WASHINGTON PARK RESTORATION AND MANAGEMENT PLAN

March 2014

Revision: January 2019

Prepared by the Land Steward Staff with the Urban Ecology Center (UEC)

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Urban Ecology Center - Washington Park Restoration and Management Plan

Mission Statement

The Urban Ecology Center connects people in cities to nature and each other.

Vision Statement

Our vision is to inspire generations to build environmental curiosity, understanding, and respect. We restore hope and heal our urban natural world, neighborhood by neighborhood.

Site Overview

Site Description

Milwaukee County straddles the tension zone, a climatic boundary that cuts diagonally across the Midwest and across the state of Wisconsin from its southeast corner to its northwest corner. Areas south of the tension zone experience more net evapotranspiration each year than net precipitation. Areas north of the tension zone receive a net annual precipitation that exceeds the annual evapotranspiration. Consequently, areas north of the tension zone burned infrequently and evolved as fire-sensitive communities while areas south of the tension zone experienced wildfire on a regular basis and evolved as fire-adapted (fire-tolerant), dependent communities. Native American cultures in the region played a vital role in managing Wisconsin's natural communities, especially fire-tolerant communities. By setting annual prescribed fires, native cultures expanded and maintained the ranges of fire-tolerant natural communities such as sedge meadow, prairie, savanna and woodland. The tension zone cuts through Milwaukee County and through southeast Wisconsin allowing for a diverse mix of natural communities to persist, some tolerant to fire and some sensitive to fire. Land surveys conducted in the early 1800s documented the vegetation found across the state, much of it unchanged since before the arrival of Europeans to the continent. The pre-settlement vegetation information has been consolidated as an early vegetation of Wisconsin map (p. 95). The northeast two-thirds of Milwaukee county and the counties north of Milwaukee were characterized by closed- canopy southern and northern mesic forest, bog, and sedge meadow while the southwest corner of Milwaukee county and the counties west and south of Milwaukee were characterized by a mosaic of prairie, oak opening (savanna), woodland, and closed-canopy forest adapted to frequent fire.

In April of 1836, Garret Vliet surveyed the land in and around acreage that is now defined as Washington Park. His data was retained by the Board of Commissioners of Public Lands- Township 7N21E of Sections 23 and 24 [j]. The land was recorded as having a rolling topography of second-rate slope. There was a plethora of native tree species identified on the land, including: American elm, white oak, bur oak, red oak, butternut, blue ash, ironwood, sugar maple, and hickory. Tree size (diameter at breast height, DBH) was recorded for each specimen. Some of the largest recorded sizes were of a 22-inch red oak and 20-inch blue ash, while the smallest sizes were of ironwood at 3-inches and 6-inches. Overall the vegetation cover was described as having good tree canopy cover with little undergrowth, indicating the land was most likely a southern mesic forest plant community type [j]. Records also identify that there was an Indian village on the bluffs of land along the Menomonee River south of Township 7N21E Section 23 and 24 [j].

In 1891, the Milwaukee Park Commission allocated and purchased 124-acres on the west side of Milwaukee [a]. They commissioned Frederick Law Olmsted, the foremost landscape architect in the country, to design West

Park, what is defined as present day Washington Park. Olmsted believed planned parks would provide people from all stations of life respite from the crowding, suffocation and industrial despondency of urban America in the last half of the 19th century. He contended that municipal open spaces with scenic landscapes and recreational activities would promote both the physical and mental health of its visitors and foster communication between social classes, thereby improving society [a, f]. Work on the site commenced in 1892 which included the installation of West Park Zoo.

West Park became Washington Park in 1900 to reflect the importance of American history, a trend that was occurring all over the United States. The park expanded to 132-acres until it was entrusted to the Milwaukee County Park Commission in 1932 [a].

By the late 1940's, the now Washington Park Zoo, was the 5th largest in the nation. Despite receiving glowing endorsements from Dr. H.M. Wegeforth, the director of the San Diego Zoological Society, signs of wear and the need for expansion was obvious. In 1963, after the animals and infrastructure were removed, the Zoo fell quiet within Washington Park [a].

In 2004, a team of students from UW-Milwaukee's Geography Department (Peter Strand, Wen Lin, and Jayoung Cho) partnered with Urban Ecology Center, a local nonprofit, to assess green spaces in Milwaukee best suited for the location of their second environmental education/community center. Using criteria identified by the Urban Ecology Center as key to successes of the Riverside Park branch, the final assessment findings identified Washington Park as the best green space for urban environmental education. Three years later, Milwaukee County Parks, Lisbon Avenue Neighborhood Development, Local Initiative Service Corporation, Neighbors United for Washington Park, Washington Park Partners, and the Washington Park Beat welcomed Urban Ecology Center to the park.

Since the Urban Ecology Center Washington Park branch opened in 2007, the Center's Land Stewardship team has been supported by Milwaukee County Parks, Washington Park Partners, Washington Park Senior Center, numerous student and corporate volunteer groups, local boys and girls club members, community neighbors, and a variety of workforce development partners in removing invasive species and installing a variety of native Wisconsin plant species. The restored native planting areas throughout the park have provided habitat for mammals, invertebrates, amphibians, and birds while increasing opportunities for high quality outdoor experiences and environmental education.

Vegetation Communities

The total acreage- 128.5-acres -of Washington Park consists of 119.5-terrestrial acres and 8-aquatic acres. The vegetation of Washington Park is primarily mowed turf grass species with scattered tree plantings. The existing trees are a mixture of native species, white oak *(Quercus alba),* sugar maple *(Acer saccharum)* and nonnative or exotic, invasive plant species including norway maple *(Acer platanoides)* and tree-of-heaven *(Ailanthus altissima).* Additionally, invasive shrub species exist, including, multiflora rose *(Rosa multiflora),* common buckthorn (*Rhamnus cathartica*), glossy-leaf buckthorn *(Rhamnus frangula),* and tatarian honeysuckle *(Lonicera tatarica).* There are minimal existing native shrub and herbaceous species in the Park. The native herbaceous perennial species include but are not limited to, heart-leaved aster *(Aster ciliolatus),* common blue heart-leaved aster *(Aster cordifolius),* common violet (*Viola sororia*), a variety of sedges (*Carex spp*) and starry solomon's plume (*Maianthemum stellata).* All in all, the predominant terrestrial vegetation is exotic and/or invasive plant species.

Portions of the lagoon's shoreline edges have been stabilized and planted with native herbaceous vegetation by Milwaukee County Parks. Overall, shrub thickets and the invasive hybrid cattail species (*Typha x glauca*) have come

to encroach upon much of the emergent and fringe areas of the shoreline. Several aquatic invasive species persist within the lagoon and two ephemeral ponds within the park including, curly-leaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (*Myriophyllum spicatum*), and hydrilla (*Hydrilla verticillata*).

Wildlife

The Park has expansive acreage with the potential to provide breeding habitat, migration stopover, winter shelter, and long-term residential grounds for a great number of wildlife species. Due to the dominant non-native and/or invasive terrestrial and aquatic plant species, the existing vegetation provides little to no and even harmful value, to wildlife. Urban Ecology Center staff will conduct a variety of surveys to monitor wildlife presence and inform the best adaptive management practices for the land.

Goals

1. Restore and maintain diverse southeast Wisconsin native plant communities for the conservation of plant and wildlife species as well as native biodiversity.
2. Amplify the Park's capacity to provide carbon sequestration, water and air purification, storm water retention and infiltration, soil creation and conservation, cultural and spiritual inspiration, and other ecosystem services.
3. Provide outdoor science education for urban youth and adults.
4. Practice and model environmentally responsible behaviors.
5. Reduce invasive and non-native plant species to enhance biodiversity, improve sightlines and view sheds, and increase accessibility of the park and lagoon.
6. Promote community by offering recreational activities that support learning, volunteerism, stewardship, and camaraderie
7. Employ the following lenses to guide land restoration and management activities: ecological, social, economic, and historical

Objectives

1. Convert 20-acres of contiguous land representative of natural, native habitat found in southeast Wisconsin within 20 years, with ongoing maintenance contingent upon the UEC operational lease within Washington Park.
2. Create 10 different southeast Wisconsin plant communities throughout the UEC land stewardship restoration acreage.
3. Create beautiful landscapes which establish a sense of place unique to southeast Wisconsin, respect the vision of Frederick Law Olmsted, and emulate the natural heritage of the region.
4. Establish natural play areas within the management units 10, 12, and 13 that the UEC educators and members of the public can use for hands-on exploration including digging, log rolling, and animal tracking.
5. Monitor/survey and record data for wildlife populations as well as plant populations and vegetation cover with community science groups, volunteers, and land stewards.
6. Use integrated pest management practices and other best management practices to minimize the use of chemical products throughout the park.

7. Formulate a schedule that guides the stewardship team from the preparation phase through to the long-term management of each management unit.
8. Aggressively reduce existing populations of invasive species throughout the designated management units over the next 20 years.
9. Implement a burn schedule to assist with invasive plant management and overall health of various plant communities that require cycles of fire to maintain vigor and biodiversity.
10. Conduct soil surveys throughout management units to test for soil type, soil pH, permeability, percent organic material, soil development, and microbial activity.
11. Complete the creation of an open community orchard from which members of the general public can harvest fruit and urban ecology center can use for programing.
12. Offer summer internships that engage interns in restoration projects, professional development activities, and leadership opportunities to guide volunteer groups.
13. Provide continued and increased volunteer opportunities for individuals and groups to engage in hands-on land restoration work and monitoring.
14. Provide annual management reports including year-end project progress and projected restoration activities for the following year(s).
15. Host annual, spring walk-around with Milwaukee (MKE) County Parks staff informing and communicating restoration and management activities for the upcoming season.
16. Manage acreage in ways that support MKE County Parks concerns regarding access, safety and views.

References

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e. McQuiggin, Mary, Allison Hager, and Brian Russart. "Quick Reference Guide: Phenology and Control of Common Invasive Plant Species Found in Southeastern Wisconsin." (n.d.): n. pag. http://sewisc.org/images/sotries/site_images/documents/Reference-Guidance-Funding/Invasives_Quick_Reference_Guide_2-12.pdf. Milwaukee County Department of Parks, 2012. Web. 2012.

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g. *The Tallgrass Restoration Handbook for Prairies, Savannas, and Woodlands,* by Stephen Packard and Cornelia F. Mutel. Island Press, Washington, D.C., 1997.

h. *The Vegetation of Wisconsin: An Ordination of Plant Communities,* by John T. Curtis, University of Wisconsin Press, Madison, Wisconsin, November 1959.

i. "Wisconsin Department of Natural Resources." *Controlling Invasive Species - Wisconsin DNR,* http://dnr.wi.gov/topic/EndangeredResources/Communities.asp.

j. "Woodland Restoration: An Overview," by Evelyn A. Howell. In *Restoration & Management Notes*, University of Wisconsin Press, Madison, Wisconsin, Summer 1986.

k. Vliet, G. (1836, April). Interior Field Notes. Board of Commissioners of Public Lands. Retrieved September, 2018, http://digicoll.library.wisc.edu/cgibin/SurveyNotes/SurveyNotesidx?type=header&issueid=SurveyNotes.INT196e01&isize=XL&twp=T007NRO21E.

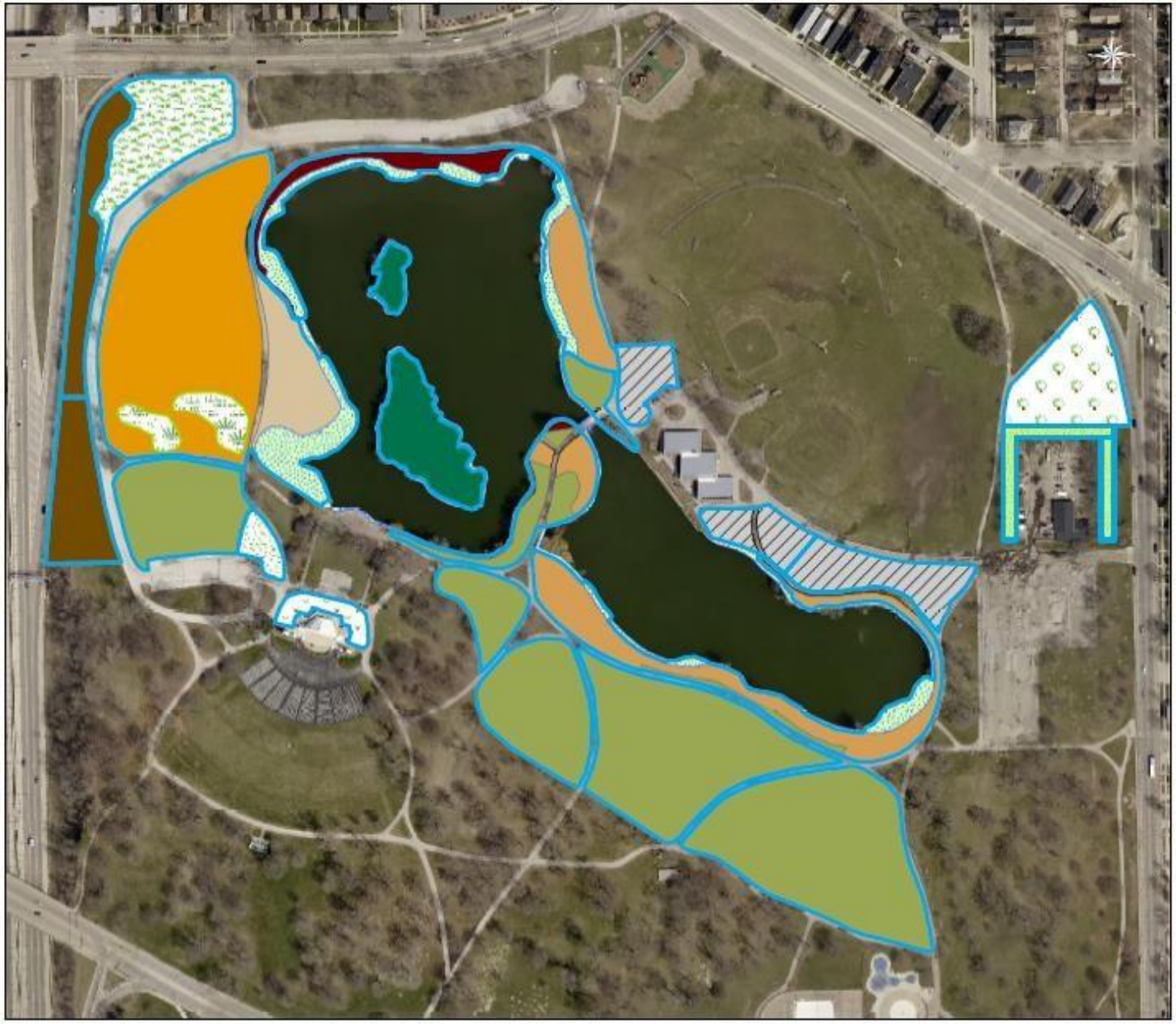
Land Description and Management

Milwaukee County Parks and Urban Ecology Center Agreements

1. Perform annual, spring walk-through with UEC Land Stewardship staff and Milwaukee County Park staff to discuss and communicate details of restoration projects and progress (Include: *Park Unit Coordinator, Regional Manager, Natural Areas Coordinator, Park Landscape Architect staff, Deputy Regional Operations Manager, UEC Washington Park Branch Manager, UEC Washington Park Land Steward* and *UEC Land Stewardship Manager*).
2. Contracted land restoration-related work will require review by MKE County Parks before the UEC sends out a Request for Proposal and gains a Right-of-Entry permit.
3. Large tree removal(s) requires approval from the MKE County Parks Forestry staff.
4. The UEC staff is required to have a minimum of one UEC staff member possessing a valid DATCP herbicide application license on site during application. The license should match the work being performed.
5. Debris disposal will be a collaborative effort between the UEC and MKE County Parks staff outlined in the Restoration and Mnaagment Plan Maintenance Agreement.
6. Invasive plant removal techniques will follow an integrated pest management methodology – See Appendix for specific techniques.
7. Permanent paved pathways proposed for installation by the UEC must meet ADA requirements and shall be reviewed and approved by MKE County Parks – See Appendix.
8. The UEC, not MKE County Parks, is responsible for maintaining the UEC plantings and trash/garbage cleanup within the restoration acreage. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit.
9. All units will have a 10ft wide mowed perimeter border. This is to maintain sightlines, visibility and path lighting performance.
10. The UEC will make every effort to utilize seed/plant sources from within a 100 mile radius north of the City of Milwaukee and 200 mile radius south of Milwaukee (in light of climate change projections).
11. The UEC Land Stewardship staff will work to maintain views into and across the lagoon and critical areas of the various restoration units.
12. Installation of plant specimens (i.e. trees) in areas of the park outside of the designated units must be discussed with and approved of by MKE County Parks' staff prior to these activities occurring.
13. Washington Park prescribed burns must be discussed and approved of by MKE County Parks staff – See Appendix for permit and plan procedures.
14. The UEC will restore and maintain 20-acres of southeast Wisconsin native plant community habitats as proposed in this Restoration and Management Plan.
15. The UEC Land Stewards will install temporary signage describing restoration work to further communicate project timelines, plant community descriptions, and restoration strategies. Installation of any permanent signage within the park as part of UEC activities and operations must be reviewed and approved by MKE County Parks.

16. This is a living document informed by adaptive management and subject to revisions which will be agreed upon by UEC and MKE County Parks. Management of the Restoration and Management Plan activities will be further governed by the Restoration and Management Plan Maintenance Agreement.
17. Proposed ancillary structures within the park/restoration ares (boardwalks, boat landings, structural play equipment, etc.) shall be reviewed and approved by MKE County Parks prior ot installation.
18. Prior to breaking ground, a request will be made for a utility marking from MKE County Skilled Trades division and WE Energies.
    - Spring (April) Request
    - Autumn (October) Request

Washington Park Plant Communities



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So much life

2018 Proposed Management Units

Plant Community

- Nature Play
- Emergent Aquatic
- Ephemeral Pond
- Oak Opening
- Mesic Prairie
- Wet-Mesic Prairie
- Native Screen
- Northern Mesic Forest
- Oak Woodland
- Orchard
- Savanna
- Southern Dry Mesic Forest
- Southern Lowland Forest
- Southern Mesic Forest
- Blatz Temple of Music Garden

N

0 125 250 500 ft

Washington Park Vegetation Management Units

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Timeline of Management Unit Restoration Dates:
(high priority – low priority)

Completed:
Units 2, 15, 7

In Progress:

Unit 8 – pending bandshell building renovation (ASAP)
Unit 12 – pending UEC building renovation
Unit 13 – pending UEC building renovation
Unit 14 – pending UEC building renovation
Unit 10 – pending UEC building renovation
Unit 3 – spring 2016 – fall 2022
Unit 1 – spring 2018 – fall 2019
Unit 5 – spring 2022 – fall 2024
Unit 6 – spring 2024 – fall 2025
Unit 9 – spring 2025 – fall 2026
Unit 4 – spring 2026 – fall 2027
Unit 11 – spring 2027 – fall 2028
Unit 12 – spring 2027 – fall 2029
Unit 17 – spring 2029 – fall 2031
Unit 18 – spring 2031 – fall 2033
Unit 19 – spring 2034 – fall 2036
Unit 20 – spring 2034 – fall 2036
Unit 16 – spring 2035 – fall 2040

2018 Proposed Management Units

N

0 125 250 500 ft

Unit Descriptions & Restoration Strategy

All restoration work will be led by UEC Land Stewardship staff. Engagement of the public and people of the Milwaukee community with the land is fundamental to the success of all land restoration projects within Washington Park. Weekly volunteer opportunities will be offered to provide hands-on support.
Neighborhood/community member volunteers, weekly walk-in volunteers, corporate and nonprofit groups as well as UEC interns, Outdoor Leaders and temporary workforce employees will assist the land stewards with efforts of restoration and unit maintenance.

