampling (e.g. Silverweed (*Argentina anserina*), Wild Strawberry (*Fragaria virginiana*))

Dry – Moist Tall Shrub Thicket & Deciduous Forest





3. Bobolink Morning Meadow



9. Bird Feeder Shrub Forest



10 Cedar Grove



9. Bird Feeder Shrub Forest

Potential Habitat Zone Locations: 3) Bobolink Morning Meadow, 9) Bird Feeder Shrub Forest, 10) Cedar Grove

This habitat zone focuses on the "mantel" or the transition area between the forest to be preserved and the open canopy areas of the park site. The distinct wildlife habitat provided in the open areas and in the forest can be complimented through strategic restoration of this transition area which connects them.

Shrub Thicket: The forest edge can be fortified by creating a restoration plan that includes transitional native shrub cover in this area with a goal to provide strategic cover and food sources for birds and other wildlife. Suggested vegetation composition would specifically include low and mid-height thicket-forming, berry-producing species. Ground layer herbaceous species should be selected for their ability to thrive in the shady forest-edge conditions beneath the shrub layer. There are existing trails along the forest edge; shrub plantings may flank the trail, or if desired a trail edge planting of shorter species may be desirable (see "Special Plantings" section below). In certain areas there may be a desire to limit human access into the forest. Thorny species and/or densely-growing shrubs may be specifically selected in such areas to help limit access. Suggested species examples for these areas include: Pennsylvania Sedge (*Carex pensylvanica*), Purple False Melic (*Schizachne purpurascens*), Anemone (*Anemone* spp.), Wild Strawberry (*Fragaria virginiana*), Bracken Fern (*Pteridium aquilinum*), Canada Violet (*Viola canadensis*), Serviceberry (*Amelanchier* spp.), Dogwood (*Cornus* pp.), Nannyberry (*Viburnum lentago*), and Hawthorns (*Crataegus* sp.).

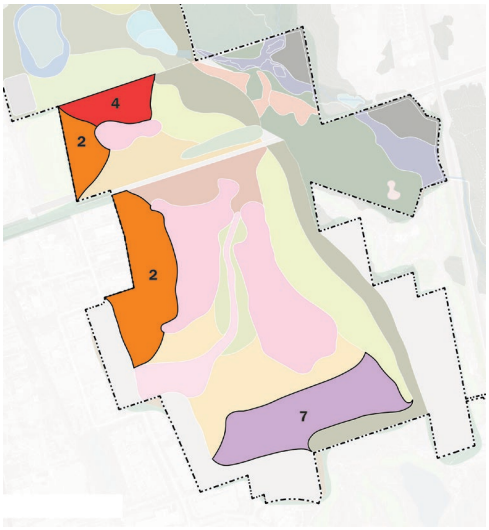
Deciduous Forest: the existing forest habitat could be expanded through restoration of deciduous forest communities in the adjacent areas. The plant species composition of the adjacent forest would provide a reference for species selections and may also serve as a seed source for future restoration plantings. Deciduous forest may not be an appropriate vegetation community target in some areas, especially in the south end of the site as most tree species would develop roots deep enough to compromise the integrity of the landfill cap, however if this target community was desired there may be some options to pursue it, such as adding additional soil depth prior to planting, or limiting species selections to only very shallow-rooted species such as Red Maple (*Acer rubrum*), and White Birch (*Betula papyrifera*)

Restoration planning for these areas should:

- be complimentary to the species composition of the adjacent forest,
- avoid the use of horticultural / non-native species, especially aggressive or invasive species with the potential to spread into the forest and alter species diversity,

- be completed with specific consideration for the trail plan including trails that parallel the forest edge and directed access points where trails enter the forest,
- take care with species selection on lands over the landfill cap; focus on shallow-rooted shrub species, check soil depths over the cap and add soil depth if necessary to accommodate roots.
- Consider incorporation of habitat structure (e.g. bat boxes, woody debris piles etc)

Dry – Moist Low Shrub Thicket





2. Butterfly Sunset Meadow



7. Meadowlark Prairie



4. Tobogganing Hill Garden

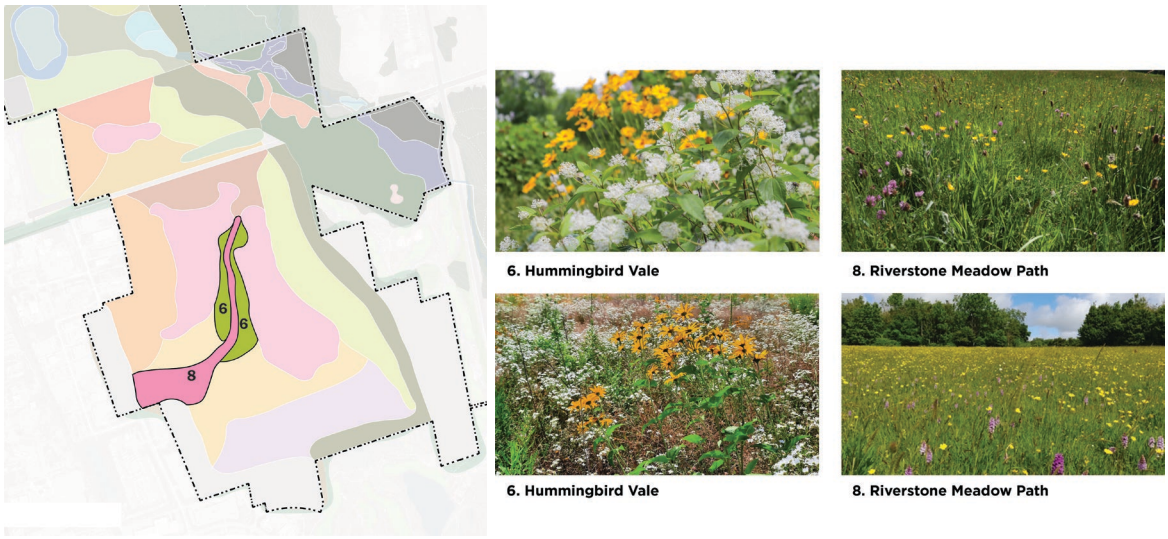


7. Meadowlark Prairie

Potential Habitat Zone Locations: 2) Butterfly Sunset Meadow, 4) Tobogganing Hill Garden, 7) Meadowlark Prairie

A target vegetation community dominated by low shrub thickets may be utilized in areas where there is a desire to limit human access. Moderate to steeply sloped areas that may pose safety risks or experience erosion issues, for example may be candidates for this target community. Establishing dense and/or thorny shrub cover below knee height will help to deter human encroachment and stabilize slopes. Species selections should include low-growing shallow-rooted species that will not affect the landfill cap nor block desirable viewpoints. Low shrub thickets provide cover and food for small mammals, rabbits, and birds and add diversity to the habitat types across the landscape. Species examples may include Raspberries & Blackberries (*Rubus* spp.), Currants & Gooseberries (*Ribes* spp.), Bearberry (*Arctostaphylos uva-ursi*), Fragrant Sumac (*Rhus aromatica*), and Smooth Rose (*Rosa blanda*).