Unit 1 – Southern Dry-mesic Forest Community

> "Red oak (*Quercus rubra*) is a common dominant tree of this upland forest community type. White oak (*Q. alba*), basswood (*Tilia americana*), sugar and red maples (*Acer saccharum* and *A. rubrum*), and white ash (*Fraxinus americana*) are also important. The herbaceous understory flora is diverse and includes many species listed under Southern Dry Forest plus jack-in-the-pulpit (*Arisaema triphyllum*), large-flowered bellwort (*Uvularia grandiflora),* interrupted fern (*Osmunda claytoniana*), Lady Fern (*Athyrium Filix-emina*), tick-trefoils (*Desmodium glutinosum* and *D. nudiflorum*), and hog peanut (*Amphicarpa bracteata*). To the detriment of the oaks, mesophytic tree species are becoming increasingly important under current management practices and fire suppression policies. Oak forests are succeeding to more mesic species (e.g., central and northern hardwood forest types), or to brush."
>
> Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

Planting records of West Park show that the land within this unit was primarily planted with trees and an understory of 3-foot to 10-foot shrubs (Table 1 & 2). Presently, the land within this unit has greater than 50% tree canopy coverage, a prominent shrub/understory layer and sparse to rich ground layer of vegetation.The native tree species consist of sugar maple (*Acer saccharum*), white oak (*Quercus alba*), white ash (*Fraxinus americana*), hawthorn (*Crataegus sp*.), staghorn sumac (Rhus typhina), and chokecherry (Prunus virginiana). Non-native and/or invasive tree species include Norway maple (*Acer platanoides*), black locust (Robinia pseudoacacia), Scots pine (*Pinus sylvestris*), white mulberry (*Morus alba*), and tree-of-heaven (*Ailanthus altissima*). The understory-shrub layer consists of non-native and/or invasive, common buckthorn (*Rhamnus cathartica*), Tatarian and bell's hybrid honeysuckle (*Lonicera tatarica* and *L. x bella*), and native staghorn sumac (*Rhus typhina*) and native chokecherry (Prunus virginiana). Much of the ground layer is bare soil with invasive, herbaceous and woody species seedlings dominating, i.e. garlic mustard (*Alliaria petiolata*). There are several populations of high quality native herbaceous species growing, including starry solomon's seal (*Maianthemum stellatum*), virginia waterleaf (*Hydrophyllum virginianum*), and large-flowered bellwort (*Uvularia grandiflora*). The land topography is mostly flat with a few piles of soil scattered throughout. The soil texture is clay loam with moderate to dry tendencies. This unit sits on the top of a west-facing slope east of Highway 175. The land is exposed to hot, dry wind, sun, and urban heat lending the plant community type to a dry-mesic forest. The total acreage is 0.657-acres.

In conjunction with review of the Olmsted Plants (Preliminary West Park Design Plan, Olmsted Master Plan "A", West Park planting lists, the West Park Plan for Border Plantation (pp. 114-118), presently growing plant species, and the topographic features of the site, a southern dry-mesic forest plant community type is the most appropriate for this unit.

Invasive shrubs were removed from this unit 2009-2012, and 2016. Restoration activities by UEC Land Stewards began in 2018.

Site Objectives

- Maintain the unit as a preserve for southern dry-mesic plant species and an ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Retain and enhance areas of fire-tolerant shrub/understory to act as a visual and natural sound barrier to city traffic on Highway 175.
- Prescribed fire will be utilized to maintain the structure and species composition of the unit.
- Provide opportunities for research as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, Wisconsin Department of Natural Resources (WDNR) listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.

Restoration Strategy

Initially, this unit will be actively managed through non-native, invasive species removal and replacement with characteristic native species vegetation of the southern dry-mesic forest plant community. Oak species will come to dominate the canopy of this unit. The augmentation of the shrub and ground layer will include species that are fire tolerant/dependent and provide a physical and natural sound barrier to the urban traffic, and buffer to the urban heat island effect and pollution from Highway 175. Seeds, plugs, and containerized plants from local genetic material will be sourced and planted throughout the unit. If or when possible, a prescribed fire regime may be used to deter mesophication or the succession of shade-tolerant, moisture loving species. A prescribed fire regime of low intensity or infrequent, light surface fires, every 5 to 10-years for the first 10 years, is most appropriate. To maintain refuge for wildlife, no more than two-thirds of the acreage will be burned at one time. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit.

Long-term monitoring and control efforts- manual and herbicide application -will be used to maintain the viability of a dry-mesic forest preserve against non-native and invasive plant species. Prescribed fire/burn occurrences will decrease to once every 10 to 25-years, burning no more than two-thirds of the acreage at one time, for the duration of the UEC land maintenance. Periodic seed spreading and/or container planting will be used where native plant populations are sparse. The canopy cover will be evaluated after maturity and managed as needed to mimic natural disturbance patterns (windthrow gaps) and maintain understory light levels similar to those found in dry-mesic forest.

A plant list for this unit can be found on pages 49-52.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program: 5 to 25-year regime Seeding, plug, and container planting

Unit 2 – Mesic Prairie Community

"This grassland community occurs on rich, moist, well-drained sites. The dominant plant is the tall grass, big bluestem (*Andropogon gerardii*). The grasses little bluestem (*Andropogon scoparius*), indian grass (*Sorghastrum nutans*), porcupine grass (*Stipa spartea*), prairie dropseed (*Sporobolus heterolepis*), and tall switchgrass (*Panicum virgatum*) are also frequent. The forb layer is diverse in the number, size, and physiognomy of the species. Common taxa include the prairie docks (*Silphium spp*.), lead plant (*Amorpha canescens*), heath and smooth asters (*Aster ericoides* and *A.laevis*), sand coreopsis (*Coreopsis palmata*),

prairie sunflower (*Helianthus laetiflorus*), rattlesnake-master (*Eryngium yuccifolium*), flowering spurge (*Euphorbia corollata*), beebalm (*Monarda fistulosa*), prairie coneflower (*Ratibida pinnata*), and spiderwort (*Tradescantia ohiensis*)."

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

Acreage of this unit is 0.97-acres. The land topography is flat with a clay loam soil texture. Soil drainage is good, allowing for moderate soil moisture levels to persist throughout the year. During periods of heavy rain the northeast corner tends to hold water, pooling for 8 to 12-hours. According to West Park planting records the vegetation cover consisted of planted trees, shrubs, and mowed turf grass species, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*). Current vegetation surveys indicate existing native tree and shrub species as: Sugar Maple and Silver Maple (*Acer saccharum* and *Acer saccharinum*), hackberry (Celtis occidentalis), white ash (*Fraxinus americana*) and staghorn sumac (*Rhus typhina*). Non-native and/or invasive tree and shrub species include: white mulberry (*Morus alba*),common buckthorn (*Rhamnus cathartica*), Tatarian and bell's hybrid honeysuckle (*Lonicera tatarica* and *L. x bella*).

Land restoration work by UEC Land Stewardship staff began on this site in 2010. Small sections of land were, year by year, converted from mowed turf grass to a mesic prairie plant community. Active land preparation and planting was completed in 2017.

Site Objectives

- Restore the unit as a preserve for mesic prairie plant species and ecologically balanced habitat for mammals, birds, and invertebrate animals. Prairie plant communities once comprised 6% of WI state land, today, it occupies less than 1% of state land and less than 0.01% of its former area in the Midwest. Mesic Prairie, which was the most common type in pre-settlement days, is almost gone now, with only about 100-acres known to exist today in Wisconsin [i].
- Utilize prescribed to maintain the structure and species composition of the unit.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit. Preserve cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

The ground layer of this unit has been planted with native, fire-tolerant/dependent herbaceous plant species found in naturally occurring mesic prairie plant communities. Local genetic material was sourced for seed and plug plants. The ecological structure and characteristics of the unit will be primarily shaped by a prescribed fire management program. A prescribed fire regime of frequent, light to moderate surface fires every 2 to 5-year is most appropriate. Burning will occur on no more than two-thirds of the acreage at one time to maintain a refuge for wildlife. A 10foot wide turf border along the perimeter of the unit has been defined and created by UEC Land Steward, but is mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit. For accessibility into and throughout the unit, wood chipped footpaths have been established and will be maintained by UEC Land Stewardship staff.

Long-term monitoring and control efforts may require manual removal and/or selective herbicide application to maintain the viability of a mesic prairie preserve against non-native and invasive plant species. Prescribed fires will continue to occur every 2 to 5-years, burning no more than two-thirds of the acreage at one time, for the duration of

the UEC land maintenance. Periodic interseeding and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity.
A plant list for this unit can be found on pages 53-57.

Methods of Restoration

Terrestrial Areas:

- Manual removal
- Herbicide application
- Fire management program: 2 to 5-year regime
- Seeding, plug, container, and balled-and-burlaped planting
- Spring brush cutting or cut-down of seasonal herbaceous vegetation (non-burn years) Smothering: commercial grade fabric and/or woodchips

Unit 3 – Oak Woodland, Oak Opening, Ephemeral Pond, & Emergent Aquatic Communities

Oak Woodland "This "forest" community is structurally intermediate between Oak Openings and Southern Dry Forest. The tree canopy cover is high, but frequent low-intensity fires and possibly (in pre-settlement times) browsing by herbivores such as elk, bison, and deer kept the understory relatively free of shrubs and saplings. Much additional information is needed but it appears that at least some plants- certain legumes, grasses, and composites among them -reached their highest abundance here. This community is dependent on fire for its formation and maintenance."

Oak Opening
"As defined by Curtis, this is an oak-dominated savanna community in which there is less than 50% tree canopy. Historically, oak openings occurred on wet-mesic to dry sites. The few extant remnants are mostly on drier sites, with the mesic and wet-mesic openings almost totally destroyed by conversion to agricultural or residential uses, and by the encroachment of other woody plants due to fire suppression. Bur, white, and black oaks (*Quercus macrocarpa, Q. alba* and *Q. velutina*) are dominant in mature stands as large, open-grown trees with distinctive limb architecture. Shagbark hickory (*Carya ovata*) is sometimes present. American hazelnut (*Corylus americana*) is a common shrub, and while the herb layer is similar to those found in oak forests and prairies, with many of the same grasses and forbs present, there are some plants and animals that reach their optimal abundance in the "openings". This community is dependent on fire for its formation and maintenance."

Ephemeral Pond
"These ponds are depressions with impeded drainage- usually in forest landscapes -that hold water for a period of time following snowmelt but typically dry out by mid-summer. Common aquatic plants of these habitats include yellow water crowfoot (*Ranunculus flabellaris*), mermaid weed (*Proserpinaca palustris*), Canada bluejoint grass (*Calamagrostis canadensis*), floating manna grass (*Glyceria septentrionalis*), spotted cowbane (*Cicuta maculata*), smartweeds (*Polygonum spp*.), orange jewelweed (*Impatiens capensis*), and sedges. Ephemeral ponds provide critical breeding habitat for certain invertebrates, as well as for many amphibians such as frogs and salamanders."

The ephemeral ponds were originally planted with and currently have a plant composition similar to *southern sedge meadow.* As the percent shade from tree canopy increases the composition may shift toward the *ephemeral pond* description described above.]

Emergent Aquatic
"Emergent aquatic (marsh) is dominated by robust emergent macrophytes, in pure stands of single species or in various mixtures. Dominants include cattails (*Typha* spp.), bulrushes (particularly *Schoenoplectus acutus, S. tabernaemontani,* and *Bolboschoenus fluviatilis*), bur-reeds (*Sparganium* spp.), giant reed (*Phragmites australis*), pickerel-weed (*Pontederia cordata*), waterplantains (*Alisma* spp.), arrowheads (*Sagittaria* spp.), the larger species of spike-rush (such as *Eleocharis smallii*), and wild rice (*Zizania* spp.). Emergent Marsh can occur in a wide variety of

hydrologic settings, including inland lake, Great Lakes, riverine and estuarine complexes. Emergent marsh often intergrades with and transitions to floating-leaved marsh or submergent marsh in deeper water but is dominated by emergent vegetation."

[Broad leaved cattail (Typha latifolia) and the American subspecies of giant reed (Phragmites australis subsp. americanus) are native species in this plant community whereas hybrid and narrow leaved cattails (Typha hybrida, angustifolia) and Eurasian giant reed (Phragmites australis subsp. australis) are WDNR listed invasive species] Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer.

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

Topographically, the land is rolling with flat areas in the southeast corner. Much of the land's soil texture is clay loam with moderate to dry tendencies and wet soils along the lagoon shoreline. In total, the unit is 4.66-acres. Vegetation in this unit is primarily mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, and various tree and shrub species scattered throughout the acreage. The existing native tree species include: sugar maple and white oak (*Quercus alba*), white ash (*Fraxinus americana*), hawthorn (*Crataegus sp*.), thornless honeylocust (*Gleditsia tricanthos var. inermis*), elm (*Ulmus sp*.), American plum (*Prunus americana*). Non-native or invasive species include Norway maple (*Acer platanoides*), white mulberry (*Morus alba*), Colorado blue spruce (*Picea pungens*), and Serbian spruce (*Picea omorika*). Native shrub species include: red-osier dogwood and silky dogwood (*Cornus sericea* and *C. amomum*). Recorded nonnative, invasive species are common buckthorn (*Rhamnus cathartica*) and Tatarian and bell's hybrid honeysuckle (*Lonicera tatarica* and *L. x bella*), The land contains 2 ephemeral ponds, totaling 0.34-acres. The eastern border of the unit abuts the Washington Park lagoon. The lagoon shoreline consists of native, silky dogwood (*Cornus amomum*), northern catalpa (*Catalpa speciosa*), American elderberry (*Sambucus canadensis*), winterberry (*Ilex verticillata*), willow (*Salix sp*.), and river birch (*Betula nigra*) species. The non-native, invasive species are European alder (*Alnus glutinosa*), white mulberry (*Morus alba*), tree-of-heaven (*Ailanthus altissima*) common buckthorn (*Rhamnus cathartica*), and hybrid cattail (*Typha x glauca*). The ephemeral ponds were historically defined as lily ponds holding native and exotic water lily species, eventually succeeding to only include the invasive hybrid cattail (*Typha x glauca*) species. The smaller pond has a wooden boardwalk stretching from the southern shoreline to the middle of the pond. The 2 ephemeral ponds have sedge peat soil, being the wettest, annually, after snowmelt and spring rains.

Active maintenance and restoration activities by UEC Land Stewards began in 2008. Efforts started with invasive species removal within the ephemeral ponds. Thousands of plugs of native marsh and sedge meadow species were planted in the ponds in 2009 and 2012. Followed by terrestrial restoration activities and removal of invasive species along the shoreline and within the emergent aquatic zone.

Site Objectives

- Establish the terrestrial land of the site as a preserve for an oak opening and oak woodland. Historically, these communities were part of a larger complex bordered by the prairies of the western United States and the deciduous forests of the eastern United States. These plant communities are the most threatened in the Midwest. Intact examples of oak opening and woodland vegetation are now so rare that less than 500 acres are thought to exist in a state similar to pre-Euro-American settlement. This is less than 0.01% of the estimated 5.5 million acres of oak opening historically found in Wisconsin [i].
- Utilize prescribed fire to maintain the structure and species composition of the planted oak opening, oak woodland, and ephemeral pond communities.
- Recover a high diversity (low-growing) emergent aquatic plant community along the shoreline of the lagoon to support wildlife, improve water quality, discourage geese congregation and view sheds from the land into the lagoon and rectify erosion issues.

- Construct 1 landing within this unit to increase public access to the lagoon for fishing and recreation while simultaneously reducing pressure on natural habitat and sensitive shoreline from social trails and off-trail trampling.
- Retain coarse woody debris (fallen logs, branches) in designated, woodchipped areas of the unit which is important for retaining moisture and humidity, create habitat for amphibians, invertebrates, and fungi, and provide nurse logs for tree saplings, and micro-climates for herbaceous plants and mosses.
- Establish and maintaining views of the lagoon by thinning-out existing shrubs and trees growing along the lagoon shoreline.
- Improve accessibility to the 2 ephemeral ponds and enhance their capacity to capture and filter storm water and provide habitat for wildlife.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

Conversion of the terrestrial land to oak opening and oak woodland is the strategy of restoration for this unit. First steps involve increasing the current density of the trees and converting the turf grass to an understory of species representative of the desired plant communities. The eastern-most 0.70-acres, bordering the lagoon, will have less than 50% tree canopy cover characteristic of an oak opening plant community. The remaining 3.96-acres will differ in having greater canopy cover, approximately ranging from 50% to 95% tree canopy or crown cover. Indicative of an oak woodland. Oak species will come to dominate the canopy of this unit. Augmentation of the shrub and ground layer will include species that are fire tolerant/dependent. Emphasis will be put upon establishment of sedges, low-growing grasses and forb species. Seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit. Vegetation cover within and around both ephemeral ponds will be monitored and managed to provide sufficient water retention for temporary pooling, a combination of open and closed canopy cover, establishment of a food web, resting, feeding and breeding habitat for invertebrates, amphibians, and songbirds. The emergent aquatic areas of the lagoon shoreline will be modified in plant composition to be more of an herbaceous versus shrub layer, consisting of low-growing sedges, rushes, grasses, and forb species. Allowing for greater visibility of the lagoon while amending the current shoreline erosion issues affecting water quality and recreation.

Early restoration efforts of both terrestrial and aquatic areas will include active management and control efforts-manual and/or herbicide application -of non-native and invasive plant species. The structure and ecological characteristics of the unit will be shaped by a prescribed fire management program. A prescribed fire regime of frequent, light to moderate surface fires every 3 to 5-year prescribed fire regime for the first 10-years is most appropriate. To maintain a refuge for wildlife, no more than two-thirds of the acreage will be burned at one time.

Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit. One ADA accessible, recreational landing will be construction and installed along the shoreline of the eastern border (p. 104). For accessibility to the landing and throughout the unit, wood chipped footpaths will be established and maintained by UEC Land Stewardship staff. The existing boardwalk found within the smaller ephemeral pond will be updated and upgraded to an ADA-approved structure that runs the full width of the smaller pond. Enhancing visitor experience, accessibility and education of this unique natural community. Large pieces (tree trunks and logs) of coarse woody debris will be retained in designated, woodchipped areas of the unit.

Long-term monitoring and control efforts may require manual removal and/or herbicide application to maintain the viability of an oak opening and oak woodland preserve against non-native and invasive plant species. Prescribed fire/burn occurrences will decrease to once every 5 to 10-years, burning no more than two-thirds of the acreage at one time. Periodic seed spreading and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. The canopy cover will be managed through occasional thinning of the canopy. Understory manipulation and shrub control via coppicing or brushing may be needed to maintain view sheds. A 10foot wide turf border along the perimeter of the unit will be defined and created by UEC Land Steward, but mowed by MKE County Parks' staff.

A plant list for this unit can be found on pages 57-72 and 91-93.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program: 3 to 10-year regime
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting Fascines installation

Aquatic Areas:

- Coconut/fiber coir log(s)
- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program (ephemeral pond only): 3 to 10-year regime
- Seeding, plug and container planting

Unit 4 – Savanna & Southern Lowlands Communities

Savanna

"In the Midwest, savanna is generally used to describe an ecosystem that was historically part of a larger complex bordered by the prairies of the west and the deciduous forests of the east. Savannas are plant communities that have a partial tree canopy and open areas dominated by herbaceous vegetation. Savannas grade into both prairie and forest. Curtis (1959) defined savannas as having no less than one tree per acre and no more than a 50% tree canopy. Oaks (*Quercus sp.*) are dominant in mature stands, typically as large, open-grown trees with distinctive limb architecture. American hazelnut (*Corylus americana*) is a common understory shrub. The herb layer is similar to those found in oak forests and prairies, with many of the same grasses and forbs present. There are some plants (e.g., kitten-tails (*Besseya bullii*) and animals (e.g., red-headed woodpecker, orchard oriole, eastern bluebird) that reach their optimal abundance in the openings. This community is dependent on fire for its formation and maintenance."

Comments: Most of the park land is planted with tree species other than oak (*Quercus sp*.) therefore a true oak-dominant savanna will not be established. When managed with prescribed burns, special care will be taken to protect non-oak trees in these savannas, which are sensitive to fire.

Southern Lowlands Communities:

Floodplain Forest

This is a lowland hardwood forest community that occurs along large rivers, usually stream order 3 or higher, that flood periodically. The best-development occurs along large rivers in southern Wisconsin, but this community is also found in the north. Canopy dominants may include silver maple (*Acer saccharinum*), river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), hackberry (*Celtis occidentalis*), swamp white oak (*Quercus bicolor*), and cottonwood (*Populus deltoides*). Northern stands are often species poor, but balsam-poplar (*Populus balsamifera*), bur oak (*Quercus macrocarpa*), and box elder (*Acer negundo*) may replace some of the missing "southern" trees.