Dry Shrub Thicket – Meadow Complex



Potential Habitat Zone Locations: 6) Hummingbird Vale, 8) Riverstone Meadow Path

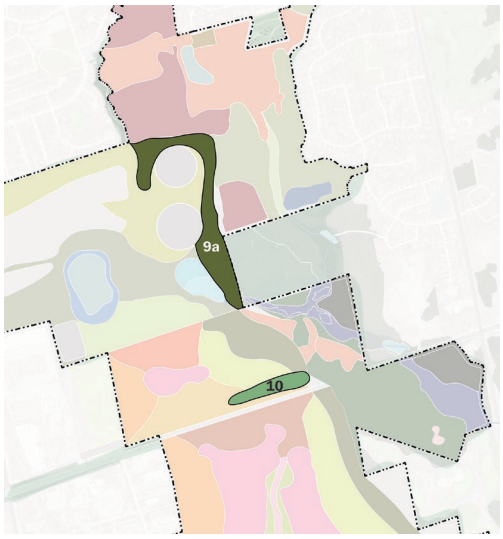
The dry shrub thicket – meadow complex was conceived specifically with habitat zones 6 and 8 in mind, although this concept may be transferrable to other areas of the site. Other concepts for habitat zones 6 & 8 invite human presence into the community, whereas the intention of this target community would be more habitat-focused with limited human access. A guard rail with educational signage may be desired at the top of slope to restrict the creation of trails down the valley slopes. A design that restricts trails down the slope of habitat zone 6 could allow for restoration of higher quality habitats, and protect the slopes against erosion pressures. The concept would include nodal restoration plantings interspersed with clusters of shrubs, graminoids and forbs. Species selections should consider specialized wildlife support e.g. Hummingbirds may be specifically supported with such species as Columbine (*Aquilegia canadensis*), Cardinal Flower (*Lobelia cardinalis*), Wild Bergamot (*Monarda fistulosa*), Hairy Beardtongue (*Penstemon hirsutus*), Cup Plant (*Silphium perfoliatum*), and New Jersey Tea (*Ceanothus americanus*)).

Dry- Wet Lowland Meadow

Potential Habitat Zone Locations: 8) Riverstone Meadow Path

Habitat zone 8 is a low-lying and linear swath of land flanked by the slopes of habitat zones 5 & 6. The geomorphology of this area is akin to the base of a river valley. Although no river runs through this 'valley' area, it's topographic position in the landscape makes it a natural catchment for surface water runoff. An existing recreational trail winds through this area. Ecological enhancements could be added to improve wildlife habitat and simultaneously improve aesthetics. Any rills or areas where surface water pools after storm events could be targeted for installation of large flat river stone. This would help to protect against erosion, stabilizing substrates and the trail surface. Species planting lists for this area should consider the need to withstand fluctuating wet/dry conditions and the presence of the landfill cap below surface. A native meadow is suggested for the target community type to include grasses, sedges, wildflowers and potentially some low shallow-rooted shrub species. Species may include, for example, Dwarf Red Raspberry (*Rubus pubescens*), Canada Anemone (*Anemonastrum canadense*), Graceful Sedge (*Carex gracillima*), and Cardinal Flower (*Lobelia cardinalis*).

Mixed & Coniferous Forest





9. Bird Feeder Shrub Forest



10 Cedar Grove



9. Bird Feeder Shrub Forest



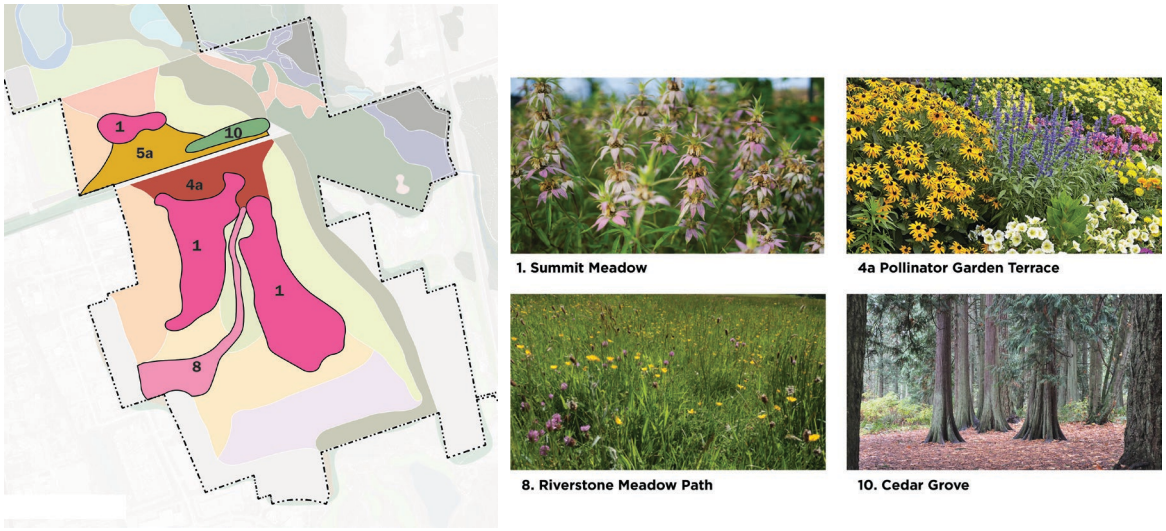
10 Cedar Grove

Potential Habitat Zone Locations: 9a) Bird Feeder Shrub Forest, 10) Cedar Grove

Areas of mixed or coniferous forest could potentially be targeted in future restoration planning. Species such as Sugar Maple (*Acer saccharum*) and White Pine (*Pinus strobus*) for example may be appropriate for a mixed forest target community. Coniferous forest dominated by Eastern White Cedar (*Thuja occidentalis*) for example, provide excellent shelter habitat and are a food source for a variety of wildlife species. Some of the benefits of incorporating these vegetation community types as targets within the park restoration plan include:

- coniferous tree species can function as a visual & noise barrier, which may be desirable in strategic areas (e.g. along Teston Road, or between recreational areas and habitat features.),
- Added diversity of habitat types
    - Offers specific habitat benefits such as winter cover and nesting areas

Native Gardens



Potential Habitat Zone Locations: 1) Summit Meadow, 4a) Pollinator Garden Terrace, 5a) Pollinator Garden Terrace, 8) Riverstone Meadow Path, 10) Cedar Grove

Formal gardens may be integrated in and around restoration areas and recreational areas. Terraced gardens may be appropriate on slopes. Other themed gardens e.g. pollinator gardens, sensory gardens etc, may add points of interest for park visitors and bolster wildlife habitat values. . Native gardens may be used to showcase the beauty of plant species that characterize local habitats, provide educational opportunities, seed-sharing opportunities for gardeners, and potential opportunities for community involvement (ie. local garden club may want to volunteer to be caretakers of the garden).

Considerations for formal gardens:

- Plant species selections should be focused on species native to southern Ontario to support local wildlife and compliment the overall restoration goals for the site
- Integrate passive recreational elements within the garden plan e.g. trails, benches
- Integrate habitat structures into the garden plan where appropriate e.g. bird perches, bird baths
- Gardens may be desired to provide a more maintained aesthetic in higher-visibility areas of the park.

Special Planting Areas

Special planting areas may be defined as part of the restoration planning process. These may include specific areas and restoration elements within any given habitat zone. The table below provides suggestions regarding special planting areas. Trails, for example, are expected to meander throughout the property extending through various habitat zones. Trail borders will require special planting plans as human disturbance (trampling) is expected to be more intense and the park may have specific maintenance regimes in these areas. Other examples of special planting areas include elements such as hedgerows or small tree/shrub planting nodes to be incorporated in and around recreational facilities. Examples of special planting area options that have been considered include:

Special Planting Type / Area	Options
Trail Edges	Trailside mow strip: Approx 0.5m - 1m wide mow strip of relatively short native graminoids that meanders along the trail edges throughout the open-canopy zones. Full Sun Trailside low-mow / no-mow strip: Approx 0.5m - 1m strip of relatively short native graminoids and groundcover that stay short and don't require regular mowing. This could be applied along the trail edges throughout the open-canopy zones.

Special Planting Type / Area	Options
	Visual Screen Trailside strip: Add a woody trailside lining / hedgerow as a visual screening option. This may for example be applied along boundaries of the site to block views and sounds from industrial land uses on adjacent properties. This may be applied specifically along trail edges, or elsewhere if appropriate. The treatment is not appropriate for lands over the landfill cap. Planting plans may include thorny or dense thicket-forming shrubs where there is a desire to block human access from certain areas.
Wetland Enhancement Areas	Wetland enhancement areas may be appropriate in specific areas in and around the existing pond and wetland; see habitat zones 12, 12a, 13, 14, or 16 on the Plan Drawing. Any future wetland enhancements must take into consideration the wetland restoration and SAR compensation efforts previously completed by TRCA. If wetland plantings are installed in future, species selections should: • be native species suited to the existing soil texture and hydrological conditions • compliment the existing species assemblage by adding diversity consider wildlife habitat functions e.g. some turtle species require bare patches of sandy soils for nesting in upland areas surrounding the aquatic and wetland habitats in which they reside; turtle nesting areas should not be planted.
Opportunistic Plantings Within Recreational Matrix	See habitat zone 15 on the Plan Drawing. Hedgerows: Hedgerows may be incorporated in various locations throughout Zone 15 to complement recreational areas of the park. Hedgerows need not be single-species, and habitat values are increased when a diversity of species are planted. Species selections for example, might include a combination such as Eastern White Cedar (*Thuja occidentalis*)), American Basswood (*Tilia americana*), Chokecherry (*Prunus virginiana*), and Gray Dogwood (*Cornus racemosa*). Planting plans may include thorny or dense thicket-forming shrubs such as Hawthorns (*Crataegus* sp.) or Prickly Ash (*Zanthoxylum americanum*) where there is a desire to block human access from certain areas. Tree & Shrub Planting Nodes: Small tree and shrub planting nodes may be incorporated in various locations throughout Zone 15 to complement recreational areas of the park. These may serve various functions e.g. providing a strategic spot of shade over a park bench. Gardens: Zone 15 is an area expected to have high human usage for the various recreational facilities; formal gardens may be incorporated into this area wherever desired.
Habitat Connection Corridor	See habitat zone 16 on the Plan Drawing. Hedgerows: Hedgerows are appropriate to incorporate in various locations throughout Zone 16 and will function as an important part of the east-west habitat corridor. Hedgerows need not be single-species, and habitat values are increased when a diversity of species are planted. Species selections may include a variety of native tree and shrub species. Planting plans may include thorny or dense thicket-forming shrubs such as Hawthorns (*Crataegus* sp.) or Prickly Ash (*Zanthoxylum americanum*) where there is a desire to block human access from certain areas. Tree & Shrub Planting Nodes: Small tree and shrub planting nodes may be incorporated in various locations throughout Zone 15 to complement recreational areas of the park. These may assist with habitat connections along the east-west corridor and serve other various functions e.g. providing a strategic spot of shade over a park bench.

4 Design Guidelines

The ecological design guidelines provide the framework for translating the habitat vision and restoration objectives of the park into on-the-ground implementation. These guidelines establish criteria for plant material sourcing, planting methods, densities, and maintenance to ensure restoration efforts are ecologically sound, resilient, and feasible to implement. They are intended to guide decision-making during design development, tendering, and construction, while providing flexibility for adaptive management over time. The guidelines also ensure alignment with restoration best practices, the constraints of the landfill cap, and the long-term ecological vision for the park.

Species Selection

For detailed guidelines, see section 4.11.4, *Target Vegetation Community Types*. The site has been divided into habitat zones (see Planting Zone List and Planting Zones Map, Appendix 1 & 4) based on distinct conditions and associated target vegetation communities. These communities provide the framework for selecting appropriate species for each zone. In some areas, where conditions create novel ecosystems, species selection may need to be tailored to the most suitable fit. Species selection also considers target wildlife habitat for species such as bees and other pollinators, bats, birds and mammals. For detailed guidelines, see *Appendix 3* – Target Wildlife Habitat Restoration and Preservation.

Diversity Guidelines for Species Selection

In addition to the considerations above for species selection, the **10-20-30 rule** can be applied more broadly to all planting types to maintain diversity and reduce vulnerability to pests, disease, or other stressors:

- No more than 10% of any one species
- No more than 20% of any genus
- No more than 30% of any family

This approach, widely used in arboriculture and ecological restoration, helps ensure genetic and structural diversity, encourages resilience in the landscape, supports ecosystem services, and provides a clear framework for monitoring species composition across trees, shrubs, wildflowers, and grasses.

Plant Material Procurement/ Sourcing	
Baseline Sourcing Requirements	• Prioritize native, locally sourced plant material grown from regional seed zone 6a, as per the Canada Plant Hardiness Zone Map. • Traditional provenance standards have emphasized sourcing from the local ecoregion or within a defined radius (e.g., 100–150 km). With accelerating climate change, a more flexible approach is also recommended (see additional sourcing considerations below). • Do not use nativars and cultivars especially ones with altered floral structures, as these may reduce ecological value. • Avoid using annuals. • Ensure suppliers can provide certification of origin and confirmation of freedom from invasive species contamination.