Buttonbush (*Cephalanthus occidentalis*) is a locally dominant shrub and may form dense thickets on the margins of oxbow lakes, sloughs and ponds within the forest. Nettles (*Laportea canadensis* and *Urtica dioica*), sedges, ostrich fern (*Matteuccia struthiopteris*) and gray-headed coneflower (*Rudbeckia laciniata*) are important understory herbs, and lianas such as Virginia creepers (*Parthenocissus spp*.), grapes (*Vitis spp.),* Canada moonseed (*Menispermum canadense*), and poison-ivy (*Toxicodendron radicans*) are often common. Among the striking and characteristic herbs of this community are cardinal flower (*Lobelia cardinalis*) and green dragon (*Arisaema dracontium*)."

Shrub-carr

"This type occupies areas that are transitional between open wetlands such as wet prairie, calcareous fen, or southern sedge meadow, and forested wetlands such as floodplain forest or southern hardwood swamp. Shrub-carr can persist at a given site for a very long time if natural hydrologic cycles are maintained. This type often occurs in bands around lakes or ponds, on the margins of river floodplains, or, more extensively, in glacial lake beds. In the south, Shrub-carr is often an integral part of prairie-savanna landscapes, though it also occurred in wetlands within more forested regions. Shrub-carr is defined as having few trees and generally 50% cover of shrubs or more, often with at least 4 or 5 species that are co-dominant. It is similar to alder thicket, but can be distinguished by having several shrub species that share dominance (especially willows and dogwoods). While alder is often present in a shrub-carr (especially in northern Wisconsin), it should comprise less than half of the relative shrub cover. Shrub-carr often intergrades with southern sedge meadow"

Emergent Aquatic

"Emergent aquatic (marsh) is dominated by robust emergent macrophytes, in pure stands of single species or in various mixtures. Dominants include cattails (*Typha* spp.), bulrushes (particularly *Schoenoplectus acutus, S. tabernaemontani,* and *Bolboschoenus fluviatilis*), bur-reeds (*Sparganium* spp.), giant reed (*Phragmites australis*), pickerel-weed (*Pontederia cordata*), waterplantains (*Alisma* spp.), arrowheads (*Sagittaria* spp.), the larger species of spike-rush (such as *Eleocharis smallii*), and wild rice (*Zizania* spp.). Emergent Marsh can occur in a wide variety of hydrologic settings, including inland lake, Great Lakes, riverine and estuarine complexes. Emergent marsh often intergrades with and transitions to floating-leaved marsh or submergent marsh in deeper water but is dominated by emergent vegetation."

[Broad leaved cattail (Typha latifolia) and the American subspecies of giant reed (Phragmites australis subsp. americanus) are native species in this plant community whereas hybrid and narrow leaved cattails (Typha hybrida, angustifolia) and Eurasian giant reed (Phragmites australis subsp. australis) are WDNR listed invasive species] Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer.

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

Acreage of this unit is 1.36-acres. The land borders the Washington Park lagoon to the north and east. The vegetation cover is mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, and a thicket of trees and shrubs growing along the lagoon shoreline.
The existing native tree and shrub species include: sugar maple and silver maple (*Acer saccharum and A. saccharinum),* white ash (*Fraxinus americana*), green ash (Fraxinus pennsylvanica), hawthorn (*Crataegus sp*.), thornless honeylocust (Gleditsia tricanthos var. inermis), red-osier dogwood and silky dogwood (*Cornus sericea* and *C. amomum*), willow (*Salix sp*.) and river birch (*Betula nigra*), elm (*Ulmus sp*.), and American plum (*Prunus americana*). Non-native and/or invasive species are Norway maple (Acer platanoides), white mulberry (Morus alba), osage orange (Maclura pomifera), common buckthorn (*Rhamnus cathartica*), mock orange (*Philadelphus* x *virginalis*), Tatarian and bell's hybrid honeysuckle (*Lonicera tatarica* and *L. x bella*), European alder (*Alnus glutinosa*), and common buckthorn (*Rhamnus cathartica*). The emergent aquatic vegetation is primarily hybrid cattail (*Typha x glauca*) and bittersweet nightshade (*Solanum dulcamara*). The land topography is flat with a slight slope downward along the lagoon shoreline. The soil texture is clay loam with dry to moist tendencies and wet soils along the lagoon shoreline.

To-date, active maintenance efforts by UEC Land Stewards have been along the shoreline, removing invasive species within the emergent aquatic areas and shoreline zone. Active maintenance began in 2014. See Timeline of Management Unit Restoration Dates for the complete unit restoration start date.

Site Objectives

- Restore the unit as a preserve for savanna along the eastern portion of the unit and southern lowland forest and other lowland plant species in the western portion of the unit and restore the whole unit as ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Recover a high diversity (low-growing) emergent aquatic plant community along the shoreline of the lagoon to support wildlife, improve water quality, discourage geese congregation and view sheds from the land into the lagoon, rectify erosion issues and enhance water access for recreation.
- Construct 2 landings within this unit to increase public access to the lagoon for fishing and recreation while simultaneously reducing pressure on natural habitat and sensitive shoreline from social trails and off-trail trampling.
- Establish and maintaining views of the lagoon by thinning-out existing woody species growing along the lagoon shoreline.
- Utilize prescribed fire to maintain the structure and species composition of the savanna community.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

Early restoration efforts throughout the unit of both terrestrial and aquatic areas will include active management and control efforts- manual and/or herbicide application -of non-native and invasive plant species. Complete restoration efforts for this unit will begin on the acreage bordering the north side of the lagoon. The turf grass ground layer will be converted to herbaceous species tolerant to fluctuating water levels as well as seasonally wet soils that usually dry out by mid-late summer. Minimal if any tree canopy will be manipulated. Sections of the existing shrub layer growing along the shoreline will be thinned to create periodic views of the lagoon in concert with planting a herbaceous layer of the emergent aquatic. This restoration strategy will enhance a sense of space and constant opening up of new views as park user's move through the landscape. The herbaceous layer of the emergent aquatic will consist of low-growing sedges, rushes, grasses, and forb species that will amend the current shoreline erosion issues affecting water quality and recreation.

The land east of the lagoon will be converted to a savanna plant community type. It will have no less than 1 tree per acre and no more than a 50% tree canopy. The ecological structure and characteristics will be shaped by a prescribed fire management program. The ground layer of this unit will be planted with native, fire tolerant/dependent herbaceous plant species found in naturally occurring savanna plant communities. Seeds and plug plants from local genetic material will be sourced and planted. A prescribed fire regime of frequent, light to moderate surface fires every 3 to 5-years is most appropriate for the first 10-years. Burning will occur on no more than two-thirds of the acreage at one time to maintain refuge for wildlife. The existing shrub layer growing along the shoreline of this section will be thinned in unison with ground layer plantings of the emergent aquatic areas.
This restoration strategy will enhance a sense of space and constant opening up of new views as park user's move through the landscape. The herbaceous layer of the emergent aquatic will consist of low-growing sedges, rushes, grasses, and forb species that will amend the current shoreline erosion issues affecting water quality and recreation.

Two ADA accessible, recreational landings will be construction and installed along the shoreline within the unit (p. 104). Woodchipped footpaths will be established leading to and from the landing as well as throughout the savanna section of the unit. A 10-foot wide turf border along the perimeter of the unit will be defined and created by UEC Land Stewards, but mowed by Milwaukee (MKE) County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit.

Long-term monitoring and control efforts may require manual removal and/or selective herbicide application to maintain the viability of a savanna and southern lowland forest preserve against non-native and invasive plant species. Prescribed fires will continue in the savanna, occurring every 5 to 10-years, burning no more than twothirds of the acreage at one time. Periodic interseeding and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity.

A plant list for this unit can be found on pages 72-76, 85-87, and 91-93.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program (savanna community only): 3 to 10-year regime
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting Fascine installation

Aquatic Areas:

- Coconut/fiber coir log(s)
- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program: 3 to 10-year regime
- Erosion control fabric: jute or straw
- Seeding, plug and container planting

Unit 5 – Southern Mesic Forest Community

"This upland forest community occurs on rich, well-drained soils. The dominant tree species is sugar maple (*Acer saccharum*), but basswood (*Tilia americana*) and (near Lake Michigan) beech (*Fagus grandifolia*) may be codominant. Many other trees are found in these forests, including those of the walnut family (*Juglandaceae*). The understory is typically open- sometimes brushy with species of gooseberry (*Ribes*) if there is a past history of grazing -and supports fine spring ephemeral displays. Characteristic herbs are spring-beauty (*Claytonia virginica*), trout-lilies (*Erythronium spp*.), trilliums (*Trillium spp*.), violets (*Viola spp*.), bloodroot (*Sanguinaria canadensis*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), and Virginia waterleaf (*Hydrophyllum virginianum*)."

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

Vegetation in this unit is primarily mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, and various tree species scattered throughout the acreage. The existing native tree species include: sugar maple (*Acer saccharum*), and black cherry (*Prunus serotina*). Norway maple (*Acer saccharum*) is present and deemed a non-native, invasive species. The soil is often cool and of a clay

loam texture.. The land is mostly flat, sloping downward to the north and northeast borders of the unit. Drainage is moderate to good.

In 2016, MKE County Parks Forestry Department planted several white and bur oak (*Quercus alba* and *Q. macrocarpa*) trees. With the approval of MKE County Parks, the UEC Land Stewards planted a single American beech (*Fagus grandifolia*) tree fall of 2018. In total, the unit is 0.99-acres.

See Timeline of Management Unit Restoration Dates for unit restoration start date.

Site Objectives

- Restore the unit as a preserve for southern mesic forest plant species and ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Establish a shade-tolerant (closed canopy), fire-intolerant plant community.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Retain coarse woody debris (fallen logs, branches) in this unit which is important for retaining moisture and humidity, create habitat for amphibians, invertebrates, and fungi, and provide nurse logs for tree saplings, and micro-climates for herbaceous plants and mosses.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Restore a healthy duff layer of leaves and decomposing organic matter which will add fertility, help maintain moisture levels, and keep the soil cool.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

Conversion of the land to southern mesic forest (SMF) is the strategy of restoration for this unit. First steps involve increasing the current density of the trees and converting the turf grass to an understory of species representative of the desired plant community. The end goal will be to create a closed tree canopy where the co-dominant species are sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*). The understory will be maintained with a limited number of small-sized trees and low-growing shrubs being planted. Species will be selected based on their propensity for southern mesic forest, overall mature growth/stature and will be strategically planted to prevent the blocking of view sheds and vistas. Characteristic herbs of the ground layer will include spring ephemerals and a high diversity of soft-stemmed species. Emphasis will be put upon establishment of sedges, low-growing grasses and forb species. Seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit. Early restoration efforts will also include active management and control efforts- manual and/or herbicide application -of non-native and invasive plant species. A 10-foot wide turf border along the perimeter of the unit will be defined and created by UEC Land Steward, but mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit. For accessibility into and throughout the unit, wood chipped footpaths will be established and maintained by UEC Land Stewardship staff.

Long-term monitoring and control efforts may require manual removal and/or herbicide application to maintain the integrity of a southern mesic forest preserve free of non-native and invasive plant species. Periodic interseeding and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. The canopy cover will be managed as needed to mimic natural disturbance patterns (windthrow gaps); thinning of the canopy, understory manipulation and shrub control via coppicing or brushing may be needed to maintain view sheds. A healthy duff layer of leaves and decomposing organic matter will be allowed to develop. Coarse woody debris will be retained throughout this unit, but managed to not block or obstruct sight lines.

The UEC Land Stewards will maintain the overall health and care of the black oak (*Quercus velutina*) planted fall of 2018 regardless of when full restoration of the unit begins.

A plant list for this unit can be found on pages 87-89.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of wood and herbaceous plants
- Chemical/Herbicide application of wood and herbaceous plants
- Smothering: commercial grade fabric and/or wood chips
- Seeding, plug, container, and balled-and-burlaped planting Fascine installation

Unit 6 - Southern Dry-mesic Forest Community

"Red oak (*Quercus rubra*) is a common dominant tree of this upland forest community type. White oak (*Q. alba*), basswood (*Tilia americana*), sugar and red maples (*Acer saccharum* and *A. rubrum*), and white ash (*Fraxinus americana*) are also important. The herbaceous understory flora is diverse and includes many species listed under Southern Dry Forest plus jack-in-the-pulpit (*Arisaema triphyllum*), large-flowered bellwort (*Uvularia grandiflora),* interrupted fern (*Osmunda claytoniana*), Lady Fern (*Athyrium Filix-emina*), tick-trefoils (*Desmodium glutinosum* and *D. nudiflorum*), and hog peanut (*Amphicarpa bracteata*). To the detriment of the oaks, mesic tree species are becoming increasingly important under current management practices and fire suppression policies."

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

Planting records of West Park show that the land within this unit was primarily planted with trees and an understory of 3-foot to 10-foot shrubs. The land within this unit has greater than 50% tree canopy coverage, a prominent shrub/understory layer and sparse to rich ground layer of vegetation. In a natural setting, these characteristics distinguish this area to be reminiscent of a woodland or forest plant community. The native tree species consist of sugar maple (*Acer saccharum*), white oak (*Quercus alba*), white ash (*Fraxinus americana*), hawthorn (*Crataegus sp*.), and red pine (*Pinus resinosa*). Non-native and/or invasive species present are Norway Maple (Acer platanoides), black locust (Robinia pseudoacacia), Scots pine (Pinus sylvestris), white mulberry (Morus alba), treeof-heaven (Ailanthus altissima), common buckthorn (*Rhamnus cathartica*), tatarian and bell's hybrid honeysuckle (*Lonicera tatarica* and *L. x bella*). The ground layer is comprised of turf grass species and bare soil with invasive, herbaceous and woody species seedlings dominating, i.e. garlic mustard (*Alliaria petiolata*). The land topography is flat to rolling with a few piles of soil deposited throughout. The soil texture is clay loam with moderate to dry tendencies. This unit sits on the top of a west-facing slope east of Highway 175. The land is exposed to hot, dry wind, sun, and urban heat lending the plant community type to a dry-mesic forest. The total acreage of this unit is 0.70-acres.

In conjunction with review of the Olmsted Plants (Preliminary West Park Design Plan, Olmsted Master Plan "A", West Park planting lists, the West Park Plan for Border Plantation, pp. 114-118), and presently growing plant species, and the topographic features of the site, a southern dry-mesic forest plant community type is the most appropriate for this unit.

Invasive shrubs were removed from this unit 2009-2012, and 2016. Restoration activities by UEC Land Stewards began in 2018.

With the approval of MKE County Parks, the UEC Land Stewards planted a single black oak (*Quercus velutina*) tree fall of 2018.

Site Objectives

- Maintain the unit as a preserve for southern dry-mesic plant species and an ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Retain and enhance areas of fire tolerant shrub/understory to act as a visual and natural sound barrier to city traffic on Highway 175.
- Prescribed fire will be utilized to maintain the structure and species composition of the unit.
- Provide opportunities for research as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.

Restoration Strategy

Initially, this unit will be actively managed through non-native, invasive species removal and replacement with characteristic native species vegetation of the southern dry-mesic forest community. Oak species will come to dominate the canopy of this unit. The augmentation of the shrub and ground layer will include species that are fire tolerant/dependent and provide a physical and natural sound barrier to the urban traffic, and buffer to the urban heat island effect and pollution from Highway 175. Seeds, plugs, and containerized plants from local genetic material will be sourced and planted throughout the unit. If or when possible, a prescribed fire regime may be used to deter mesophication or the succession of shade-tolerant, moisture loving species. A prescribed fire regime of low intensity or infrequent, light surface fires, every 5 to 10-years for the first 10-years, is most appropriate. To maintain refuge for wildlife, no more than two-thirds of the acreage will be burned at one time.

A 10-foot wide turf border along the perimeter of the unit will be defined and created by UEC Land Stewards, but mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continued throughout the maintenance term of this unit.

Long-term monitoring and control efforts may require manual removal and/or herbicide application to maintain the viability of a dry-mesic forest preserve against non-native and invasive plant species. Prescribed fire/burn occurrences will decrease to once every 10 to 25-years, burning no more than two-thirds of the acreage at one time, for the duration of the UEC land maintenance. Periodic seed spreading and/or container planting will be used where native plant populations are sparse. The canopy cover will be evaluated after maturity and managed as needed to mimic natural disturbance patterns (windthrow gaps) and maintain understory light levels similar to those found in dry-mesic forest.

The UEC Land Stewards will maintain the overall health and care of the single black oak (*Quercus velutina*) planted fall of 2018 regardless of when full restoration of the unit begins.

A plant list for this unit can be found on pages 49-52.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program: 5 to 25-year regime Seeding, plug, and container planting

Unit 7 – Wet-mesic Prairie Community

> "Wet-mesic prairie community is characterized by tall prairie grasses occurring on mineral soils. It can be distinguished from wet prairie by its greater prevalence of forbs associated with mesic and dry-mesic prairie such as yellow coneflower (*Ratibida pinnata*) and stiff goldenrod (*Solidago rigida*), and greater depth of water table. In contrast, wet prairies tend to have a higher water table and higher prevalence of wetland forbs such as Joe-Pye-weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), common water hemlock (*Cicuta maculata*), swamp milkweed (*Asclepias incarnata*), and water smartweed (*Persicaria amphibia*). Loamy soils set wet-mesic prairie apart from other similar wetland types including calcareous fen and southern sedge meadow, both of which occur on organic soils (peat and/or marl). In addition, wet-mesic prairie is dominated by grasses in terms of biomass, where sedge meadows are dominated by sedges."
>
> Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

The vegetation cover of this 0.159-acre unit was originally mowed turf grass. The site has a clay-loam soil and slopes down from its southern edge and southwest corner to its northern edge and northeast corner. The soil is well drained along the west third of the unit, while the rest of the unit is saturated after precipitation.

In 2008, MKE County parks designed and funded the installation of a bioswale (large rain garden) to filter and absorb storm water runoff from the Blatz Temple of Music parking lot. UEC Land Stewardship staff and a crew from Student Conservation Association (SCA) prepared the site, then planted native, wet-mesic to dry-mesic grasses and forbs purchased and provided by MKE County Parks. After the bioswale was installed, Marek Landscaping installed a flagstone path to connect the parking lot to the paved path north of the swale.

The UEC Land Stewards currently maintain this unit, however active restoration of this unit was completed in 2008.

Site Objectives

- Maintain the unit as a preserve for primarily wet-mesic prairie species and ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Maintain the unit as bioswale to absorb storm water runoff from the Blatz Temple of Music parking lot and filter out pollutants and nutrients before they reach the lagoon.
- Provide opportunities for research and education as it relates to public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Prescribed fire will be utilized to maintain the structure and species composition of the unit.
- Increase diversity of plant species within the unit.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

The ground layer of this unit has been planted with native, fired adapted/dependent herbaceous plant species found in naturally occurring wet-mesic to dry-mesic prairie plant communities. Local genetic material was sourced for plug plants. The ecological structure and characteristics of the unit will be primarily shaped by a prescribed fire management program. A prescribed fire regime of frequent, light to moderate surface fires every 2 to 5-years is the most appropriate. Burning will occur on no more than two-thirds of the acreage at one time to maintain a refuge for wildlife. A 10-foot wide turf border along the perimeter of the unit has been defined and created by UEC Land Steward, but is mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit. UEC Land Stewards will maintain clear and clean access along the Lannon stone pathway.

Long-term monitoring and control efforts to maintain the viability of a wet mesic prairie preserve may require manual removal and/or selective herbicide application of non-native and invasive plant species. Prescribed fires will continue to occur every 2 to 5-years, burning no more than two-thirds of the acreage at one time, for the duration of the UEC land maintenance. Periodic seed spreading and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity.

A plant list for this unit can be found on pages 83-85.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program: 2 to 5-year interval
- Seeding, plug, and container planting
- Spring brush cutting or cut-down of seasonal herbaceous vegetation (non-burn years) =

Unit 8 – Blatz Temple of Music Garden

A permanent, commercial-style planting design comprised of Wisconsin native shrubs and herbaceous perennials fill the planting beds surrounding the perimeter of the Blatz Temple of Music. Great care and thought was put into plant selection to provide constant floral color, clean lines, rhythm and repetition of plant material, access to utility boxes, and overall safety of park users.