Plant Material Procurement/ Sourcing	
Procurement	• Contract Growing may be required for species with limited commercial availability, specialized genetic sourcing (e.g., locally adapted ecotypes), or projects that require large-scale planting beyond what nurseries typically stock. This approach allows time to ensure sufficient quantities, consistent quality, and appropriate provenance of plant material. • Seed Collection and Propagation Partnerships can be pursued with local conservation authorities, seed suppliers, or community seed banks. This ensures material is sourced directly from local populations and grown to the project's specifications. It may also present opportunities to explore partnerships that support Indigenous knowledge, stewardship, and broader reconciliation objectives, as well as initiatives such as the Southern Ontario Seed Strategy. • Sourcing through Native Plant Nurseries and Growers where availability allows, prioritizing suppliers within the regional seed zone to maintain local genetic integrity. • Plant Salvage and Translocation may be possible in cases where development or site alteration threatens native plants, though this option is highly context-specific and subject to regulatory approval. • Advance Ordering / Pre-booking with local nurseries is another option when supply is limited but propagation timelines are shorter. Early coordination ensures priority access to desired species without a full contract grow commitment. • Procurement Plan Timing: Anticipate a multi-year process for native plant procurement; 3+ years may be necessary to obtain target species in the desired quantities.

Plant Material Procurement/ Sourcing	
Additional Considerations	With accelerating climate change, today's plant communities may not be optimal to persist under predicted conditions. Climate analogue modelling (Government of Canada, climatedata.ca) indicates that Columbus, Ohio's present-day climate is a reasonable proxy for Toronto and surrounding areas from 2041–2070 under a moderate emissions scenario. While local native species remain a priority, plant sourcing may be broadened to incorporate assisted migration strategies where appropriate and where plant material is available. Importantly, this approach does not involve sourcing Ontario-native species from southern U.S. populations (e.g., Red Oak), as these species already occur locally. Instead, assisted migration focuses on introducing new species or communities not currently present in the region to enhance future resilience: • Assisted Population Migration (Low risk): Source populations of species that are native to Ontario but from southern portions of their range to introduce genotypes adapted to warmer conditions. This applies only to species already native to the region. • Assisted Range Expansion (Intermediate risk): Introduce non-local, non-invasive species from adjacent Level III Ecoregions that do not currently occur in Ontario, mimicking natural range expansion under climate change. • Long-Distance Migration (Higher risk): Consider species native to more distant Level III Ecoregions (e.g., southern U.S.) that are non-invasive, ecologically compatible, and projected to thrive under future climate conditions (e.g., Kentucky Yellowwood, *Cladrastis kentukea*). This strategy supports future-resilient plant communities while minimizing ecological risk and avoiding unnecessary translocation of local Ontario-native species from other jurisdictions. Potential species for assisted range expansion should be evaluated for ecological suitability and invasiveness before planting. For example, Osage Orange (*Maclura pomifera*), though sometimes planted in Ontario, is considered invasive in multiple U.S. states and may not be appropriate for assisted migration. https://climate-scenarios.canada.ca/?page=scen-rcp https://www.epa.gov/eco-research/ecoregions-north-america

Plant Stock

Select plant stock type based on restoration context:

Direct Seeding	Best suited for large-scale restoration or disturbed areas (e.g., trail edges, graded slopes, prairie or meadow restoration). Provides cost-effective coverage across extensive areas.
Plugs	Appropriate for small to medium restoration patches focused on herbaceous species (e.g., garden beds, understory plantings). Establish quickly and compete more effectively with invasive species than seed alone.
Whips / Bare-root Stock	Effective for mid- to large-scale woody plantings, such as thicket establishment or woodland edge restoration. Offers a cost-efficient method for achieving density at scale.
Caliper Trees	Recommended only for formal landscapes or situations requiring immediate canopy or screening. Not appropriate for ecological restoration settings.

Planting Layout and Density

Planting layout for restoration areas should never form organized rows. Plants should be staggered and mimic a natural system as much as possible. Densities will vary by zone and restoration context:

Prairie and Meadow Areas	• Seed at 8–10 kg/ha (≈ 500–1,000 seeds/m²). • Use an inert bulking agent to ensure even distribution. • Keep grass and wildflower seed separate where possible: Grass seed – broadcast and cover with ~6 mm (¼") of topsoil or mulch. Wildflower seed – broadcast on the surface (do not bury).
Forest Understory Areas	• Seed at 8–10 kg/ha (≈ 10–50 seeds/m²). • Plant plugs at 0.25 m spacing (maximum). • Plant whips at 1.0 m spacing (maximum).
Forest Creation Areas	• Plant whips and bare-root stock at 1.0–1.5 m spacing.
Forest Edge	• Use higher-density plantings to reduce edge effects, suppress invasives, and provide layered habitat structure. • Plugs – ~0.25 m spacing. • Whips – 0.5–1.0 m spacing.
Screening	• Layout should consider a combination of larger stock sizes for immediate screening (if necessary) and medium stock to slowly grow to join and fill in the larger stock. • Whips – 0.5-1.0 m spacing. • Caliper trees – species dependent.
Native Gardens	• Spacing may be more ornamental, but must still prioritize ecological function. • Herbaceous plants – ~0.25 m spacing (e.g., formal pollinator gardens). When possible, arrange in clusters of 3 or 5. • Whips – 1.0-1.5 m spacing (e.g., to frame views or along built edges).

Timing of Planting

Baseline Timing Requirements	• Timing should first consider if the area has been or will be treated for invasive species. All invasive species removal initiatives should take place prior to any restoration plantings. • Spring planting in intact/healthy ecosystems (i.e. forests, swamps, riparian areas, etc.) should be avoided to limit impact to sensitive spring ephemerals.
Planting Plugs and Whips	• Planting should typically take place in the spring or fall while conditions are cooler and rain is more frequent to allow for healthy establishment and reduce watering maintenance. • Note that weather is more important than exact dates and in some cases a wet winter may be more appropriate than a dry, hot fall.
Seeding Grasses	• *Warm season grasses* (big bluestem, little bluestem, etc.): Late spring to early summer (May–June). Warm-season grasses germinate slowly and need soil temperatures above 15°C to establish. Late spring seeding avoids frost risk and gives plants the full growing season to develop roots. • *Cool season grasses* (Canada bluegrass, Canada wildrye, etc.): Late summer to early fall (mid-August to mid-September). Soil is still warm, moisture is generally reliable, and seeds can germinate and establish roots before winter dormancy. Fall seeding often improves overwinter survival and reduces competition from annual weeds. • *Cool and warm season grasses*: if seeding both warm and cold species together, it is possible to seed cool season grass in early spring (April to mid-May), but seedlings may struggle with summer heat and drought.
Seeding Wildflowers	• Wildflowers: Late fall is best to allow any cold stratification required for several wildflowers (a period of cold to break seed dormancy). • Wildflowers with grasses: When mixing grasses and wildflowers, time the seeding to suit the slowest-germinating species, usually the wildflowers, and consider whether cold stratification is required.

Maintenance	
Watering	The plantings will require regular access to water for the first year and then during times of drought for the following year. Watering the new plantings during establishment is recommended once a week to ensure healthy, vigorous plant establishment and growth. Aim for infrequent but deep soaking over frequent light watering. If using a hose, water low and slow for about 15 minutes on a slow trickle. Avoid watering at the base of the trunks, which can cause rotting. Watering either in the morning or in the evening is best.
Mulching and Weeds	It is recommended that most plantings be installed with mulch to suppress weed growth and support moisture retention. Weeds from the seed bank will need to be managed during the first several years to prevent them from outcompeting young native plants. Weeds will need to be removed periodically throughout the growing season, preferably by hand, to protect planted species. Suggested removal frequency is: • First 2 years: 2–3 times per year, staggered across spring, summer, and fall • Subsequent years: once per year Proper identification of young plants is essential; only a trained botanist or ecologist should remove weeds to ensure native plants are not inadvertently pulled. Mulch can be re-applied in formal garden beds, areas where weed control is challenging, or where additional moisture retention is needed.
Mowing	Mowing of any restoration areas is not usually recommended, however the prairie meadow area on top of the land cap can not be allowed to naturally succeed into an ecosystem with woody vegetation. Therefore, a mowing maintenance regime is required. It is recommended that the prairie meadow area is: • Frequency: every year (in phases), every 2 years if phases are not sustainable. • Methods: Mow in phases. Divide the open prairie/meadow into 2 or 3 areas and cycle mowing each year. Leaving refuge patches will ensure continuous habitat availability. • Height: leave 8-12 inches • Timing: mow in late fall (late October–November) of the scheduled year. This avoids peak bloom and seed production, gives migratory butterflies (like Monarchs) time to leave, ensures most plants have set seed, and avoids disturbance of breeding birds. • Alternative Approaches: Where feasible, alternative vegetation management techniques may be considered to complement or replace mowing. Targeted grazing (e.g., by goats) can be effective in controlling woody vegetation and may provide additional educational and community engagement opportunities. The use of such methods should be evaluated based on site constraints, safety, operational requirements, and maintenance capacity.

Monitoring

Successful ecological restoration can require high levels of monitoring and maintenance during the first few years and an adaptive approach to deal with any unexpected or undesired outcomes. The need for monitoring and maintenance will gradually decrease until restoration areas are considered to be on track towards self-sustaining ecological systems.

A long-term monitoring plan may be developed with additional goals and criteria to evaluate the success of restoration efforts and inform adaptive management as necessary.

Monitoring approaches can generally be categorized as compliance-based or performance-based, depending on project objectives, planting scale, and desired level of ecological outcome verification. These approaches differ in intent, methodology, and level of effort, and may be applied independently or concurrently.

Plant Materials Warranty (individual plant performance):
Plant materials warranties represent a compliance-based monitoring approach, and best applied to landscape-style plantings where individual plants are discrete, countable, and easily observed (e.g., caliper trees and shrubs).

Under this approach, plant material is typically covered by a minimum two-year warranty period following installation, during which the contractor is responsible for replacing any dead or severely declining plants at no additional cost to the client. Monitoring during the warranty period focuses on verifying survival and identifying plant losses requiring replacement.

Warranty monitoring is effective for confirming that planting objectives have been achieved at the individual-plant level.

Free-To-Grow (FTG) Monitoring (system level performance):
FTG monitoring evaluates the performance of restoration plantings at the community or system scale, rather than at the level of individual plants. The intent of FTG monitoring is to determine when a planted area has achieved sufficient establishment to persist and develop without intensive restoration-specific maintenance.

FTG monitoring is based on area- or plot-level assessment and compares observed conditions against predefined success criteria related to establishment, growth, and competition. FTG monitoring may occur during the early establishment period and typically continues for several additional years, depending on site conditions and project objectives.

Example FTG success criteria may include:

- Planted vegetation has overtopped, or is not at risk of being overtopped by, competing vegetation.
- Growth form and vigor indicate healthy establishment (e.g., not stunted, suppressed, or repeatedly browsed).
- Plants are free from significant browsing pressure or physical damage.
- Overall survival, density, and diversity across the planted area meet project-specific targets.

Achievement of FTG criteria indicates that the restoration area is on a stable trajectory toward self-sustaining conditions and no longer requires intensive restoration-focused maintenance, even if individual plant losses continue to occur over time.

Optional Advanced Monitoring:
Customized Long-term Monitoring Program - The City may wish to incorporate additional parameters into a long-term monitoring program for the purpose of demonstrating how well specific project goals have been met. Such programs are typically customized based on project goals. For example, if a goal was to improve habitat suitability for open-country SAR birds, monitoring may include annual bird surveys to determine how extensively Bobolink and Eastern Meadowlark are utilizing the property. If a primary restoration goal was to create pollinator habitat, the monitoring program may include targeted pollinator surveys to determine which pollinator species/ abundances can be detected at the site, and whether any measurable increases can be observed as the restoration work progresses. Detailed monitoring programs such as these give land owners options for demonstrating the success of their project goals, but are also typically contingent on staff capacity and funds to complete the additional monitoring work.

Where appropriate, there is also an opportunity to incorporate community science (citizen science) initiatives into monitoring programs. Volunteer-based monitoring—supported through initial training and standardized protocols—can help expand data collection efforts while fostering stewardship, education, and a sense of shared responsibility for the landscape. Existing or emerging City-led programs may provide a framework for implementing this approach.

Photo Monitoring - Photo monitoring may serve to document the successful progression of restoration efforts over the long-term. For example, taking photos annually (or more often to capture multiple seasons) from fixed location points yields a collection of time-lapse images that can be used for promotional/ public-facing communications, and help people to appreciate and celebrate success of the restoration work.