Site Description

The total acreage of this unit is 0.18-acres. Original plantings within the beds that surround the Blatz Temple of Music as of 2008 resembled a commercial-style design with a ground layer, shrub layer and specimen trees. The ground layer was comprised of low-growing, cultivated perennials, broadleaf weeds and grasses. Alpine currant (*Ribes alpinum*) and hedge cotoneaster (*Cotoneaster lucidus*) shrubs were planted along the perimeter of the planting beds. The tree specimens existing to date are 8 hawthorn (*Crataegus sp*).

In 2009, with approval of MKE County Parks, the cotoneaster shrubs and weeds were removed (the alpine hedge was left) the area was planted with herbaceous woodland and savanna specific plant species.

In winter of 2015, a landscape design was drafted by the Washington Park UEC Land Steward and approved by MKE County Parks. In spring of 2015, volunteers and UEC Land Stewards removed all remaining shrubs and previously planted herbaceous plants. With MKE County Parks' approval, native plants were installed based on the proposed 2015 design within the planting beds on the south side of the structure. Black, smothering fabric was laid on top of the east, north, and west planting beds with a layer of woodchips spread a crossed it and allowing it to remain in place until 2018 during renovations of the building.

In spring of 2018, the black, smothering fabric was removed and a layer of woodchips was re-spread across the east, north, and west planting beds. Future restoration work awaits approval of a revised 2015 design and completion of renovations of the Blatz Temple of Music.

Site Objectives

- Complete and maintain aesthetically-pleasing landscaping, in a commercial-style design, displaying native sun and shade loving plants within the planting beds of the Blatz Temple of Music.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Preserve existing hawthorns (*Crataegus sp.*) as specimens of historical significance.

Restoration Strategy

Continued maintenance of the south side plantings will be the focus of UEC Land Stewards. In late winter, early spring, the following shrubs will be cut back to 1/3 of their existing height, scarlet elderberry (*Sambucus rubra*) and dwarf bush honeysuckle (*Diervilla lonicera*). Herbaceous vegetation will be cut back annually in spring time. Woodchips will be added to the planting beds as needed and defined bed edges will be maintained. The west, north, and east planting beds will be maintained as woodchip, weed free areas until future planting is approved of.

Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continued throughout the maintenance term of this unit.

A proposed revision of the 2015 landscape design will be submitted to MKE County Parks as the first step in the full restoration of this unit. Upon approval, the plant beds will be planted based on design specifications and maintained as a native plant garden. Plugs and containerized plants from local genetic material will be the source of plant material for the planting beds. Woodchips will be added after plant installation.

Long-term monitoring and control efforts may require manual removal and/or herbicide application to control weeds and maintain the aesthetic of the planting beds. Plug and/or container planting may be needed to replace plant specimens throughout the duration of the UEC land maintenance agreement. Woodchips may be added to the planting beds as needed for aesthetics and weed suppression.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Seeding, plug, and container planting
- Spring brush cutting or cut-down of seasonal herbaceous vegetation

Unit 9 – Savanna & Southern Mesic Forest Communities

Savanna

"In the Midwest, savanna is generally used to describe an ecosystem that was historically part of a larger complex bordered by the prairies of the west and the deciduous forests of the east. Savannas are plant communities that have a partial tree canopy and open areas dominated by herbaceous vegetation. Savannas grade into both prairie and forest. Curtis (1959) defined savannas as having no less than one tree per acre and no more than a 50% tree canopy. Oaks (*Quercus sp.*) are dominant in mature stands, typically as large, open-grown trees with distinctive limb architecture. American hazelnut (*Corylus americana*) is a common understory shrub. The herb layer is similar to those found in oak forests and prairies, with many of the same grasses and forbs present. There are some plants (e.g., kitten-tails (*Besseya bullii*) and animals (e.g., red-headed woodpecker, orchard oriole, eastern bluebird) that reach their optimal abundance in the openings. This community is dependent on fire for their formation and maintenance."

Comments: Most of the park land is planted with tree species other than oak (*Quercus sp*.) therefore a true oak-dominant savanna will not be established. When managed with prescribed burns, special care will be taken to protect non-oak trees in these savannas, which are sensitive to fire.

Southern Mesic Forest

"This upland forest community occurs on rich, well-drained soils. The dominant tree species is sugar maple (*Acer saccharum*), but basswood (*Tilia americana*) and (near Lake Michigan) beech (*Fagus grandifolia*) may be co-dominant. Many other trees are found in these forests, including those of the walnut family (*Juglandaceae*). The understory is typically open- sometimes brushy with species of gooseberry (Ribes) if there is a past history of grazing -and supports fine spring ephemeral displays. Characteristic herbs are spring-beauty (*Claytonia virginica*), trout-lilies (*Erythronium spp*.), trilliums (*Trillium spp*.), violets (*Viola spp*.), bloodroot

(*Sanguinaria canadensis*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), and Virginia waterleaf (*Hydrophyllum virginianum*)."

Emergent Aquatic

"Emergent aquatic (marsh) is dominated by robust emergent macrophytes, in pure stands of single species or in various mixtures. Dominants include cattails (*Typha* spp.), bulrushes (particularly *Schoenoplectus acutus, S. tabernaemontani,* and *Bolboschoenus fluviatilis*), bur-reeds (*Sparganium* spp.), giant reed (*Phragmites australis*), pickerel-weed (*Pontederia cordata*), waterplantains (*Alisma* spp.), arrowheads (*Sagittaria* spp.), the larger species of spike-rush (such as *Eleocharis smallii*), and wild rice (*Zizania* spp.). Emergent Marsh can occur in a wide variety of hydrologic settings, including inland lake, Great Lakes, riverine and estuarine complexes. Emergent marsh often intergrades with and transitions to floating-leaved marsh or submergent marsh in deeper water but is dominated by emergent vegetation."

[Broad leaved cattail (Typha latifolia) and the American subspecies of giant reed (Phragmites australis subsp. americanus) are native species in this plant community whereas hybrid and narrow leaved cattails (Typha hybrida, angustifolia) and Eurasian giant reed (Phragmites australis subsp. australis) are WDNR listed invasive species]

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

This unit is 0.90-acres. The land abuts the Washington Park lagoon along the west and east unit borders. Topography of the land is mostly flat with the perimeter sloping downward as it meets the lagoon shoreline. The soil texture is clay loam with dry to moist tendencies and wet soils along the lagoon shoreline. The vegetation cover is a mix of mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, a 1,200-square foot section of restored prairie, and a thicket of trees and shrubs growing along the lagoon shoreline. The existing native tree and shrub species include: sugar maple and silver maple (*Acer saccharum and A. saccharinum*), green ash (*Fraxinus pennsylvanica*), hawthorn (*Crataegus sp*.), boxelder (*Acer negundo*), elm (*Ulmus sp*.), American basswood (*Tilia americana*), willow sp. (*Salix sp.),* ironwood (*Ostrya virginiana*), chokecherry (*Prunus virginiana*), gray dogwood and silky dogwood (*Cornus racemosa* and *Cornus amomum*). Non-native, invasive species include Norway maple (*Acer platanoides*), white mulberry (*Morus alba*), European alder (*Alnus glutinosa*), weeping willow (*Salix babylonica*), common buckthorn (*Rhamnus cathartica*), nanking cherry (*Prunus tomentosa*), European cranberry viburnum (*Viburnum opulus*), Tatarian and bell's hybrid honeysuckle (*Lonicera tatarica* and *L. x bella*).The emergent aquatic vegetation is primarily hybrid cattail (*Typha x glauca*) with a minimal presence of native, herbaceous plant species.

In 2007, UEC staff installed a 100-foot planted coir log section and strip of terrestrial vegetation on the east side of the unit's shoreline to mitigate erosion. The plant species were a mix of emergent and shoreline herbaceous plant species.

In 2008, MKE County Parks hired Marek Landscaping to create the 1,200-square foot section of prairie, install a 105-foot planted coir log section to mitigate erosion and build a Lannon stone walkway with a recreational landing on the west side of the unit.

To-date, active maintenance efforts by UEC Land Stewards have been removing invasive species within the emergent aquatic and shoreline areas, and maintenance through prescribed burning of the 1,200-square foot planted prairie.

See Timeline of Management Unit Restoration Dates for the complete unit restoration start date.

Site Objectives

- Restore the unit as a preserve for savanna and southern mesic forest plant species, and ecologically balanced habitat for mammals, birds, and invertebrate animals.

- Recover a high diversity (low-growing) emergent aquatic plant community along the shoreline of the lagoon to support wildlife, improve water quality, discourage geese congregation, improve view sheds from the land into the lagoon, rectify erosion issues, and enhance water access for recreation.
- Construct 1 landing on the east lagoon shoreline of this unit to increase public access to the lagoon for fishing and recreation while simultaneously reducing pressure on natural habitat and sensitive shoreline from social trails and off-trail trampling.
- Establish and maintaining views of the lagoon by thinning-out existing woody species growing along the lagoon shoreline.
- Utilize prescribed fire to maintain the structure and species composition of the savanna community.
- Maintain existing sections of closed canopy, fire-intolerant plant species within the southern mesic forest community.
- Retain coarse woody debris (fallen logs, branches) in this unit which is important for retaining moisture and humidity, create habitat for amphibians, invertebrates, and fungi, and provide nurse logs for tree saplings, and micro-climates for herbaceous plants and mosses.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Restore a healthy duff layer of leaves and decomposing organic matter within the southern mesic forest sections of the unit which will add fertility, help maintain moisture levels, and keep the soil cool.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

Early restoration efforts throughout the unit of both terrestrial and aquatic areas will include active management and control efforts of non-native and invasive plant species through manual removal and/or herbicide application. Due to the presences of several aggressive, tall, native plant species growing in the prairie installed by Marek Landscaping, this section will be reworked. The species composition will be altered to support low-growing grasses, sedges, and flowering forbs naturally found within savanna plant communities. The remaining turf grass ground layer will be converted to native, fire tolerant/dependent herbaceous plant species also naturally found within savanna plant communities. Seeds and plug plants from local genetic material will be sourced and planted.

The ecological structure and characteristics of the savanna community sections will be shaped by a prescribed fire management program. A prescribed fire regime of frequent, light to moderate surface fires every 3 to 5-years is most appropriate.

Minimal if any tree canopy will be manipulated in the sections of this unit that are designated southern mesic forest. The end goal is a closed-tree canopy where the dominant species are sugar maple (*Acer saccharum*), American basswood (*Tilia americana*), and American beech (*Fagus grandifolia*). Initially, all non-native and invasive species will be removed. Native shrub species may be thinned out in unison with herbaceous layer planting. This restoration strategy will enhance a sense of space and constant opening up of new views as park user's move through the landscape. Any newly planted native shrub species will be selected based on their affinity for southern mesic forest, overall mature growth/stature and then strategically planted to prevent the blocking of view sheds and vistas. Characteristic herbs of the ground layer will include spring ephemerals and a high diversity of soft-stemmed species. Emphasis will be put upon establishment of sedges, low-growing grasses and forb species. Seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit.

The herbaceous layer of the emergent aquatic zone will be restored and will consist of low-growing sedges, rushes, grasses, and forb species that will amend the current shoreline erosion issues affecting water quality and recreation.

A 10-foot wide turf border along the paved path within the unit will be defined and created by UEC Land Steward, but mowed by Milwaukee (MKE) County Parks' staff. One ADA accessible, recreational landing will be constructed along the east shoreline (p. 104). A woodchipped footpath will lead park users to the landing. The existing Lannon stone walkway and landing will remain as is with maintenance being performed as needed.

Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continued throughout the maintenance term of this unit.

Long-term monitoring and control efforts to maintain the viability of a southern mesic forest preserve may require ongoing manual removal and/or herbicide application of non-native and invasive plant species. Prescribed fires will continue in the savanna lands, occurring every 5 to 10-years. Periodic seed spreading and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. A healthy duff layer of leaves and decomposing organic matter will be allowed to develop. Coarse woody debris will be retained throughout this unit, but managed to not block or obstruct sight lines.

A plant list for this unit can be found on pagesn 72-76, 87-89, and 91-93.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program (savanna community only): 3 to 10-year regime
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting
- Spring brush cutting or cut-down of seasonal herbaceous vegetation (non-burn years)

Aquatic Areas:

- Coconut/fiber coir log(s)
- Erosion control fabric: jute or straw
- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Seeding, plug and container planting

Unit 10 – Nature Play Area

The nature play area will be an area intended for children to explore, play, and learn. Plants will include tough native groundcovers and sedges. There will be areas for children to climb (logs and stumps), dig holes, and make temporary forts and shelters out of natural materials. The plant species selected for this unit will feature native plants used as sources of food, textiles, dyes, and medicinal herbs (non-toxic) by Native Americans and early European settlers. Trees such as chinkapin oak (*Quercus muehlenbergii*), shagbark hickory (*Carya ovata*), white walnut (*Juglans cinerea*), and prairie crabapple (*Malus ioensis*) will provide light shade for native shrubs such as hazelnut (*Corylus americana*), black chokeberry (*Prunus x prunifolium*), serviceberry (Amelanchier spp) and American current (*Ribes americanum*). Herbaceous plants such as wild ginger, wild leek, wild strawberry, and wild garlic will also be planted.

Site Description

Acreage of this unit totals 0.31-acres. The vegetation cover is mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, and various tree species planted throughout. The existing native tree species include: silver maple (*Acer saccharinum*), green ash (*Fraxinus*

pennsylvanica), hawthorn (*Crataegus sp*.), and black walnut (*Juglans nigra*). The land topography is primarily flat. The soil texture is clay loam with dry to moist tendencies.

See Timeline of Management Unit Restoration Dates for the complete unit restoration start date.

Site Objectives

- Create opportunities for outdoor exploration and unstructured play.
- Incorporate the natural aesthetic of the park into an exciting and engaging space for children of all ages to play and families to enjoy.
- Promote nature education and appreciation.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.

Restoration Strategy

Initially, the focus of restoration will be the conversion of the current vegetation cover to tough, native groundcover species. This unit's close proximity to the UEC building makes it an ideal space for incorporating natural aesthetics with the creation of a play space to promote outdoor exploration and learning in nature. The understory will remain open with a limited number of small-sized trees and low-growing shrubs being planted. Overall, the plant species selected for this unit will feature native plants used as sources of food, textiles, dyes, and medicinal herbs (nontoxic) by Native Americans and early European settlers. Seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit. A 10-foot wide turf border along the perimeter of the unit will be defined and created by UEC Land Stewards, but mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during restoration efforts and continue throughout the maintenance term of this unit. For accessibility into and throughout the unit, wood chipped footpaths will be established and maintained by UEC Land Stewardship staff. Early restoration efforts will also include active management and control efforts- manual and/or herbicide application -of non-native and invasive plant species.

After plant establishment, a section of the unit will be defined for a wood log play structure that children can climb on. Woodchips will be spread beneath the wood log play structure.

Long-term monitoring and control efforts will require manual removal of non-native and invasive plant species. Periodic seed spreading and/or plug planting will be used where native plant populations are sparse and to maintain species diversity. Woodchips will be added beneath the play structure and to the footpaths as needed.

A plant list for this unit can be found on pages 76-79.

Methods of Restoration

Terrestrial Lands:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting

Unit 11 – Savanna Community

Savanna

"In the Midwest, savanna is generally used to describe an ecosystem that was historically part of a larger complex bordered by the prairies of the west and the deciduous forests of the east. Savannas are plant communities that have a partial tree canopy and open areas dominated by herbaceous vegetation. Savannas grade into both prairie and forest. Curtis (1959) defined savannas as having no less than one tree per acre and no more than a 50% tree canopy. Oaks (*Quercus sp.*) are dominant in mature stands, typically as large, open-grown trees with distinctive limb architecture. American hazelnut (*Corylus americana*) is a common understory shrub. The herb layer is similar to those found in oak forests and prairies, with many of the same grasses and forbs present. There are some plants (e.g., kitten-tails (*Besseya bullii*) and animals (e.g., red-headed woodpecker, orchard oriole, eastern bluebird) that reach their optimal abundance in the openings. This community is dependent on fire for its formation and maintenance."

Comments: Most of the park land is planted with tree species other than oak (*Quercus sp*.) therefore a true oak-dominant savanna will not be established. When managed with prescribed burns, special care will be taken to protect non-oak trees in these savannas, which are sensitive to fire.

Emergent Aquatic

"Emergent aquatic (marsh) is dominated by robust emergent macrophytes, in pure stands of single species or in various mixtures. Dominants include cattails (*Typha* spp.), bulrushes (particularly *Schoenoplectus acutus, S. tabernaemontani,* and *Bolboschoenus fluviatilis*), bur-reeds (*Sparganium* spp.), giant reed (*Phragmites australis*), pickerel-weed (*Pontederia cordata*), waterplantains (*Alisma* spp.), arrowheads (*Sagittaria* spp.), the larger species of spike-rush (such as *Eleocharis smallii*), and wild rice (*Zizania* spp.). Emergent Marsh can occur in a wide variety of hydrologic settings, including inland lake, Great Lakes, riverine and estuarine complexes. Emergent marsh often intergrades with and transitions to floating-leaved marsh or submergent marsh in deeper water but is dominated by emergent vegetation."

[Broad leaved cattail (*Typha latifolia*) and the American subspecies of giant reed (*Phragmites australis subsp. americanus)* are native species in this plant community whereas hybrid and narrow leaved cattails (*Typha hybrida, angustifolia*) and Eurasian giant reed (*Phragmites australis subsp. australis*) are WDNR listed invasive species]

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

This 1.41-acre unit hugs the lagoon shoreline on the south, east and north borders and changes in elevation with a gradual slope upland 10 to 15-feet above the shoreline before leveling off. The soil in this area is clay loam over heavy clay. Existing native tree and shrub species of this unit include: box elder (*Acer negundo*), silver maple (*Acer saccharinum*), hawthorns (*Crataegus sp.*), green ash (*Fraxinus pennsylvanica*), and staghorn sumac (*Rhus typhina*). Non-native and/or invasive species are European alder (*Alnus glutinosa*), hybrid crabapple (*Malus sp.*), weeping willow (*Salix babylonica*), common buckthorn (*Rhamnus cathartica*) and spindletree (*Euonymus europaeus*). Majority of the terrestrial land is mowed turf grass. The shoreline is severely eroded while the emergent aquatic consists mostly of hybrid cattail (*Typha x glauca*).

In 2008, to remedy the eroding shoreline, discourage geese, and improve water quality, MKE County Parks hired Marek Landscaping to reconstruct a natural shoreline along 5,000-square feet of land. Large diameter coir logs, secured with wooden stakes were planted with plugs of emergent aquatic native plants. On shore, the turf grass was removed, the area was top-dressed with compost, seeded with native prairie seed mix and cover with biodegradable erosion control fabric. A border of 4x4 lumber was installed at ground level on the south edge of the planting area. A temporary fence was installed on the south edge of the planted shoreline as well as the lagoon edge adjacent to the water. A permanent, interpretive stainless steel sign was also installed by the county.

In 2014, several species of trees were planted within the turf grass area by UEC Land Stewardship staff.

To-date, active maintenance effort by UEC Land Stewards has been removing invasive species within the emergent aquatic and along the shoreline areas, and maintenance through prescribed burn of the 5,000-square foot planted shoreline restoration.

See Timeline of Management Unit Restoration Dates for the complete unit restoration start date.

Site Objectives

- Establish the unit as a preserve for savanna and emergent aquatic plant species and an ecologically balanced habitat for associated mammals, birds, and invertebrate animals.
- Construct 3 landings within this unit to increase public access to the lagoon for fishing and recreation while simultaneously reducing pressure on natural habitat and sensitive shoreline from social trails and off-trail trampling.
- Extend the shoreline restoration along the whole south, east, and north lagoon shoreline to mitigate erosion, discourage geese congregation, and establish diverse emergent aquatic vegetation to support wildlife and improve water quality.
- Maintain and establish views of the lagoon by thinning-out existing shrubs and trees growing along the lagoon shoreline.
- Utilize prescribed fire to maintain the structure and species composition of the unit.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

Early restoration efforts throughout the unit of both terrestrial and aquatic lands will include active management and control effort- manual and/or herbicide application -of non-native and invasive plant species. Complete restoration efforts for this unit will begin with removal of the turf grass ground layer. The terrestrial lands including the shoreline will be converted to a savanna plant community type. It will have no less than 1 tree per acre and no more than a 50% tree canopy. The ecological structure and characteristics will be shaped by a prescribed fire management program. The ground layer of this unit will be planted with native, fire tolerant/dependent herbaceous plant species found in naturally occurring savanna plant communities. Seeds and plug plants from local genetic material will be sourced and planted. A prescribed fire regime of frequent, light to moderate surface fires every 3 to 5-years is most appropriate for the first 10-years. Burning will occur on no more than two-thirds of the acreage at one time to maintain refuge for wildlife. Sections of the existing woody species growing along the shoreline will be thinned to create periodic views of the lagoon in concert with planting a herbaceous layer of the emergent aquatic. This restoration strategy will enhance a sense of space and constant opening up of new views as park user's move through the landscape. The herbaceous layer of the emergent aquatic will consist of low-growing sedges, rushes, grasses, and forb species that will amend the current shoreline erosion issues affecting water quality and recreation.