Implementation Phasing

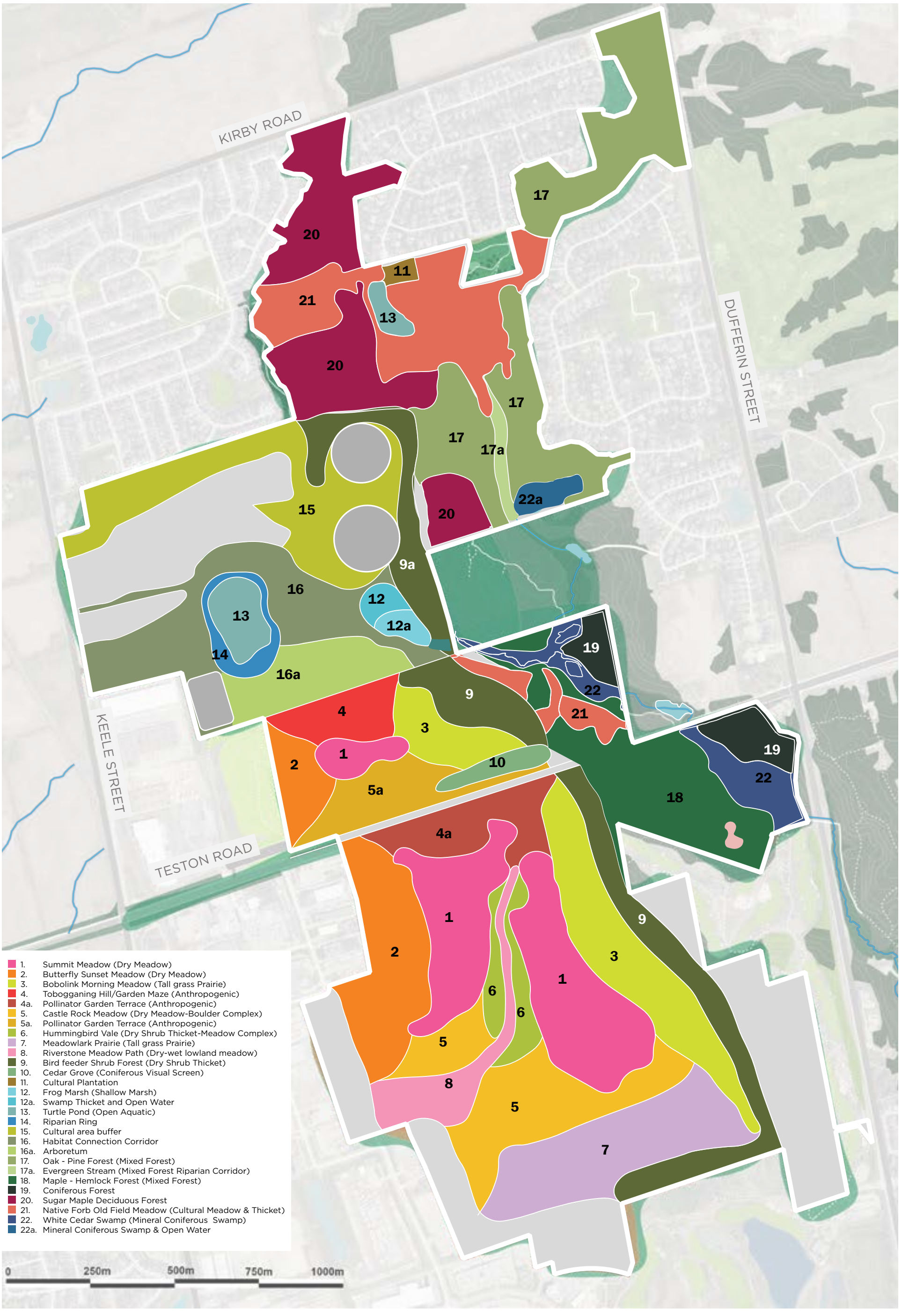
A detailed implementation phasing plan will be required to guide the timing of plantings, seeding, maintenance, and monitoring activities throughout the development cycle. When developing this plan, consideration should be given to plant growth and development timelines, including expected seed collection periods, establishment rates, and long-term land cover objectives (e.g., projected vegetation structure five years post-implementation). At this stage, a full phasing plan is not provided, but it will be essential for coordinating planting activities with site conditions, seasonal constraints, and long-term project goals.

5 Appendices

Appendix 1 – Planting Zones Map

North Maple Regional Park Master Plan
Ecological Restoration Planting Zones

Volume 6: Ecological Restoration Plan, Appendix 1: Planting Zones



Appendix 2 – Ecological Framework

Appendix 2 – Ecological Framework

Stormwater Management Strategy and Green / Blue Infrastructure

Stormwater management strategies are intended to address hydrological concerns but also have ecological implications and design can create co-benefits by integrating:

- Green/blue infrastructure such as bioswales, wet meadows, constructed wetlands, and vegetated buffers. Such features can be designed to mimic natural hydrology, enhance infiltration, and reduce nutrient/pollutant loads. The NMRP has limited applications for infiltration due to the landfill so it is expected that opportunities for stormwater management will largely be focused on surface conveyance, detention or attenuation. Linear drainage can be designed to mimic water courses with small meanders, floodplains and associated vegetation communities where space permits. Detention and attenuation can be focused on wetland community types with overflow designs to surface conveyance.
- Avoid installation of turf or engineered monocultures, instead incorporate areas of native meadow and shrubs to increase pollinator habitat, bird foraging, and structural diversity.
- Connectivity: Linear stormwater management corridors (e.g. drainage swales, outfall buffers) can act as ecological linkages between other habitat patches, improving species movement and resilience.
- Climate lens: Integrating biodiversity into stormwater management designs increases system resilience under intensifying storm events (more frequent heavy rainfall) and extended droughts, both projected under regional climate change scenarios.

Sustainability, ecological restoration, resilience (Oak Ridges Moraine, landfills, development lands)

The Green Corridors concept for NMRP is in conformity with the ORMCP because it:

- Preserves lands designated as Natural Core Area,
- Expands Natural Core Areas through the restoration and preservation of buffers and connective linkages. This includes meeting or exceeding Minimum Vegetation Protection Zones (MVPZ's) as specified in Section III of the ORMCP,
- Focuses proposed development on lands designated as Settlement Area,
- Exceeds policy expectations for Settlement Areas (from an ecological perspective) by proposing habitat restoration combined with passive recreation wherever opportunities exist.

Climate change resilience

With climate change, Southern Ontario is expected to see warmer average temperatures, more frequent extreme heat, heavier precipitation events, and longer

summer droughts (Canada's Changing Climate Report, 2019; Ontario Climate Data Portal). Healthy ecosystems and biodiversity are strongly associated with climate resilience. The preservation, enhancement, and restoration of diverse native plant communities will increase ecological stability under changing climate conditions into the future. In particular, the restoration of habitats over the capped landfill will provide vastly superior climate resilience benefits as compared to maintaining the area as monoculture turf or single-species tree plantings.

NMRP Design Strategies that contribute to climate resilience:

- Use of drought-tolerant native meadow species suitable for landfill cap conditions enhances persistence of live native cover and habitat.
- Shrub communities along perimeters and corridors provide thermal refugia, shading, and food sources for wildlife while maintaining landfill cap integrity.
- Pollinator-supportive species improve ecosystem services, ensuring continued reproduction of plants under shifting climate and phenology patterns.
- Co-benefits to the Master Plan: Enhances visitor experience (seasonal flowering meadows), reduces long-term maintenance, improves carbon sequestration relative to turf, and aligns with municipal/regional climate adaptation objectives.