A 10-foot wide turf border along the perimeter of the unit will be defined and created by UEC Land Stewards, but mowed by MKE County Parks' staff. Three ADA accessible, recreational landings will be construction throughout the unit (p. 104). Woodchip footpaths will lead park users to and from the landings of this unit. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit.

Long-term monitoring and control efforts may require manual removal and/or selective herbicide application to maintain the viability of a savanna and southern lowland forest preserve against non-native and invasive plant species. Prescribed fires will continue in the savanna, occurring every 5 to 10-years, burning no more than

twothirds of the acreage at one time. Periodic interseeding and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. A plant list for this unit can be found on pages 72-76 and 91-93.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Fire management program: 3 to 10-year regime
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting Fascine installation

Aquatic Areas:

- Coconut/fiber coir log(s)
- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Seeding and plug planting

Unit 12 – Nature Play Area

The nature play area will be an area intended for children to explore, play, and learn. Plants will include tough native groundcovers and sedges. There will be areas for children to climb (logs and stumps), dig holes, and make temporary forts and shelters out of natural materials. The plant species selected for this unit will feature native plants used as sources of food, textiles, dyes, and medicinal herbs by Native Americans and early European settlers. Trees such as chinkapin oak (*Quercus muehlenbergii*), shagbark hickory (*Carya ovata*), white walnut (*Juglans cinerea*), and prairie crabapple (*Malus ioensis*) will provide light shade for native shrubs such as hazelnut (*Corylus americana*), black chokeberry (*Prunus x prunifolium*), and American current (*Ribes americanum*). Herbaceous plants such as wild ginger, wild leek, and wild garlic will also be planted.

Emergent Aquatic

"Emergent aquatic (marsh) is dominated by robust emergent macrophytes, in pure stands of single species or in various mixtures. Dominants include cattails (*Typha* spp.), bulrushes (particularly *Schoenoplectus acutus, S. tabernaemontani,* and *Bolboschoenus fluviatilis*), bur-reeds (*Sparganium* spp.), giant reed (*Phragmites australis*), pickerel-weed (*Pontederia cordata*), waterplantains (*Alisma* spp.), arrowheads (*Sagittaria* spp.), the larger species of spike-rush (such as *Eleocharis smallii*), and wild rice (*Zizania* spp.). Emergent Marsh can occur in a wide variety of hydrologic settings, including inland lake, Great Lakes, riverine and estuarine complexes. Emergent marsh often intergrades with and transitions to floating-leaved marsh or submergent marsh in deeper water but is dominated by emergent vegetation."

[Broad leaved cattail (*Typha latifolia*) and the American subspecies of giant reed (*Phragmites australis subsp. americanus*) are native species in this plant community whereas hybrid and narrow leaved cattails (*Typha hybrida, angustifolia*) and Eurasian giant reed (*Phragmites australis subsp. australis)* are WDNR listed invasive species]

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

Acreage of this unit totals 0.36-acres and borders the lagoon to the north. The land topography is mostly flat with a slight slope downward o the northern border. Clay loam is the soil texture. Soil drainage is moderate to dry. The land vegetation within unit 13 originally consisted of mowed turf grass species, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), and a small number of trees growing throughout. The native tree

and shrub species included hawthorn (*Crataegus sp*.), green ash (*Fraxinus pennsylvanica*), box elder (*Acer negundo*), and silky dogwood (*Cornus amomum*). Non-native and/or invasive species, Norway maple (*Acer platanoides*), willow (*Salix sp.*), and European cranberry viburnum (*Viburnum opulus*). The emergent aquatic are fairly intact with limited erosion occurring along the shoreline.

Land restoration work began on this site in 2008. Small sections of land were, year by year, converted from mowed turf grass to an open meadow of native flowering trees, shrubs, forbs, and grasses that feature ethnobotanical attributes used by Native Americans and early European settlers. Active land preparation and planting was completed in 2013.

Due to pending building lease and renovation agreements for the County Boathouse/UEC leased building, this unit will most likely need to be reworked. The unit would continue to represent a nature play area with a plant selection focused on species of ethnobotanical interest. The UEC Land Stewards currently maintain this unit.

See Timeline of Management Unit Restoration Dates for the complete unit restoration start date.

Site Objectives

- Create opportunities for outdoor exploration and unstructured play.
- Incorporate the natural aesthetic of the park into an exciting and engaging space for children of all ages to play and families to enjoy.
- Promote nature education.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.

Restoration Strategy – pending UEC building renovation

If rework is needed, the initial focus of restoration will be replacement of the native groundcover species, shrubs and trees. The plant species selected will feature native plants used as sources of food, textiles, dyes, and medicinal herbs by Native Americans and early European settlers. All seeds, plugs, containerized plants, and ball-andburlaped trees from local genetic material will be sourced and planted throughout the unit. A 10-foot wide turf border along the perimeter of the unit will be defined and created by UEC Land Stewards but mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continue throughout the maintenance term of this unit.

After plant establishment, an area will be redefined for an outdoor classroom with wood log seating (Diagram 7). Woodchip footpaths will lead in and around the unit as well as through an underground tunnel. Sections of land will be designated for digging holes and make temporary forts and shelters out of natural materials.

The shoreline and emergent aquatic areas may need restoring and/or modification after building renovation. The plant composition will primarily consist of an herbaceous versus shrub layer, consisting of low-growing sedges, rushes, grasses, and forb species. Allowing for greater visibility of the lagoon while amending the current shoreline erosion issues affecting water quality and recreation.

Long-term monitoring and control efforts will require manual removal of non-native and invasive plant species. The understory/middle plane will remain open with a limited number of small-sized trees and low-growing shrubs being planted. Periodic seed spreading and/or plug planting will be used where native plant populations are sparse and to maintain species diversity. Woodchips will be added to the outdoor classroom and to the footpaths as needed.

A plant list for this unit can be found on pages 76-79 and 91-93.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting
- Spring brush cutting or cut-down of seasonal herbaceous vegetation

Aquatic Areas:

- Coconut/fiber coir log(s)
- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Seeding and plug planting

Unit 13 – Nature Play Area

The nature play area will be an area purposeful for children to explore, play, and learn. Plants will include tough native groundcovers and sedges. There will be areas for children to climb (logs and stumps), dig holes, and make temporary forts and shelters out of natural materials. The plant species selected for this unit will feature native plants used as sources of food, textiles, dyes, and medicinal herbs by Native Americans and early European settlers. Trees such as chinkapin oak (*Quercus muehlenbergii*), shagbark hickory (*Carya ovata*), white walnut (*Juglans cinerea*), and prairie crabapple (*Malus ioensis*) will provide light shade for native shrubs such as hazelnut (*Corylus americana*), black chokeberry (*Prunus x prunifolium*), and American current (*Ribes americanum*). Herbaceous plants such as wild ginger, wild leek, and wild garlic will also be planted.

Site Description

Majority of the land in this unit is flat but sits upon a downward sloping ridge along the northern border. The total acreage is 0.64-acres. Soil drainage is moderate to wet with a clay loam soil texture. The soil along the northern border of the unit is consistently saturated due to a crack in the lagoon liner. The land vegetation within unit 14 originally consisted of mowed turf grass species, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), and a small number of trees growing throughout. The tree species include: hawthorn (*Crataegus sp*.), Norway maple (*Acer platanoides*), and green ash (*Fraxinus pennsylvanica*)

Land restoration work began on this site in 2008. A small section of land, 2,000-square feet, of mowed turf grass was converted to a mesic prairie swale to help with assumed water drainage from a crack in the Washington Park lagoon liner. Additionally, several trees and a shrub were installed with MKE County approval by UEC Land Stewards throughout the unit. The planted trees and shrub include: allegheny serviceberry (*Amelanchier laevis*), white walnut (*Juglans cinerea*), prairie crabapple (*Malus ioensis*), chinkapin oak (*Quercus muehlenbergii*) and American hazelnut (*Corylus americana*). Land preparation and planting is not complete. Due to pending building lease and renovation agreements for the County Boathouse/UEC leased building, no additional restoration work has been conducted in this unit since 2013.

To-date, UEC Land Stewards actively maintain the 2,000-square foot planted mesic prairie swale as well as overall health of the 2008 tree and shrub plantings.

See Timeline of Management Unit Restoration Dates for the complete unit restoration start date.

Site Objectives

- Create opportunities for outdoor exploration.
- Incorporate the natural aesthetic of the park into an exciting and engaging space for children of all ages to play and families to enjoy.

- Create habitat connectivity between this unit and adjacent units.
- Promote nature education and appreciation.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.

Restoration Strategy - pending UEC building renovation

If rework is needed, the initial focus of restoration will be to remove any and all remaining mowed turf grass throughout this unit and replace it with native groundcover species, shrubs and trees. The plant species selected will feature native plants used as sources of food, textiles, dyes, and medicinal herbs by Native Americans and early European settlers. All seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit. A 10-foot wide turf border along the perimeter of the unit will be defined and created by UEC Land Stewards but mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur throughout the restoration and maintenance term of this unit.

After plant establishment, areas will be redefined for children to climb (logs and stumps) and build temporary forts and shelters out of natural materials (Diagrams 4, 5, 6). Woodchip footpaths will lead in and around the unit for accessibility to and from the defined play areas.

Long-term monitoring and control efforts will require manual removal of non-native and invasive plant species. The understory/middle plane will remain open with a limited number of small-sized trees and low-growing shrubs being planted. Periodic seed spreading and/or plug planting will be used where native plant populations are sparse and to maintain species diversity. Woodchips will be added to the footpaths as needed.

A plant list for this unit can be found on pages 76-79.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting
- Spring brush cutting or cut-down of seasonal herbaceous vegetation

Unit 14 – County Yard Native Screen

The MKE County work yard and storage area is surrounded by a hedgerow of trees, shrubs, and herbaceous plants. UEC land steward staff work to maintain a hedgerow of vegetation for screening, but remove all invasive species and replace the plants with WI native species. The list of appropriate plants for the purpose of screening and wildlife habitat include but are not limited to blackhaw viburnum (*Viburnum prunifolium*), American highbush cranberry viburnum (*Viburnum opulus spp. trilobum*), and witch-hazel (*Hamamelis virginiana*) and as well as competitive groundcover plants like Virginia waterleaf (*Hydrophyllum virginianum*), Virginia wild rye (*Elymus virginicus*), jewelweed (*Impatiens pallida*), mayapple (*Podophyllum peltatum)*, and Solomon's seal (*Maianthemum racemosum*).

Site Description

The land within this unit has greater than 50% tree canopy coverage, a prominent shrub/understory layer and sparse to rich ground layer of vegetation. The native tree and shrub species consist of boxelder (*Acer negundo*), silver maple (Acer saccharinum), cockspur hawthorn (*Crataegus crusgalli*), ash (*Fraxinus sp*.), thornless honeylocust (*Gleditsia tricanthos var. inermis*), black walnut (*Juglans nigra*) nannyberry (Viburnum lentago). The most pervasive tree species is the non-native, invasive white mulberry (*Morus alba*). Common buckthorn (*Rhamnus cathartica*), Tatarian and bell's hybrid honeysuckle (*Lonicera tatarica* and *L. x bella*) make up the non-native, invasive species shrub layer. Much of the ground layer is bare soil with invasive, herbaceous and woody species seedlings dominating, i.e. garlic mustard (*Alliaria petiolata*) and dame's rocket (*Hesperis matronalis*). The soil is often cool, but dry. The soil texture is clay loam. The topography of the land is flat. Acreage of this unit is 0.35acres.

To-date, active maintenance efforts by UEC Land Stewards has been removal of herbaceous invasive species and interseeding of herbaceous native species. Active maintenance began in 2012. See Timeline of Management Unit Restoration Dates for the complete unit restoration start date.

Site Objectives

- Maintain the unit as a native plant species screen while providing an ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Preserve a closed-tree canopy and shrub/understory layer to visually obstructing the view into the MKE County Parks' maintenance yard.
- Retain coarse woody debris (fallen logs, branches) in this unit which is important for retaining moisture and humidity, create habitat for amphibians, invertebrates, and fungi, and provide nurse logs for tree saplings, and micro-climates for herbaceous plants and mosses.
- Restore a healthy duff layer of leaves and decomposing organic matter which will add fertility, help maintain moisture levels, and keep the soil cool.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.

Restoration Strategy

Initial efforts of active restoration will be removal of non-native, woody invasive species removal and replacement with native tree and shrub species. Native plant replacement will occur in conjunction with each other, ideally installing vegetation of the same size that was removed to maintain a contiguous visual screen. The ground layer will continue to be liberated of invasive, herbaceous species and planted with spring ephemerals, sedges, and a high diversity of soft-stemmed species. Seeds, plugs, and containerized plants from local genetic material will be sourced and planted throughout the unit. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during restoration and continued throughout the maintenance term of this unit.

Long-term monitoring and control efforts, including manual removal and herbicide application, will be used to maintain the viability of a native plant screen against non-native and invasive plant species. Periodic seed spreading and/or container planting will be used where native plant populations are sparse and gaps appear in the screen. A healthy duff layer of leaves and decomposing organic matter will be allowed to develop. Restoration efforts will continue to focus on maintaining a closed-canopy tree line with a middle layer and ground layer of vegetation.

A plant list for this unit can be found on pages 81-82.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants

- Chemical/Herbicide application of woody and herbaceous plants Seeding, plug, and container

Unit 15 – Orchard

The orchard contains both new and heirloom cultivars of various apples, pears, plums, peaches, cherries, and pawpaw. Meandering paths break the orchard up into many "mini-orchards" roughly the size of an urban backyard, thus demonstrating the potential of fruit produce production for the average urban homeowner. As an experiment in integrated (organic) pest management, the orchard perimeter is surrounded by and under planted with native shrubs, perennials, and groundcovers which attract additional pollinators and will provide a refuge for predatory insects and birds that will theoretically help control pest insects.

Site Description

The vegetation within unit 16 originally consisted of mowed turf grass species, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), one silver maple (*Acer saccharinum*), and two green ash (*Fraxinus pennsylvanica*). The total acreage is 0.86-acres. Topography of the land is flat with a gradual lowering of elevation in the southwestern border. Soil drainage is moderate with a clay loam to loam soil texture.

Land restoration work began on this site in 2011 with the planting of several cultivated fruit trees throughout the unit. In 2013, a landscape design of a community orchard was drafted by the Washington Park UEC Land Steward. With MKE County Park's approval, the design was implemented that same year. Due to disease and vandalism, it was necessary to replace all of the trees planted in 2011. New trees were strategically planted within mulched planting beds. Grassy pathways meander through the unit. A perimeter of native plant species was installed along the western border, starting from the sidewalk and expanding eastward at varying widths. The orchard "island" were planted with an understory of ephemeral spring wildflowers which bloom at the same time the trees are in bloom but are dormant and senesced by the time fruit is ready to harvest.

Active land preparation and planting was completed in 2017.

Site Objectives

- Maintain the unit as an open, community orchard providing a source of fresh fruit produce.
- Promote nature education by developing opportunities for students and volunteers to observe plant-to-insect relationships and survey for insect species richness/diversity.
- Promote opportunities horticulture education related organic food production and integrated pest management.
- Provide an ecologically balanced habitat for birds, mammals, and specifically beneficial and predatory invertebrate animals.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Preserve cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

The vegetation perimeter of the unit has been planted with salt-tolerant, native grasses and flowering forb species that specifically attract beneficial insects that pollinate flowering plants and predate orchard tree pests. A plethora of species were selected to provide a flower food source to insects from April through October. Spring ephemeral forbs have been planted throughout the mulched fruit tree planting beds to create an aesthetically pleasing ground layer while providing an early spring food source for insects. All fruit tree cultivars were selected for hardiness, excellent fruit production, pest and disease resistance, as well as short growth stature.

Long-term maintenance efforts of this unit will include annual spring cut down and clean-up of previous season's herbaceous growth. Plug plants will be installed into the native plant perimeter if populations are sparse and/or to maintain a diversity of species needed to attract beneficial insects. Annual, winter fruit tree pruning will be conducted to maintain overall health and integrity of the specimens. Fruit trees will be replaced as needed due to disease, vandalism, and old-age. A harvest schedule has been drafted to insure clean-up and prevent stinging insect swarms in and around the orchard (p. 105). The fruit tree planting beds will be allowed to produce spring ephemeral flowers, upon senescence, the vegetation will be cut down and maintained as wood chipped island. Turf footpaths that meander through the orchard space of the unit will be maintained at 8-feet wide by UEC Land Stewards, but mowed by MKE County Parks' staff. A 5-foot wide turf border along the north, northeastern perimeter of the unit was defined and created by UEC Land Steward, and will continue to be mowed by MKE County Parks' staff. Monitoring and control efforts- manual and herbicide application -will be used against undesirable non-native and invasive plant species. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will continue throughout the maintenance term of this unit.

A plant list for this unit can be found on pages 79-81.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Seeding, plug, and container planting
- Spring brush cutting or cut-down of seasonal herbaceous vegetation

Unit 16 – Northern Mesic Forest & Emergent Aquatic Communities

Northern Mesic Forest

"Sugar maple (*Acer saccharum*) is dominant or co-dominant in most stands, while hemlock (*Tsuga canadensis)* was the second most important species, sometimes occurring in nearly pure stands with white pine (*Pinus strobus*), white spruce (*Abies balsamea*), and white cedar (*Thuja occidentalis*) . Beech (*Fagus grandifolia*) can be a co-dominant with sugar maple in the counties near Lake Michigan. Other important tree species were yellow birch (*Betula alleghaniensis*), basswood (*Tilia americana*), and white ash (*Fraxinus americana*). After old-growth stands were cut, trees such as quaking and bigtooth aspens (*Populus tremuloides* and *P. grandidentata*), white birch (*Betula papyrifera*), and red maple (*Acer rubrum*) became and still are important in many second-growth Northern Mesic Forests. Characteristic subcanopy trees include balsam fir (*Abies balsamea*), ironwood (*Carpinus caroliniana*), and American elm (*Ulmus americana*). The shrub layer includes species such as alternate-leaved dogwood (*Cornus alternifolia*), beaked hazelnut (*Corylus cornuta*), leatherwood (*Dirca palustris*), American fly honeysuckle (*Lonicera canadensis*), prickly gooseberry (*Ribes cynosbati*), red elderberry (*Sambucus racemosa*), and maple-leaved arrowwood (*Viburnum acerifolium*). Historically, Canada yew (*Taxus canadensis*) was an important shrub. The groundlayer varies from sparse and species poor in hemlock stands with wood ferns (*Dryopteris intermedia*), blue-bead lily (*Clintonia borealis*), club-mosses (*Lycopodium* spp., *Dendrolycopodium* spp., etc.), and Canada mayflower (*Maianthemum canadense*), to lush and species-rich with fine spring ephemeral displays of species such as large-flowered trillium (*Trillium grandiflorum*), Dutchman's-breeches (*Dicentra cucullaria*), spring beauty (*Claytonia virginica*), and trout lilies (*Erythronium* spp.). Other characteristic species include white baneberry (*Actaea pachypoda*), downy Solomon's-seal (*Polygonatum pubescens*), wild sarsaparilla (*Aralia nudicaulis*), rose twisted stalk (*Streptopus roseus*), starflower (*Trientalis borealis*), maidenhair fern (*Adiantum pedatum*), and lady fern (*Athyrium filix-femina*)."

Emergent Aquatic

"Emergent aquatic (marsh) is dominated by robust emergent macrophytes, in pure stands of single species or in various mixtures. Dominants include cattails (*Typha* spp.), bulrushes (particularly *Schoenoplectus acutus, S. tabernaemontani,* and *Bolboschoenus fluviatilis*), bur-reeds (*Sparganium* spp.), giant reed (*Phragmites australis*), pickerel-weed (*Pontederia cordata*),

waterplantains (*Alisma* spp.), arrowheads (*Sagittaria* spp.), the larger species of spike-rush (such as *Eleocharis smallii*), and wild rice (*Zizania* spp.). Emergent Marsh can occur in a wide variety of hydrologic settings, including inland lake, Great Lakes, riverine and estuarine complexes. Emergent marsh often intergrades with and transitions to floating-leaved marsh or submergent marsh in deeper water but is dominated by emergent vegetation."

[Broad leaved cattail (*Typha latifolia*) and the American subspecies of giant reed (*Phragmites australis subsp. americanus*) are native species in this plant community whereas hybrid and narrow leaved cattails (*Typha hybrida, angustifolia*) and Eurasian giant reed (*Phragmites australis subsp. australis*) are WDNR listed invasive species]

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

This unit is comprised of two islands in the western portion of the lagoon with a total acreage of 0.90 acres. The larger island is 0.78 acres and the smaller is 0.12 acres. The larger island rises 5 to 7-feet above the surrounding lagoon at its highest point with gradual slopes on both sides. The smaller island only rises 3 to 4-feet above the lagoon. Both islands, especially the large island, are damaged by erosion with abrupt vertical bare-soil edges 1 to 3feet high. The soil is well drained, silt loam. The current canopy on the islands includes a mix of native trees and non-native, invasive trees. Native trees include basswood *(Tilia americana*), sugar maple (*Acer saccharum*), paper birch (*Betula papyrifera*), hackberry (*Celtis occidentalis*), elm (*Ulmus sp.*), and silver maple (*Acer saccharinum*). Non-native, invasive species include: European alder (*Alnus glutinosa*), black locust (*Robinia pseudoacacia*), and Norway maple (*Acer platanoides*). The understory and shrub layer is dominated by the invasive shrub, common buckthorn (*Rhamnus cathartica*) and hybrid honeysuckle (*Lonicera x bella*). Both islands, especially the smaller island have some large clones of native red osier and/or silky dogwood (*Cornus sericea* and *C. amomum*), and willow species (*Salix spp*). The herbaceous layer is degraded and consists of a few common sedges (*Carex sp.*), starry solomon's seal (*Maianthemum stellata*), and the following invasives: lily of the valley (*Convallaria majalis*), garlic mustard (*Alliaria petiolata*), reed canary grass (*Phalaris arundinacea*).

Restoration activity has occurred on the island. Two thirds of the mature buckthorn have been cut and chemically controlled by UEC staff, volunteers, and an SCA crew from 2009-2012. Approximately 170-square feet of terrestrial land was planted with native ferns, sedges, and woodland wildflowers in 2010.
To-date, active maintenance efforts by UEC Land Stewards has been removing invasive species along the shoreline and terrestrial land.

See Timeline of Management Unit Restoration Dates for the complete unit restoration start date.

Site Objectives

- Establish the unit as a preserve for northern mesic forest plant species and ecologically balanced habitat for mammals, birds, and invertebrate animals. Northern mesic forest was once a dominant old growth forest type in the northern half of WI extending into Southeast WI including Sheboygan and Ozaukee counties.
- Retain a large amount of coarse woody debris (fallen logs, branches) in this unit which are important for retaining moisture and humidity, create habitat for amphibians, invertebrates, and fungi, and provide nurse logs for tree saplings, and micro-climates for herbaceous plants and mosses.
- Restore a healthy duff layer of leaves and decomposing organic matter which will add fertility, help maintain moisture levels, and keep the soil cool- essential for the health of northern mesic forest species.
- Restore a diverse and dense cover of native vegetation on the shoreline and in the emergent aquatic zone around the islands to mitigate and prevent erosion, improve water quality, discourage geese, and create habitat for wildlife.
- Provide opportunities for research, education, and recreation as they relate to the public and UEC needs.

- Eliminate any and all existing non-native WDNR listed invasive plant species within the unit.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.
- Improved the existing wooden boat landing.

Restoration Strategy

Initially, this unit will be actively managed through non-native, invasive species removal and replacement with characteristic native species vegetation of the northern mesic forest plant community. Sugar maples are the dominant tree species in NMF, however it will not be a significant component in this unit due to limited space, its abundance elsewhere in the park, and its propensity to cast deep shade to the detriment of efforts to establish a dense herbaceous layer and prevent erosion. Conifers and other less common deciduous trees typical of NMF will be given preference. Because this unit is located on islands within the interior of the lagoon, all typical forest layers will be allowed to develop including a ground layer, shrub layer, understory and canopy. Seeds, plugs, and containerized plants from local genetic material will be sourced and planted on the upland areas of the unit.

Shoreline restoration will begin with the installation of coir logs and/or fascines. Plugs of herbaceous plants and container grown trees and shrubs will be planted within the coir logs and fascine bundles. Additionally large coir logs, connected to the island shoreline will be added to the emergent aquatic zone beyond the shoreline/bank. Specific shade-tolerant, wetland and emergent aquatic species will be planted within the coir logs. Supplementary planting of prickly shrubs such as native blackberries, raspberries, gooseberries, and wild roses may be necessary to discourage geese from coming ashore. UEC staff will not be addling goose eggs on or near the island.

Monthly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during restoration efforts and continued throughout the maintenance term of this unit. Early restoration efforts will include renovation/improvement of the existing boat landing on the east side of the larger island (p. 104).

Long-term monitoring and control efforts may require manual removal and/or herbicide application to maintain the integrity of a northern mesic forest preserve free of non-native and invasive plant species. Periodic interseeding and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. The canopy cover will be managed as needed to mimic natural disturbance patterns (windthrow gaps). A healthy duff layer of leaves and decomposing organic matter will be allowed to develop. Coarse woody debris will be retained throughout this unit, but managed to not block or obstruct sight lines.

A plant list for this unit can be found on pages 89-93.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Smothering: woodchips and/or leaf litter
- Seeding, plug, container, and balled-and-burlaped planting
- Erosion control fabric: jute or straw
- Fascine installation

Aquatic Areas:

- Coconut/fiber coir log(s)
- Erosion control fabric: jute or straw
- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Seeding, plug and container planting

Unit 17 – Southern Mesic Forest Community

> "This upland forest community occurs on rich, well-drained soils. The dominant tree species is sugar maple (*Acer saccharum*), but basswood (*Tilia americana*) and (near Lake Michigan) beech (*Fagus grandifolia*) may be co-dominant. Many other trees are found in these forests, including those of the walnut family (*Juglandaceae*). The understory is typically open- sometimes brushy with species of gooseberry (Ribes) if there is a past history of grazing -and supports fine spring ephemeral displays. Characteristic herbs are spring-beauty (*Claytonia virginica*), trout-lilies (*Erythronium spp*.), trilliums (*Trillium spp*.), violets (*Viola spp*.), bloodroot (*Sanguinaria canadensis*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), and Virginia waterleaf (*Hydrophyllum virginianum*)."
>
> Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

The acreage of this unit totals 2.33-acres. Vegetation in this unit is primarily mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, and various tree species scattered throughout the acreage. The existing tree species include: sugar maple and Norway maple (*Acer saccharum* and *A. platanoides*), American Basswood (*Tilia americana*), green ash (*Fraxinus pennsylvanica*), red oak (*Quercus rubra*), bur oak (*Quercus macrocarpa*), hackberry (*Celtis occidentalis*), thornless honeylocust (*Gleditsia triacanthos var. inermis*). Soil texture runs clay loam to loam and remains cool in temperature. Moisture levels tend to be moderate to moist. The land is mostly flat sloping upward to a ridge running along the western border. The apex is in the southwestern corner of the unit. The land has a large "kettle" landform cut into the ridge along the southwestern border. A prominent feature representative of the kettles found throughout the glaciated regions of Wisconsin's Kettle Moraine watersheds. Typical ecological landscapes found within the Kettle Moraine watersheds are mixed hardwood forests, oak opening (savanna) and woodland, and prairies. The unit's land features and existing tree species lend the plant community type to a southern mesic forest.

See Timeline of Management Unit Restoration Dates for unit restoration start date.

Site Objectives

- Restore the unit as a preserve for southern mesic forest plant species and an ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Establish a shade-tolerant (closed canopy), fire-intolerant plant community.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Retain large pieces (tree trunk and/or logs) in this unit which is important for retaining moisture and humidity, create habitat for amphibians, invertebrates, and fungi, and provide nurse logs for tree saplings, and micro-climates for herbaceous plants and mosses.
- Restore a healthy duff layer of leaves and decomposing organic matter which will add fertility, help maintain moisture levels, and keep the soil cool.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

Conversion of the land to southern mesic forest is the strategy of restoration for this unit. First steps involve increasing the current density of the trees and converting the turf grass to an understory of species representative of the desired plant community. The end goal will be a closed tree canopy where the dominant species are sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), and American basswood (*Tilia americana*). The understory

will remain open with a limited number of small-sized trees and shrubs being planted. Species will be selected based on their propensity for southern mesic forest, overall mature growth/stature and strategically planted to maintain a view of the kettle landform found within this unit as well as vista views from the top of the ridge looking downward and views from the flat, low topographic areas looking upwards towards the ridge. Characteristic herbs of the ground layer will include spring ephemerals and a high diversity of soft-stemmed species. Emphasis will be put upon establishment of sedges, low-growing grasses and forb species. Seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit. Early restoration efforts will also include active management and control efforts- manual and/or herbicide application -of non-native and invasive plant species. A 10+-foot wide border along the perimeter of the unit will be defined and created by UEC Land Steward, but mowed by MKE County Parks' staff. The perimeter border may be set back further if more views are needed to be preserved. Woodchip footpaths will lead in and around the unit. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continued throughout the maintenance term of this unit.

Long-term monitoring and control efforts to maintain the viability of a southern mesic forest preserve may require manual removal and/or herbicide application non-native and invasive plant species. Periodic interseeding and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. The canopy cover will be managed as needed to mimic natural disturbance patterns (windthrow gaps); thinning of the canopy, understory manipulation and shrub control via harvest or brushing may be needed to maintain view sheds. A healthy duff layer of leaves and decomposing organic matter will be allowed to develop. Coarse woody debris will be retained throughout this unit, but managed to not block or obstruct sight lines.

A plant list for this unit can be found on pages 87-89.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application woody and herbaceous plants
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting
- Fascine installation
- Erosion control fabric: jute or straw

Unit 18 – Southern Mesic Forest Community

"This upland forest community occurs on rich, well-drained soils. The dominant tree species is sugar maple (*Acer saccharum*), but basswood (*Tilia americana*) and (near Lake Michigan) beech (*Fagus grandifolia*) may be codominant. Many other trees are found in these forests, including those of the walnut family (*Juglandaceae*). The understory is typically open- sometimes brushy with species of gooseberry (Ribes) if there is a past history of grazing -and supports fine spring ephemeral displays. Characteristic herbs are spring-beauty (*Claytonia virginica*), trout-lilies (*Erythronium spp*.), trilliums (*Trillium spp*.), violets (*Viola spp*.), bloodroot (*Sanguinaria canadensis*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), and Virginia waterleaf (*Hydrophyllum virginianum*)."

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

This unit has a rolling landscape with a ridge running along the southern border. The land levels/flattens in the middle of the unit before continuing to slope downwards to the north. Soil drainage along the ridge is good making

the leveled areas of land soggy during periods of heavy rain. The soil texture is clay loam. Vegetation in this unit is primarily mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, and various tree species scattered throughout the acreage. The existing tree species include: sugar maple and Norway maple (*Acer saccharum* and *A. platanoides*), American Basswood (*Tilia americana*), hackberry (*Celtis occidentalis*), red oak (*Quercus rubra*), and green ash (*Fraxinus pennsylvanica*). The unit's land features and existing tree species lend the plant community type to a southern mesic forest. Acreage totals 2.05-acres.

With the approval of MKE County Parks, the UEC Land Stewards planted several oak species (*Quercus alba, Q. velutina, Q. macrocarpa*), sugar maple (*Acer saccharum*), ironwood (*Ostrya virginiana*), American beech (*Fagus grandifolia*), dutch elm disease resistant American elm cultivars (*Ulmus americana 'Princeton'* and *U. americana 'Valley Forge'*), Kentucky coffeetree (*Gymnocladus dioicus*), and hackberry (*Celtis occidentalis*) trees throughout the unit in fall of 2018.

See Timeline of Management Unit Restoration Dates for unit restoration start date.

Site Objectives

- Restore the unit as a preserve for southern mesic forest plant species and ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Establish a shade-tolerant (closed canopy), fire-intolerant plant community.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Retain large pieces (tree trunk and/or logs) in this unit which is important for retaining moisture and humidity, create habitat for amphibians, invertebrates, and fungi, and provide nurse logs for tree saplings, and micro-climates for herbaceous plants and mosses.
- Restore a healthy duff layer of leaves and decomposing organic matter which will add fertility, help maintain moisture levels, and keep the soil cool.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

The land of this unit will be converted to southern mesic forest as the primary strategy of restoration. First steps involve increasing the current density of the trees and converting the turf grass to an understory of species representative of the desired plant community. The end goal will be a closed tree canopy where the dominant species are sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), and American basswood (*Tilia americana*). The understory will remain open with a limited number of small-sized trees and shrubs being planted. Species will be selected based on their affinity for southern mesic forest, overall mature growth/stature and will be strategically planted to prevent the blocking of view sheds, vistas, and sight lines. Characteristic herbs of the ground layer will include spring ephemerals and a high diversity of soft-stemmed species. Emphasis will be put upon establishment of sedges, low-growing grasses and forb species. Native species seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit. Early restoration efforts will also include active management and control efforts- manual and/or herbicide application -of non-native and invasive plant species. A 10+-foot wide border along the perimeter of the unit will be defined and created by UEC Land Steward, but mowed by MKE County Parks' staff. Woodchip footpaths will lead in and around the unit. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continued throughout the maintenance term of this unit.

Long-term monitoring and control efforts to maintain the viability of a southern mesic forest preserve may require ongoing manual removal and/or herbicide application of non-native and invasive plant species. Periodic seed spreading and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. The canopy cover will be managed as needed to mimic natural disturbance patterns (windthrow gaps); thinning of the canopy, understory manipulation and shrub control via harvest or brushing may be needed to maintain view sheds. A healthy duff layer of leaves and decomposing organic matter will be allowed to develop. Coarse woody debris will be retained throughout this unit, but managed to not block or obstruct sight lines.

The UEC Land Stewards will maintain the overall health and care of the trees planted fall of 2018 regardless of when full restoration of the unit begins.

A plant list for this unit can be found on pages 87-89.

Methods of Restoration

Terrestrial Lands:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting
- Fascine installation
- Erosion control fabric: jute or straw

Unit 19 – Southern Mesic Forest Community

"This upland forest community occurs on rich, well-drained soils. The dominant tree species is sugar maple (*Acer saccharum*), but basswood (*Tilia americana*) and (near Lake Michigan) beech (*Fagus grandifolia*) may be co-dominant. Many other trees are found in these forests, including those of the walnut family (*Juglandaceae*). The understory is typically open- sometimes brushy with species of gooseberry (Ribes) if there is a past history of grazing -and supports fine spring ephemeral displays. Characteristic herbs are spring-beauty (*Claytonia virginica*), trout-lilies (*Erythronium spp*.), trilliums (*Trillium spp*.), violets (*Viola spp*.), bloodroot (*Sanguinaria canadensis*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), and Virginia waterleaf (*Hydrophyllum virginianum*)."

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

Vegetation in this unit is primarily mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, and various tree species scattered throughout the acreage. The existing tree species include: American Basswood (*Tilia americana*), green ash (*Fraxinus pennsylvanica*), thornless honeylocust (*Gleditsia triacanthos var. inermis*), American beech (*Fagus grandifolia*), hackberry (*Celtis occidentalis*). This unit has a rolling landscape with a ridge running along the southern border. The soil texture is clay loam to loam with good drainage throughout. The unit's land features, existing trees species, and northern exposure lend the plant community type to a southern mesic forest. Acreage totals 1.02-acres.

With the approval of MKE County Parks, the UEC Land Stewards planted a single bur oak (*Quercus macrocarpa*) on top of the ridge in the southwest corner of the unit in fall of 2018.

See Timeline of Management Unit Restoration Dates for unit restoration start date.

Site Objectives

- Restore the unit as a preserve for southern mesic forest plant species and ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Establish a section of acreage for shade-tolerant (closed canopy) plants that transitions to a more open canopy, savanna-like, plant community section.
- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Retain large pieces (tree trunk and/or logs) in this unit which is important for retaining moisture and humidity, create habitat for amphibians, invertebrates, and fungi, and provide nurse logs for tree saplings, and micro-climates for herbaceous plants and mosses.
- Restore a healthy duff layer of leaves and decomposing organic matter which will add fertility, help maintain moisture levels, and keep the soil cool.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.
- Maintain sledding opportunities in this area by not planting additional trees in the western half of the unit.

Restoration Strategy

This unit of land will be converted to southern mesic forest as the primary strategy of restoration. First steps involve increasing the current density of trees growing along the northeastern border and converting the turf grass in this section of the unit to an understory of species representative of the desired plant community. The end goal being a closed tree canopy along the northeastern unit border where the dominant species are sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), and American basswood (*Tilia americana*) transitioning to a more open, savanna-like, canopy and understory, from the middle section of the unit to the western border.

The closed canopy understory will remain open with a limited number of small-sized trees planted within it. Species will be selected based on their affinity for southern mesic forest, overall mature growth/stature and will be strategically planted to prevent the blocking of view sheds, vistas, and sight lines. Characteristic herbs of the ground layer will include spring ephemerals and a high diversity of soft-stemmed species. Emphasis will be put upon establishment of sedges, low-growing grasses and forb species to maintain vista views from the top of the ridge looking downward and views from the low topographic areas looking upwards towards the ridge.

The open, savanna-like acreage will have no less than one tree per acre and no more than a 50% tree canopy. The ground layer of this section will be planted with native, fired adapted/dependent herbaceous plant species found in naturally occurring savanna plant communities. Emphasis will be put upon establishment of sedges, low-growing grasses and forb species to prevent the blocking of view sheds and vistas. A prescribed fire regime may be implemented to maintain a more open canopy plant community. A 3 to 5-year prescribed fire regime is most appropriate. Burning will occur on no more than two-thirds of the acreage at one time to maintain refuge for wildlife.

Native species seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit. Early restoration efforts will also include active management with manual removal and/or herbicide application of non-native and invasive plant species. A 10+-foot wide border along the perimeter of the unit will be defined and created by UEC Land Steward, but mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continued throughout the maintenance term of this unit. For accessibility, woodchip footpaths will lead in and around the unit, but not throughout the mowed turf grass section.

Long-term monitoring and control efforts to maintain the viability of a southern mesic forest preserve may require ongoing manual removal and/or herbicide application to control non-native and invasive plant species. Seed

spreading and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. The canopy cover will be managed as needed to mimic natural disturbance patterns (windthrow gaps); thinning of the canopy, understory manipulation and shrub control via harvest or brushing may be needed to maintain view sheds. A healthy duff layer of leaves and decomposing organic matter will be allowed to develop. Coarse woody debris will be retained throughout this unit, but managed to not block or obstruct sight lines.

The UEC Land Stewards will maintain the overall health and care of the single bur oak (*Quercus macrocarpa*) planted fall of 2018 regardless of when full restoration of the unit begins.

A plant list for this unit can be found on pages 87-89.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application of woody and herbaceous plants
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting
- Fascine installation
- Erosion control fabric: jute or straw

Unit 20 – Southern Mesic Forest Community

"This upland forest community occurs on rich, well-drained soils. The dominant tree species is sugar maple (*Acer saccharum*), but basswood (*Tilia americana*) and (near Lake Michigan) beech (*Fagus grandifolia*) may be co-dominant. Many other trees are found in these forests, including those of the walnut family (*Juglandaceae*). The understory is typically open- sometimes brushy with species of gooseberry (Ribes) if there is a past history of grazing -and supports fine spring ephemeral displays. Characteristic herbs are spring-beauty (*Claytonia virginica*), trout-lilies (*Erythronium spp*.), trilliums (*Trillium spp*.), violets (*Viola spp*.), bloodroot (*Sanguinaria canadensis*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), and Virginia waterleaf (*Hydrophyllum virginianum*)."