Appendix 3 – Target Wildlife Habitat Restoration and Preservation

Appendix 3 – Target Wildlife Habitat Restoration and Preservation

Restoration approach guidelines specific to supporting the targeted wildlife groups are provided in the following table:

Target Wildlife Group	Restoration & Preservation Guidelines
Pollinators & Other Insects	1. Plant a diversity of native meadow and prairie wildflowers. 2. Avoid pesticide use in property maintenance. 3. Choose native species, avoiding nativars/ cultivars, which may have diminished value for wildlife e.g. double or triple bloom varieties can block access to pollen and nectar. 4. Pollinators need continuous blooms to provide food source from season to season; ensure species selections include multiple species blooming in spring, summer, and fall. 5. Incorporate at least 2 different larval host plant species for any specific target species. 6. Support for bees may include: a. Leaving patches of bare ground to provide nesting habitat, b. Leaving deadfall logs/branches on the ground, especially on sunny south-facing slopes which provide ideal nesting locations, c. Avoid cutting or mowing dead stems in spring because they may contain hibernating bees. If spring maintenance must occur in meadow areas avoid cutting or mowing the bottom 8" of stems. Top stems that are cut should be left lying on the ground in bundles. 7. General support for butterflies / moths may include: a. Provide areas of vegetation that provide shelter from wind and sun b. Avoid 'cleaning up' leaf litter as it provides overwintering habitat for butterflies c. Add flat rocks for basking in sunny areas sheltered from wind exposure 8. Support for Migratory Butterflies, specifically Monarch, may include:

	a. Delay mowing or maintenance of meadow/ prairie habitats to avoid sensitive seasonal timing (e.g. after the reproduction cycle is complete and butterflies have migrated south for the colder months). b. Incorporate Milkweed species (*Asclepias* sp.) as Monarch host plants, and other fall-flowering native wildflowers that act as a source of nectar. 9. Consider adding water sources in dry areas of the site e.g. fountain within a more formal garden area, adding microtopography to retain small puddles following rain events, or planting species such as Cup Plant (*Silphium perfoliatum*), which has cup-shaped leaves that naturally hold rainwater.
Birds	1. Preserve areas of existing native vegetation. 2. Plant a diversity of native species in enhancement areas. 3. Create a shrub thicket of berry-producing species along the forest edge to provide a food source and shelter habitat for birds. 4. General Support for Birds: a. Plant native trees, shrubs, and wildflowers for shelter and food b. Avoid pesticide use c. Provide a water source d. Keep domestic pets on-leash e. Bird-friendly windows in nearby buildings f. Turn off all indoor lights in unused spaces, avoid using exterior spotlights, flood lights, and advertising lights at night and during migration seasons 5. Support for Bobolink may include the creation of open canopy habitats that: a. Are at least 3ha in size b. Have plant cover present at the beginning of the nesting season c. Are dominated by tall grasses, with 50 – 80% coverage of grass species d. Have low to moderate leaf litter depth (under 2cm) e. Contain at a few small shrubs for perching

	f. Are located away from noise and visual disturbances e.g. roads), which can negatively affect breeding density. g. No-mow in May-July during nesting season 6. Support for Eastern Meadowlark may include the creation of open canopy habitats that: a. Are at least 5ha in size (10ha + preferred) b. Are dry and dominated by tall grasses, ideally with 75% coverage of grass species c. High density of dead grass thatch is beneficial d. Have minimal woody vegetation e. Are located away from noise and visual disturbances e.g. roads), which can negatively affect breeding density. f. No-mow in May-July during nesting season 7. Support other bird species by strategically incorporating their preferred food source plants (e.g. Hummingbirds show a preference for species such as Cardinal Flower, Hairy Beardtongue, Wild Bergamot, and Columbine). 8. Migratory birds may be supported through the provision of available food, water, and protective vegetation cover that they may access during stopovers.
Bats	1. Preserve native trees, including standing dead snags, wherever possible 2. If tree removals are required (e.g. along trail edges) complete this outside of sensitive seasonal timeframes for bat activity 3. Preserve ponds and wetlands where bats forage for insects 4. Install bat boxes to be utilized as roosting structures 5. Minimize pesticide usage that may kill insects (bat food source)
Reptiles & Amphibians	1. Preserve and enhance wetlands, aquatic habitats, watercourses and the lands that buffer them 2. Maintain woody debris, floating logs, rock piles, open sandy shorelines, and leaf litter as they offer habitat

	functions such as turtle basking, refuge for snakes, amphibian foraging and shelter habitat 3. Preserve or create vernal pools to support amphibian breeding 4. Consider eco-passages to facilitate safe wildlife movements where corridors are bisected by roads 5. Where turtles or other sensitive species are present, implement measures to protect nesting areas (e.g., along trails or roads). This may include seasonal monitoring, temporary barriers, signage, or installation of nest protection measures, where appropriate and in accordance with applicable permitting requirements. 6. Maintain water quality, quantity, and hydroperiod within wetlands, aquatic habitats, and watercourses 7. Limit pesticides, chemical fertilizers, and road salts in close proximity to water features
Mammals & Other Wildlife	1. Preserve, enhance, and restore natural features and protect their ecological functions 2. Restore native vegetation communities such as forests, wetlands, prairie, and meadow and encourage diversity of habitat types 3. Provide habitat linkages amongst natural features and create landscape-scale connections with larger natural heritage systems 4. Support high biodiversity of native flora and fauna 5. Preserve/ plant mast producing trees (e.g. Oak, Beech), which provide food for a variety of mammals 6. Some species depend on large natural features that offer interior habitats; increase interior habitat by increasing overall habitat patch size.