Epstein, Eric, Emmet Judziewicz, and Elizabeth Spencer. "Wisconsin Natural Heritage Inventory: Recognized Natural Communities." Wisconsin DNR. R.p., n.d. Web. 01 Jan. 2014

Site Description

This unit is at the toe of a slope that gradually rises southward. The soil texture is clay loam with dry to wet tendencies based on the season. Vegetation in this unit is primarily mowed turf grass, i.e. Kentucky bluegrass (*Poa pratensis*) and perennial ryegrass (*Lolium perenne*), common broadleaf turf grass weeds, and various tree species scattered throughout the acreage. The existing tree species include: sugar maple and Norway maple (*Acer saccharum* and *A. platanoides*), American Basswood (*Tilia americana*), American Sycamore (*Platanus occidentalis*), thornless honeylocust (*Gleditsia triacanthos var. inermis*), hawthorn (Crataegus sp.), and green ash (*Fraxinus pennsylvanica*). The unit's land features and existing tree species lend the plant community type to a southern mesic forest. Acreage totals 0.41-acres.

See Timeline of Management Unit Restoration Dates for unit restoration start date.

Site Objectives

- Restore the unit as a preserve for southern mesic forest plant species and an ecologically balanced habitat for mammals, birds, and invertebrate animals.
- Establish a shade-tolerant (closed canopy), fire-intolerant plant community.

- Provide opportunities for research and education as it relates to the public as well as UEC needs.
- Restore a healthy duff layer of leaves and decomposing organic matter which will add fertility, help maintain moisture levels, and keep the soil cool.
- Eliminate any and all existing non-native, WDNR listed invasive plant species within the unit.
- Non-native species that have historical value or warrant preservation will not be removed from this unit.
- Create cues-of-care to maintain sight lines and visual evidence of intentionality.

Restoration Strategy

The land within this unit will be converted to southern mesic forest as the primary strategy of restoration. The end goal is a closed tree canopy where the dominant species are sugar maple (*Acer saccharum*), basswood (*Tilia americana*) and American beech (*Fagus grandifolia*). The understory will remain open with only an herbaceous, ground layer being planted. Characteristic herbs of the ground layer will include spring ephemerals and a high diversity of soft-stemmed species. Emphasis will be put upon establishment of sedges, low-growing grasses and forb species. Seeds, plugs, containerized plants, and ball-and-burlaped trees from local genetic material will be sourced and planted throughout the unit.

Early restoration efforts will also include active management and control efforts with manual removal and/or herbicide application of non-native and invasive plant species. A 10+-foot wide border along the perimeter of the unit will be defined and created by UEC Land Steward, but mowed by MKE County Parks' staff. Weekly litter/garbage cleanups, led by the UEC Land Stewardship staff and volunteers, will occur during early restoration efforts and continued throughout the maintenance term of this unit. For accessibility, woodchip footpaths will lead in and around the unit, but not throughout the mowed turf grass section.

Long-term monitoring and control efforts to maintain the viability of a southern mesic forest preserve may require ongoing manual removal and/or herbicide application non-native and invasive plant species. Periodic seed spreading and/or plug planting will be used where native plant populations are sparse and to maintain high species diversity. The canopy cover will be managed as needed to mimic natural disturbance patterns (windthrow gaps); thinning of the canopy, understory manipulation and shrub control via coppicing or brushing may be needed to maintain view sheds. A healthy duff layer of leaves and decomposing organic matter will be allowed to develop.

A plant list for this unit can be found on pages 87-89.

Methods of Restoration

Terrestrial Areas:

- Mechanical/Manual control of woody and herbaceous plants
- Chemical/Herbicide application woody and herbaceous plants
- Smothering: commercial grade fabric and/or woodchips
- Seeding, plug, container, and balled-and-burlaped planting
- Erosion control fabric: jute or straw

Washington Park Restoration and Management Plan Reference Data

Management Unit Plant Species Lists

Plant Species Working List

Date: Jan 2019
Observer: Joel Springsteen
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Southern Dry-Mesic Forest

Southern Dry-Mesic Forest: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Acer	*saccharum*	Sugar Maple				
Acer	*nigrum*	Black Maple				
Ailanthus	*altissima*	Tree of Heaven				
Amelanchier	*arborea*	Downy Serviceberry				
Amelanchier	*laevis*	Smooth Serviceberry				
Celtis	*occidentalis*	Hackberry				
Carya	*cordiformis*	Yellowbud Hickory				
Carya	*ovata*	Shagbark Hickory				
Cornus	*Alterifolia*	Pagoda Dogwood				
Crataegus	*crus-galli*	Thornless Cockspur Hawthorn				
Fraxinus	*Species*	Ash				
Juglans	*Nigra*	Black Walnut				
Malus	*coronaria*	Sweet Crabapple				
Ostrya	*virginiana*	Ironwood				
Prunus	*americana*	American plum				
Prunus	*serotina*	Back Cherry				
Tilia	*americana*	Basswood				
Quercus	*alba*	White Oak				
Quercus	*ellipsoidalis*	Hill's Oak				
Quercus	*muehlenbergii*	Chinkapin Oak				
Quercus	*rubra*	Red Oak				
Ulmus	*rubra*	Slippery Elm				

Southern Dry-Mesic Forest: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Cornus	*racemosa*	Gray Dogwood				
Cornus	*rugosa*	Round-leaved Dogwood				
Corylus	*americana*	American Hazelnut				
Diervillea	*lonicera*	Dwarf Bush Honeysuckle				
Lonicera	*x bella*	Bell's Honeysuckle and				
Lonicera	*tartarica*	Tartarian Honeysuckle				
Physocarpus	*opulifolius*	Common Ninebark				
Ptelea	*trifoliata*	Wafer Ash				
Prunus	*virginiana*	Chokecherry				
Rhamnus	*cathartica*	Common Buckthorn				
Ribes	*cynosbati*	Prickly Gooseberry				
Ribes	*Missouriense*	Missouri Gooseberry				
Rhus	*aromatica*	Fragrant Sumac				
Rhus	*typhina*	Staghorn Sumac				
Rubus	*allegheniensis*	Alleghaney Blackberry				
Viburnum	*rafinesquianum*	Rafinesque Viburnum				
Viburnum	*prunifolium*	Blackhaw Viburnum				
Zanthoxylum	*americanum*	Prickly Ash				

Southern Dry-Mesic Forest: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Agrimonia	*gryposepala*	Tall Hairy Agrinomy				
Amphicarpa	*bracteata*	Hogpeanut				
Anemone	*quinquefolia*	Wood Anemone				
Anemone	*virginiana*	Tall Thimbleweed				
Aquilegia	*canadensis*	Canada Columbine				
Aralia	*nudicaulis*	Wild Sarsaparilla				
Aralia	*racemosa*	American Spikenard				
Asarum	*canadense*	Wild Ginger				
Arisaema	*triphyllum*	Jack-in-the-Pulpit				
Asclepias	*exaltata*	Poke Milkweed				
Aster	*sagitfolia*	Arrow-leaved Aster				
Aster	*Shortii*	Short's Aster				

Caulophyllum	*thalictroides*	Blue Cohosh				
Cardemine	*concatenata*	Toothwort				
Claytonia	*virginica*	Spring Beauty				
Cryptotaenia	*canadensis*	Canadian Honewort				
Dicentra	*canadensis*	Squirrel corn				
Dicentra	*cucullaria*	Dutchman's breeches				
Desmodium	*glutinosum*	Pointed-leaf Ticktrefoil				
Dioscorea	*Villosa*	Wild Yam				
Erigeron	*pulchellens*	Robin's Fleabane Daisy				
Erythronium	*Albicum*	White Trout Lily				
Erythronium	*americanum*	Yellow Trout Lily				
Eupatorium	*purpureum*	Purple Stemmed Joe-Pye				
Fragaria	*virginiana*	Woodland Strawberry				
Galium	*aparine*	Stickywilly				
Galium	*concinnum*	Shining Bedstraw				
Geranium	*maculatum*	Wild Geranium				
Geum	*Allepicum*	Yellow Avens				
Geum	*canadensis*	White Avens				
Helianthus	*strumosis*	Pale-leaved Sunflower				
Hydrophyllum	*virginianum*	Virginia Waterleaf				
Lactuca	*spicata*	Woodland Lettuce				
Maianthemum	*racemosum*	False Solomon's Seal				
Maianthemum	*Stellate*	Starry Solomon's Plume				
Osmorhiza	*Claytoni*	Sweet Cicely				
Parietaria	*pensylvanica*	Pennsylvania Pellitory				
Phlox	*Divaricate*	Woodland Phlox				
Phryma	*leptostachya*	American Lopseed				
Persicaria	*virginiana*	Woodland knotweed				
Podophyllum	*peltatum*	Mayapple				
Polemonium	*Reptans*	Jacob's Ladder				
Polygonatum	*pubescens*	Hairy Solomon's Seal				
Prenanthes	*alba*	Lion's Foot				
Ranunculus	*abortivus*	Little-leaf Buttercup				
Sanicula	*gregaria*	Canadian Black Snakeroot				
Securigera	*varia*	Purple crowned vetch				
Smilax	*ecirrhata*	Upright Carrionflower				
Smilax	*herbacea*	Smooth Carrionflower				
Solidago	*ulmifolia*	Elm-leaved Goldenrod				

Thalictrum	*dioicum*	Early Meadow-rue				
Trillium	*grandiflora*	Large White Trillium				
Trillium	*recurvatum*	Prairie Trillium				
Triosteum	*perfoliatum*	Late Horse Gentian				
Uvularia	*grandiflora*	Largeflower Bellwort				
Veronicastrum	*virginicum*	Culver's Root				
Viola	*Sororia*	Common Wood Violet				
Viola	*pubescens*	Downy Yellow Violet				

Southern Dry-Mesic Forest: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Brachyelytrum	*erectum*	Bearded Shorthusk				
Bromus	*latiglumis*	Ear-leaved Brome				
Bromus	*pubescens*	Hairy Woodland Brome				
Carex	*blanda*	Common Wood Sedge				
Carex	*pensylvanica*	Pennsylvania Sedge				
Carex	*radiata*	Eastern Star Sedge				
Carex	*rosea*	Rosy Sedge				
Carex	*spicata*	Prickly Sedge				
Carex	*sprengelii*	Sprengel's Sedge				
Diarrherna	*obovata*	Beak Grass				
Elymus	*villosa*	Downy Wild Rye				
Elymus	*virginiana*	Virginia Wild Rye				
Festuca	*obtusa*	Nodding Fescue				
Hystrix	*patula*	Bottlebrush Grass				
Juncus	*tenuis*	Pathrush				
Lolium	*perenne*	Perennial Ryegrass				
Poa	*pratensis*	Kentucky bluegrass				
Poa	*sylvestris*	Woodland bluegrass				

Southern Dry-Mesic Forest: Vines						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Celastrus	*scandens*	Bittersweet				
Lonicera	*prolificum*	Yellow Vine Honeysuckle				
Parthenocissus	*vitacea*	Grape Woodbine				

Southern Dry-Mesic Forest: Ferns						

Genus	Species	Common Name	Pre-existing	Planted	Future Planting	Remove
Adiantum	*pedatum*	Maidenhair Fern				
Athyrium	*filix-femina*	Lady Fern				
Botrychium	*virginianum*	Rattlesnake Fern				
Dryopteris	*carthusiana*	Spinulose Wood Fern				
Gymnocarpium	*dryopteris*	Common Oak Fern				
Polystichum	*acrostichoides*	Christmas Fern				
Pteridium	*aquilinum*	Western Bracken Fern				

Plant Species Working List

Date: January 15th, 2019
Observer: Joel Springsteen
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Mesic Prairie

Prairie-Mesic: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Ailanthus	*altissima*	Tree of Heaven				

Prairie-Mesic: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Ceanothus	*americanus*	New Jersey tea				
Hypericum	*kalmianum*	Kalm's St.Johns Wort				
Rhus	*typhina*	Staghorn Sumac				
Rosa	*arkansana*	Prairie Rose				
Rosa	*carolina*	Carolina Rose				

Prairie-Mesic: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Achillea	*millefolium*	Common Yarrow				
Agastache	*scrophulariaefolia*	Purple Giant Hyssop				
Allium	*cernuum*	Nodding Pink Onion				

Amaranthus	*retroflexus*	Rough Amaranth				
Ambrosia	*artimisiifolia*	Common Ragweed				
Amorpha	*canescens*	Leadplant				
Anemone	*canadensis*	Canada Anemone				
Anemone	*cylindrica*	Thimbleweed				
Anemone	*patens*	Pasqueflower				
Anemone	*virginiana*	Tall Thimbleweed				
Aquilegia	*canadensis*	Canadian Columbine				
Arctium	*spp.*	Burdock				
Artemesia	*ludoviciana*	White Sage				
Artemesia	*sp*	Common Mugwort				
Asclepias	*incarnata*	Swamp Milkweed				
Asclepias	*purpurescens*	Purple Milkweed				
Asclepias	*sullivanti*	Sullivant's Milkweed				
Asclepias	*syriaca*	Common Milkweed				
Asclepias	*tuberosa*	Butterfly Weed				

Aster	*azureus*	Sky Blue Aster				
Aster	*drummondii*	Drummond's Aster				
Aster	*ericoides*	Heath Aster				
Aster	*laevis*	Smooth Blue Aster				
Aster	*novae-angliae*	New England Aster				
Aster	*pilosus*	Frost Aster				
Aster	*prenanthoides*	Crooked Stem Aster				
Aster	*sagittifolius*	Arrow-leaved Aster				
Aster	*shortii*	Short's Aster				
Astragalus	*canadensis*	Milk-vetch				
Baptisia	*alba*	White Wild Indigo				
Blephilia	*ciliata*	Downy Woodmint				
Camassia	*scilloides*	Wild Hyacinth				
Campanula	*americana*	Tall Bellflower				
Chamaesyce	*maculata*	Milk-purslane				
Chenopodium	*album*	Common Lamb's Quarters				
Cirsium	*arvense*	Canada Thistle				
Cirsium	*discolor*	Field Thistle				
Cirsium	*vulgare*	Bull Thistle				
Cychorium	*intibus*	Common Chickory				
Convolvulus	*arvensis*	Field Bindweed				
Coreopsis	*palmata*	Prairie Coreopsis				
Coreopsis	*tripteris*	Tall Coreopsis				

Dalea	*candida*	White Prairie Clover				
Dalea	*purpurea*	Purple Prairie Clover				
Dauca	*carota*	Queen Anne's Lace				
Desmodium	*canadense*	Showy Ticktrefoil				
Desmodium	*illinoense*	Illinois Ticktrefoil				
Dodecatheon	*meadia*	Shooting Star				
Echinacea	*pallida*	Pale Purple Coneflower				
Erigeron	*strigosus*	Daisy Fleabane				
Erigeron	*annuus*	Annual Fleabane				
Erigeron	*philadelphicus*	Marsh Fleabane				
Erigeron	*pulcellus*	Robin's Fleabane				
Eryngium	*yuccifolium*	Rattlesnake Master				
Fragaria	*virginiana*	Wild Strawberry				
Galium	*boreale*	Northern Bedstraw				
Gaura	*biennis*	Bienniel Bee Blossom				
Gentiana	*alba*	Cream Gentian				
Gentiana	*andrewsii*	Bottle Gentian				
Gentiana	*crinitia*	Fringed Gentian				
Geranium	*maculatum*	Wild Geranium				
Geum	*triflorum*	Prairie Smoke				

Glechoma	*hederacea*	Creeping Charlie				
Helenium	*autumnale*	Sneezeweed				
Helianthus	*occidentalis*	Western Sunflower				
Heliopsis	*helianthoides*	False Sunflower				
Heuchera	*richardsonnii*	Prairie Alumroot				
Hypericum	*punctatum*	Dotted St.John's Wort				
Hypericum	*pyramidatum*	Great St.John's Wort				
Hypoxis	*hirsuta*	Yellow Star Grass				
Iris	*virginica shrevei*	Southern Blue Flag Iris				
Krigia	*biflora*	Two-flowered Cynthia				
Lactuca	*serriola*	Prickly Lettuce				
Lathrys	*venosus*	Veiny Pea				
Leonurus	*cardiaca*	Lion's Tail				
Lespedeza	*capitata*	Round-headed Bush Clover				
Liatris	*aspera*	Rough Blazing Star				
Liatris	*ligulistylis*	Meadow Blazing Star				
Liatris	*pycnostachya*	Prairie Blazing Star				
Liatris	*spicata*	Marsh Blazing Star				

Lilium	*michiganense*	Michigan lily				
Lilium	*philadephicum*	Prairie Lily				
Lobelia	*siphilitica*	Great Blue Lobelia				
Lotus	*corniculatus*	Bird's-foot Trefoil				
Lysimachia	*ciliata*	Fringed Loosestrife				
Lysimachia	*quadriflora*	Prairie Loosestrife				
Matricaria	*discoidea*	Pinnapple-weed				
Medicago	*luplina*	Black Medic				
Melilotus	*officinalis*	Yellow Sweet Clover				
Melilotus	*albus*	White Sweet Clover				
Monarda	*fistulosa*	Wild Bergamot				
Myrabilis	*nyctaginea*	Wild Four-'o Clock				
Nepata	*cataria*	Catnip				
Oenothera	*biennis*	Evening Primrose				
Oxalis	*stricta*	Common Yellow Wood-sorrel				
Oxalis	*violacea*	Violet Wood Sorrel				
Packera	*aurea*	Groundsel				
Packera	*paupercula*	Balsam Groundsel				
Parthenium	*integrifolium*	Wild Quinine				
Persicaria	*spp.*	Smartweeds				
Phlox	*glaberrima*	Smooth Phlox				
Phlox	*pilosa*	Prairie Phlox				
Phlox	*divaricata*	Woodland Phlox				
Physostegia	*virginiana*	Obedient Plant				
Physalis	*longifolia*	Smooth Ground Cherry				
Plantago	*major*	Common Plantain				
Polygonum	*aviculare*	Common Knotweed				
Polygonum	*achoreum*	leathery knotweed				
Polygonatum	*biflorum*	Giant Solomon's Seal				
Potulaca	*oleracea*	Common Purslane				
Potentilla	*arguta*	Prairie Cinquefoil				
Prenanthes	*racemosa*	Purple Rattlesnake Root				
Pycnanthemum	*virginianum*	Mountain Mint				
Ranunculus	*fascicularis*	Early Buttercup				
Ratibida	*pinnata*	Yellow Coneflower				
Rudbeckia	*fulgida speciosa*	Showy Coneflower				
Rudbeckia	*hirta*	Black-eyed Susan				
Rudbeckia	*triloba*	Brown-eyed Susan				
Ruellia	*humilis*	Hairy Wild Petunia				

Silphium	*integrifloium*	Rosinweed				
Silphium	*laciniatum*	Compass Plant				
Silphium	*terebinthinaceum*	Prairie Dock				
Smilacina	*stellata*	Starry Solomon's Plume				
Smilacina	*racemosa*	False Solomon's Seal				
Sisyrinchium	*angustifolium*	Narrow-leafed Blue-eyed Grass				
Solidago	*juncea*	Early Goldenrod				
Solidago	*rigida*	Stiff Goldenrod				
Solidago	*speciosa*	Showy Goldenrod				
Solidago	*riddellii*	Riddell's Goldenrod				
Solidago	*ohiensis*	Ohio Goldenrod				
Sonchus	*spp.*	Sow Thistle				
Taraxacum	*officinale*	Common Dandelion				
Thalictrum	*dasycarpum*	Purple Meadowrue				
Tradescantia	*ohiensis*	Ohio Spiderwort				
Trifolium	*pratense*	Red Clover				
Trifolium	repens	White Clover				
Verbena	*hastata*	Blue Vervain				
Verbena	*stricta*	Hoary Vervain				
Veronicastrum	*virginicum*	Culver's Root				
Viola	*pedatifida*	Prairie Violet				
Vicia	*americana*	American Vetch				
Zizia	*aptera*	Heart-leaf Golden Alexanders				
Zizia	*aurea*	Golden Alexander				

Prairie-Mesic: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Andropogon	*scoparium*	Little Bluestem				
Andropogon	*gerardii*	Big Bluestem				
Bouteloua	*curtipendula*	Side-oats Gramma				
Bromus	*kalmii*	Prairie Brome				
Carex	*bebbii*	Bebb's Sedge				
Carex	*bicknellii*	Bicknell's Sedge				
Carex	*brevior*	Plains Oval Sedge				
Carex	*cephalophora*	Oval Headed Sedge				
Carex	*cristatella*	Crested Oval Sedge				
Carex	*gravida*	Heavy Sedge				