Appendix 4 – Complete Planting Zone List with Descriptions

Appendix 4 – Complete Planting Zone List with Descriptions

PLANTING ZONE	DESCRIPTION
1. Summit Meadow (Dry Meadow)	Native meadow with a mix of low, mid, and tall wildflowers amongst short-to-mid height grasses that will flourish in full sun with some wind exposure. Suggested approx. 60:40 ratio of grasses to wildflowers. Goat grazing or mowing may be beneficial on a 1-to-5-year basis to keep woody veg down.
2. Butterfly Sunset Meadow (Dry Meadow)	Native meadow that supports a variety of pollinators and takes advantage of the west-facing viewshed that should provide a nice lookout for people to watch the sunset. Ensure continuous bloom of native wildflowers from spring to fall. A few scattered low shrubs included for interest and diversity.
3. Bobolink Morning Meadow (Tall grass Prairie)	Native grassland community that supports open country birds; especially Bobolink and Eastern Meadowlark. Name reflects the morning sun exposure. Aim for 75:25 % coverage of tall grasses: forbs.
4. Tobogganing Hill/Garden Maze (Anthropogenic)	Mosaic of gardens/ paths/ and meadow. A more anthropogenic space; mosaic of native gardens and meadow. Pollinator gardens intermixed with areas of native meadow.
4a. Pollinator Garden Terrace (Anthropogenic)	Terraced pollinator gardens using crib logs.This slope is visible from Teston Rd. Under this option crib logs would be installed to terrace the slope with native plant gardens installed on each level. Possible educational opportunity re: pollinator gardens. Opportunity to get community volunteers (e.g. local garden club) to maintain the gardens.
5. Castle Rock Meadow (Dry Meadow-Boulder Complex)	Sunny, sheltered slopes planted with native meadow geared towards supporting butterflies, moths and other pollinators. Flat rocks for basking. Patches of bare ground ok; leave for ground nesting bees. Deadfall logs/branches may provide additional cover and nesting locations for bees. Milkweeds and other native wildflowers blooming from spring to fall. Occasional mow /graze to keep woody veg from establishing. Seasonal timing will be key to avoiding important lifecycle times for butterflies and bees. Raptor perches.

5a. Pollinator Garden Terrace (Anthropogenic)	Terraced pollinator gardens using crib logs.This slope is visible from Teston Rd. Under this option crib logs would be installed to terrace the slope with native plant gardens installed on each level. Possible educational opportunity re: pollinator gardens. Opportunity to get community volunteers (e.g. local garden club) to maintain the gardens.
6. Hummingbird Vale (Dry Shrub Thicket-Meadow Complex)	Shruby habitat slopes. Plant interspersed clusters of shrubs, graminoids and forbs. Guard rail with educational signage at top of slope. No trail access.Castle Rock Playground option. Inspired by Castle Rock in New Zealand. Large rocks intended for human-basking, climbing, and exploring. Interspersed with low-growing ground cover plants that can be trampled. Fragaria, low sedges,
7. Meadowlark Prairie (Tall grass Prairie)	Tallgrass prairie-like community geared towards supporting Eastern Meadowlark & Bobolink. 75:25 ratio of tall grasses to forbs. No mow in May – July during nesting season.
8. Riverstone Meadow Path (Dry-wet lowland meadow)	Wildflower meadow. Species that will look beautiful lining the edges of the trail that runs through the centre of this low area and withstand some moderate disturbance related to trail-usage. Species need to withstand fluctuating wet/dry conditions and limited sun exposure.
9. Bird feeder Shrub Forest (Dry Shrub Thicket)	Birdfeeder Shrub Forest. Fortify the forest edge with transitional native shrub cover. Focus on low and mid-height thicket-forming, berry-producing species that have food and cover habitat value for birds. Ground layer species should be ok in the shade under the shrubs and be complimentary to the adjacent deciduous forest community. Thorny species and thick shrubs cover also good to help deter encroachment/ random creation of new trails that would disturb the adjacent forest. Brush piles.
10. Cedar Grove (Coniferous Visual Screen)	A pocket of densely-planted Cedars that would act as a visual barrier/ noise barrier along Teston Rd. Cedars act as a shelter and food source for a variety of birds and mammals and should thrive in this low-lying pocket despite fluctuating water levels and roadside disturbance.

11. Cultural Plantation	Formal gardens may be integrated in and around restoration areas and recreational areas. Other themed gardens may add points of interest for park visitors and bolster wildlife habitat values. Native gardens may be used to showcase the beauty of plant species that characterize local habitats, provide educational, or seed-sharing opportunities for gardeners.
12. Frog Marsh (Shallow Marsh)	This cattail dominated headwater wetland has PSW status and feeds into the East Don River. Wetland to be preserved and incorporated into a larger east-west habitat corridor that links it to the pond to the west as well as the larger natural feature to the east. Restoration activities will be involved to remove invasive species including phragmites.
12a. Swamp Thicket and Open Water	This willow dominated swale will be retained and strengthened as an east–west habitat corridor through preservation of existing wetland features and native restoration within the Manitoba maple–dominated woodland.
13. Turtle Pond (Open Aquatic)	This is the largest open water body at the site offering a water source, which is of great value to a variety of wildlife such as birds, mammals, reptiles, and amphibians. This area is to be preserved and incorporated into a larger east-west habitat corridor.
14. Riparian Ring	The outer riparian ring is designated as Provincially Significant Wetland. The vegetation in this riparian ring offers shelter for wildlife utilizing the pond, helps to stabilize the pond edges protecting them from erosion, and filtering surface runoff as it drains into the pond. This area is to be preserved and incorporated into a larger east-west habitat corridor.
15. Cultural area buffer	This zone is characterized by mixed anthropogenic planting that supports the park's recreation activities before transitioning into more naturalized landscape elements in other parts of the park. Planting plans may include thorny or dense thicket-forming shrubs where there is a desire to block human access from certain areas.
16. Habitat Connection Corridor	Habitat values are increased when a diversity of species are planted. Species selections may include a variety of native trees and shrubs. Small tree planting nodes may be incorporated throughout to complement recreational areas of the park.

16a. Arboretum	An extension of the botanical gardens and conservatory, the arboretum should prioritize using native species, ensure structural diversity, and focus on conservation, sustainability, and habitat creation. This landscape zone should showcase native and rare plant material, organized by reference communities within the region.
17. Oak - Pine Forest (Mixed Forest)	Forest to be preserved within the ANSI (Areas of Natural and Scientific Interest). There is opportunity to restore the cultural areas of the forest to a native community by removing invasive species, decommissioning unnecessary trails, and planting native mixed forest species.
17a. Evergreen Stream (Mixed Forest Riparian Corridor)	Habitat corridor to be preserved within the ANSI. There is opportunity to retore the cultural areas of the corridor to a native community.
18. Maple - Hemlock Forest (Mixed Forest)	Forest to be preserved within the ANSI.
19. Coniferous Forest	Forest to be preserved within the ANSI with opportunity to expand into adjacent cultural areas.
20. Sugar Maple Deciduous Forest	Forest to be preserved within the ANSI with opportunity to expand into adjacent cultural woodland areas.
21. Native Forb Old Field Meadow (Cultural Meadow & Thicket)	Cultural meadow and thicket to be enhanced into a native sand barren community or integrate with surrounding forest system depending on existing conditions.
22. White Cedar Swamp (Mineral Coniferous Swamp)	Water features inside the ANSI to be preserved.
22a. Mineral Coniferous Swamp & Open Water	Water feature inside the ANSI to be preserved. There is opportunity to restore the cultural surrounding areas of the feature to a native community.