Carex	*normalis*	Spreading Oval Sedge				
Carex	*vulpinoidea*	Brown Fox Sedge				
Carex	*pennsylvanica*	Penn Sedge				
Deschampsia	*caespitosa*	Tufted Hair Grass				
Elymus	*canadensis*	Canadian Wild Rye				
Elymus	*hystrix*	Bottlebrush Grass				
Elymus	*villosa*	Silky Wild Rye				
Elymus	*virginicus*	Virginia Wild Rye				
Elymus	*repens*	Quackgrass				
Hierochloe	*odorata*	Vanilla Sweet Grass				
Panicum	*virgatum*	Switchgrass				
Poa	*pratense*	Kentucky Bluegrass				
Sorghastrum	*nutans*	Indian Grass				
Sporobolus	*heterolepis*	Prairie Dropseed				

Plant Species Working List

Date: January 19th, 2019
Observer: Joel Springsteen
Location/Unit: Washington Park:
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Oak Woodland

Woodland: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Acer	*saccharum*	Sugar maple				
Acer	*platanoides*	Norway maple				
Amelanchier	*laevis*	Allegheny serviceberry				
Carpinus	*caroliniana*	Musclewood				
Carya	*ovata*	Shagbark hickory				
Cornus	*alternifolia*	Pagoda dogwood				
Crataegus	*spp.*	Hawthorns				
Fagus	*grandifolia*	American Beech				
Ostrya	*virginiana*	Ironwood				
Prunus	*serotina*	Black Cherry				
Ptelea	*trifoliata*	Wafer Ash				

Quercus	*alba*	White Oak				
Quercus	*bicolor*	Swamp White Oak				
Quercus	*lyrata*	Overcup Oak (sold to us a white Oak)				
Quercus	*macrocarpa*	Bur Oak				
Quercus	*meuhlenbergii*	Chinkapin				
Quercus	*rubra*	Red Oak				
Quercus	*X scheuttei (bicolor x macrocarpa)*	Schuette Oak				
Quercus	*velutina*	Black Oak				
Tilia	*americana*	Basswood				
Ulmus	*spp*	American Elm				

Woodland: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Amorpha	*canescens*	Leadplant				
Ceanothus	*americana*	New Jersey tea				
Corylus	*americana*	American Filbert				
Euonymus	*atropupurea*	Eastern Wahoo				
Hamamelis	*virginiana*	Common Witchhazel				
Ramnus	*cathartica*	Common Buckthorn				
Ribes	*americanum*	American Black Currant				
Ribes	*missouriense*	Missouri Gooseberry				
Sambucus	*canadensis*	American Elderberry				
Sambucus	*racemosa*	Scarlet Elderberry				
Staphylea trifolia	*trifolia*	Bladdernut				
Symphoricarpos	*albus*	Snowberry				
Symphoricarpos	*occidentalis*	Western Snowberry				
Viburnum	*lentago*	Nannyberry				
Viburnum	*prunifolium*	Blackhaw				
Viburnum	*rafinesquianum*	Rafinesque Viburnum				
Diervillea	*lonicera*	Bushhoneysuckle				

Woodland: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Actaea	*pachypoda*	Doll's Eyes				
Actaea	*rubra*	Red Baneberry				
Aganilis	*purpurea*	Purple False Foxglove				
Agastache	*scrophulariifolia*	Purple Giant Hyssop				
Agrimonia	*gryposepala*	Agrimony				
Allium	*canadense*	Wild Garlic/Onion				
Allium	*tricoccum burdickii*	Wild Leek				
Amphicarpaea	*bracteata*	Hogpeanut				
Anemone	*quinquefolia*	Wood Anemone				
Anemone	*virginiana*	Tall Windflower				
Anemone	*canadensis*	Canada anemone				
Anemone	*cylindrica*	Thimbleweed				
Apocynum	*androsaemifolium*	Spreading Dogbane				
Aquilegia	*canadensis*	Canada Columbine				
Aralia	*nudicaulis*	Wild Sarsaparilla				
Aralia	*racemosa*	American Spikenard				
Arenaria	*lateriflora*	Wood Sandwort				
Arisaema	*dracontium*	Green Dragon				
Arisaema	*triphyllum*	Jack-in-the-Pulpit				
Asarum	*canadensis*	Wild Ginger				
Asclepias	*exaltata*	Poke Milkweed				
Asclepias	*purpurascens*	Purple Milkweed				
Asclepias	*incarnata*	Swamp Milkweed				
Aureolaria	*grandiflora*	Large-flowered Yellow False Foxglove				
Aureolaria	*pedicularia*	Annual Yellow False Foxglove				
Blephilia	*ciliata*	Downy Wood Mint				
Blephilia	*hirsuta*	Wood Mint				
Camassia	*scilloides*	Wild Hyacinth				
Campanula	*americana*	Tall Bellflower				

Cardamine (Dentaria)	*diphylla*	Broad-leaved Toothwort				
Cardamine (Dentaria)	*laciniata*	Toothwort				
Caulophyllum	*thalictroides*	Blue Cohosh				
Chenopodium	*standleyanum*	Woodland Lambs Quarters				
Cichorium	*intybus*	Common Chicory				
Cirsium	*altissimum*	Tall Wood Thistle				
Cryptotaenia	*canadensis*	Canadian Honewort				
Cypripedium	*parviflorum*	Yellow Lady Slipper				
Desmodium	*cuspidatum*	Large-bracted Ticktrefoil				
Desmodium	*glutinosum*	Pointed ticktrefoil				
Desmodium	*nudiflorum*	Bare-stemmed Ticktrefoil				
Desmodium	*paniculatum*	Tall Ticktrefoil				
Dicentra	*canadensis*	Squirrel Corn				
Dicentra	*cucullaria*	Dutchman's Breeches				
Dodecatheon	*meadia*	Shooting Star				
Erigeron	*annuus*	Annual Fleabane				
Erigeron	*philadelphicus*	Common Fleabane				
Erigeron	*philadelphicus*	Marsh Fleabane				
Erigeron	*pulchellus*	Robin's Plantain				
Epifagus	*virginiana*	Beech Drops				
Eupatorium	*maculatum*	Spotted Joe-pye Weed				
Eupatorium	*purpureum*	Purple-stemmed Joe-pye Weed				
Eupatorium	*sessifolium*	Upland Woodland Boneset				
Floerkea	*proserpinacoides*	False Mermaid				
Fragaria	*virginiana*	Wild Strawberry				
Galium	*boreale*	Northern Bedstraw				
Gallium	*cicaezans*	Hairy Wild Licorice				
Gallium	*concinnum*	Shining Bedstraw				
Gallium	*triflorum*	Sweet-scented Bedstraw				

Gentiana	*alba*	Cream Gentian				
Gentiana	*andrewsii*	Bottle Gentian				
Gentiana	*crinitia*	Fringed Gentian				
Geranium	*maculatum*	Wild Geranium				
Geum	*allepicum*	Yellow Avens				
Geum	*canadense*	White Avens				
Geum	*laciniatum*	Rough Avens				
Geum	*rivale*	Purple Avens				
Helenium	*autumnale*	Sneezeweed				
Helianthus	*decapetalus*	forest Sunflower				
Helianthus	*strumosus*	Pale-leaved Woodland Sunflower				
Heracleum	*maximum*	cow Parsnip				
Heuchera	*richardsonii*	Prairie Alumroot				
Hieracium	*kalmii*	Canada Hawkweed				
Hydrophyllum	*virginianum*	Virginia Water-leaf				
Hypericum	*pyramidatum*	Great St.John's Wort				
Impatiens	*capensis*	Orange Jewelweed				
Impatiens	*pallida*	Pale Jewelweed				
Krigia	*biflora*	Cynthia				
Lactuca	*biennis*	Woodland Lettuce				
Lathyrus	*ochroleucus*	Pale Vetchling				
Lathyrus	*venosus*	Forest Pea				
Lilium	*michiganense*	Michigan Lily				
Lilium	*philadelphicum*	Wood Lilly				
Lithospermum	*latiflorium*	Broad-leaved Puccoon				
Lobelia	*inflata*	Indian Tobacco				
Lobelia	*siphilitica*	Blue Lobelia				
Lysimachia	*ciliata*	Fringed Loosestrife				
Maianthemum	*canadense*	Canada Mayflower				
Maianthemum	*racemosum*	False Solomon's Seal				
Maianthemum (Smilacina)	*stellata*	Starry False Solomon's Seal				
Monarda	*fistulosa*	Bergamot				

Oenothera	*perennis*	Small Sundrops				
Osmorhiza	*claytoni*	Hairy Sweet Cicely				
Osmorhiza	*longistylis*	Smooth Sweet Cicely				
Oxalis	*(stricta)*	Yellow Wood Sorrel				
Oxalis	*violacea*	Violet Wood Sorrel				
Panax	*quinquefolius*	American Ginseng				
Panax	*trifolius*	Dwarf Ginseng				
Paronychia	*canadensis*	Tall-forked Chickweed				
Pedicularis	*canadensis*	Wood Betony				
Phlox	*divaricata laphamii*	Blue Woodland Phlox				
Phlox	*pilosa*	Downy Prairie Phlox				
Phryma	*leptostachya*	American Lopseed				

Physostegia	*virginiana*	Obedient Plant				
Podophyllum	*peltatum*	Mayapple				
Polemonium reptans	*reptans*	Jacob's Ladder				
Polygonatum	*commutatum*	Solomon's Seal				
Polymnia	*canadensis*	Pale-flowered Leaf-cup				
Potentilla	*arguta*	Prairie Cinquefoil				
Potentilla	*simplex*	Common Cinquefoil				
Prenanthes	*alba*	Lion's Foot				
Prunella	*vulgaris subsp.vulgaris*	Common heal-all				
Pycnanthemum	*virginianum*	Mountain Mint				
Ranunculus	*fascicularis*	Early Buttercup				
Ranunculus	*hispidus (septentrionalis)*	Bristly Buttercup				
Ranunculus	*arbortivas*	Little-flowered buttercup				
Sanguinaria	*canadensis*	Bloodroot				
Sanicula	*gregaria*	Clustered Black Snakeroot				
Sanicula	*trifoliata*	Beaked Sanicule				

Sanicula	*marilandica*	Maryland Sanicule				
Scrophularia	*marilandica*	Eastern Figwort				
Scuttellaria	*lateriflora*	Mad-dog Skullcap				
Scuttellaria	*ovata*	Heart-leaved Skullcap				
Silene	*stellata*	Starry Campion				
Solidago	*caesia*	Bluestem Goldenrod				
Solidago	*flexicaulis*	Zigzag Goldenrod				
Solidago	*juncea*	Early Goldenrod				
Solidago	*speciosa*	Showy Goldenrod				
Solidago	*ulmifolia*	Elm-leaved Goldenrod				
Symphyotrichum (Aster)	*azureus*	Sky Blue Aster				
Symphyotrichum (Aster)	*cordifolius*	Heart-leaved Aster				
Symphyotrichum (Aster)	*drummondii*	Drummond's Aster				
Symphyotrichum (Aster)	*furcatus*	Forked Aster				
Symphyotrichum (Aster)	*laevis*	Smooth Blue Aster				
Symphyotrichum (Aster)	*lateriflorus*	Side-flowering Aster				
Symphyotrichum (Aster)	*macrophyllus*	Big-leaved Aster				
Symphyotrichum (Aster)	*sagittifolius*	Arrow-leaved Aster				
Taenidia	*integerrima*	Yellow Pimpernel				
Thalictrum	*dasycarpum*	Purple Meadowrue				
Thalictrum	*dioicum*	Early Meadowrue				
Thalictrum	*thalictroides*	Rue Anemone				
Thaspium	*trifoliatum*	Meadow Parsnip				
Trillium	*cernuum*	Nodding Trillium				
Trillium	*erectum*	Red Trillium				
Trillium	*flexipes*	Nodding Wake-robin				
Trillium	*grandiflorum*	Large Trillium				
Trillium	*recurvatum*	Prairie Trillium				

Triosteum	*aurantiacum*	Early Horse Gentian				
Triosteum	*perfoliatum*	Late Horse Gentian				
Uvularia	*grandiflora*	Bellwort				
Veronicastrum	*virginicum*	Culver's Root				
Viola	*cucullaria*	Marsh Violet				
Viola	*sororia*	Common Violet				
Viola	*pubescens*	Downy Yellow Violet				
Zizia	aptera	Hear-Leaved Gold. Alexander				
Zizia	*aurea*	Golden Alexander				

Woodland: Vines						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Calystegia	*spithamaea*	Low Bindweed				
Celastris	*scandens*	American bittersweet				
Dioscorea	*villosa*	Wild Yam				
Fumaria	*officionalis*	Fumitory				
Lathyrus	*venosus*	Veiny Pea				
Lonicera	*dioica*	Red Vine Honeysuckle				
Lonicera	*reticulata/ prolifera*	Yellow Vine Honeysuckle				
Menispermum	*canadense*	Moonseed				
Parthenocissus	*quinquefolia*	Virginia Creeper				
Parthenocissus	*vitacea*	Grape Woodvine				
Smilax	*ecirrhata*	Upright Carrion Flower				
Smilax	*herbacea*	Common Carrion Flower				
Vicia	*americana*	American vetch				
Vicia	*caroliniana*	Carolina vetch				
Woodland: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Brachyelytrum	*erectum*	Bearded short husk				
Bromus	*ciliatus*	Fringed brome				

Bromus	*kalmii*	Prairie brome				
Carex	*blanda*	Common Wood Sedge				
Carex	*pedunculata*	Long-stock Sedge				
Carex	*spicata*	Prickly Sedge				
Carex	*rosea*	Curly-styled Wood Sedge				
Carex	*sparganioides*	Bur-reed Sedge				
Carex	*tenera*	Narrow-leaved Sedge				
Carex	*bebbii*	Bebb's Sedge				
Carex	*pensylvanica*	Pennsylvania Sedge				
Diarhena	*obovatus*	Beak Grass				
Elymus	*virginicus*	Virginia Wild Rye				
Elymus	*villosus*	Downy Wild Rye				
Elymus (Hystrix)	*patula*	Bottlebrush Grass				
Elymus	*repans*	Quackgrass				
Festuca	*subverticillata*	Nodding Fescue				
Juncus	*tenuis*	Path Rush				
Leersia	*virginica*	White Grass				
Muhlenbergia	*frondosa*	Common Satin Grass				
Muhlenbergia	*mexicana*	Leafy Satin Grass				
Muhlenbergia	*racemosa*	Upland Wild Timothy				
Muhlenbergia	*sylvatica*	Woodland Satin Grass				
Muhlenbergia	*tenuiflora*	Slender Muhly				
Poa	*pratensis*	Kentucky bluegrass				
Poa	*sylvestris*	Woodland Bluegrass				

Woodland: Ferns						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Adiatum	*pedatum*	Maidenhair Fern				
Athyrium	*filix-feminina*	Lady Fern				
		Cut-leaved Grape Fern				

Botrychium	*dissectum*					
Botrychium	*multifida*	Leathery-leaved Grape Fern				
Botrychium	*virginicum*	Rattlesnake Fern				
Cystopteris	*protusa*	Fragile Fern				
Gymnocarpium	*dryopteris*	Oak Fern				
Oenoclea	*sensibilis*	Sensitive Fern				

Plant Species Working List

Date: 19-Mar-14
Observer: Joel Springsteen
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Ephemeral Pond

Ephemeral Ponds: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Fraxinus	*pennsylvanica*	green ash				
Larix	*laricina*	tamarack				
Morus	*alba*	White Mulberry				
Nyssa	*sylvatica*	Black Tupelo				
Prunus	*americana*	American plum				
Prunus	*tomentosa*	Nanking Cherry				
Ulmus	*americana*	American Elm				
Salix	*spp*	Willow Species				

Ephemeral Ponds: Shrubs	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Cornus	*amomum*	silky dogwood				
Ilex	*verticillata*	winterberry holly				
Lonicera	*oblongifolia*	swamp fly honeysuckle				
Lonicera	*tartarica*	rartarian honeysuckle				
Lonicera	*villosa*	mountain fly honeysuckle				
Potentilla	*fruticosa*	*shrubby cinquefoil*				

Ribes	*americanum*	American black currant				
Ribes	*glandulosum*	swamp skunk currant				
Ramnus	*allnifolia*	alder-leaf buckthorn				
Ramnus	*cathartica*	common buckthorn				
Ramnus	*frangula*	glossy buckthorn				
Rosa	*arkansana*	prairie wild rose				
Rosa	*carolina*	Carolina rose				
Rosa	*multiflora*	multiflora rose				
Rosa	*palustris*	swamp rose				
Senna	*hebecarpa*	wild senna				
Sambucus	*canadensis*	american elderberry				
Spirea	*alba*	meadowsweet				
Spirea	*tomentosa*	steeplebush				
Viburnum	*opulus*	Euro. Highbush Cranberry Viburnum				
Viburnum	*trilobum*	Amer. Highbush Cranberry Viburnum				

Ephemeral Ponds: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Acorus	*calamus*	sweet flag				
Alisma	*subcordatum*	water plantain				
Amorpha	*fruticosa*	false indigo				
Anemone	*canadensis*	meadow anemone				
Angelica	*atropurpurea*	angelica				
Asclepias	*incarnata*	swamp milkweed				
Aster	*lanceolatus*	panciled aster				
Aster	*novae-angliae*	New England aster				
Aster	*puniceus*	swamp aster				
Aster	*umbellatus*	flat topped aster				
Bidens	*sp*	bidens species				
Bidens	*cernua*	nodding swamp marigold				
Bidens	*connata*	purple stemmed swamp marigold				
Bidens	*coronata*	tall swam marigold				

Caltha	*palustris*	marsh marigold				
Chelone	*glabra*	turtlehead				
Erigeron	*philadelphicus*	marsh fleabane				
Eupatorium	*maculatum*	spotted joe-pye weed				
Eupatorium	*perfoliatum*	boneset				
Eupatorium	*maculatum*	spotted joe pye weed				
Gentiana	*andrewsii*	bottle				
Geum	*rivale*	water avens				
Hasteola	*suaveolens*	indian plantain				

Helenium	*autumnale*	sneezeweed				
Heracleum	*maximum*	cow parsnip				
Hierochloe	*Odorata*	sweet grass				
Hypericum	*prolificum*	shrubby St. Johnswort				
Hypericum	*pyramidatum*	great St John's wort				
Iris	*virginica shrevei*	southern blue flag iris				
Liatris	*spicata*	marsh blazing star				
Lilium	*michiganense*	Michigan lily				
Lobelia	*cardinalis*	cardinal flower				
Lobelia	*siphilitica*	great blue lobelia				
Lycopus	*americanus*	water horehound				
Lysimachia	*ciliata*	fringed loosestrife				
Lysimachia	*quadriflora*	prairie loosestrife				
Lysimachia	*thyrsiflora*	tufted loosestrife				
Lythrum	*alatum*	winged loosestrife				
Mentha	*arvensis*	wild mint				
Mimulus	*rigens*	monkey flower				
Packera	*aurea*	ground sel				
Packera	*paupercula*	balsam groundsel				
Parthenium	*integrifolium*	wild quinine				
Penthorum	*sedoides*	ditch stonecrop				
Phlox	*glabberima interior*	marsh phlox				
Physostegia	*virginiana*	obedient plant				
Prenanthus	*racemosa*	rattlesnake root				
Pycnanthemum	*virginianum*	mountain mint				

Sagittaria	*latifolia*	common arrowhead				
Scutellaria	*lateriflora*	blue skullcap				
Silphium	*terebinthinaceum*	prairie dock				
Solidago	*ohioensis*	Ohio goldenrod				
Solidago	*riddellii*	Riddel's goldenrod				
Solidago	*rigida*	stiff goldenrod				
Solidago	*patula*	swamp goldenrod				
Solidago	*uliginosa*	bog goldenrod				
Sparganium	*sp.*	bur-reed				
Symplocarpus	*foetidus*	skunk cabbage				
Thalictrum	*dasycarpum*	purple meadowrue				
Verbena	*hastata*	blue vervain				
Vernonia	*fasciculata*	ironweed				
Veronicastrum	*virginicum*	culver's root				
Viola	*cucullata*	marsh blue violet				
Zizia	*aurea*	golden Alexander				

Ephemeral Ponds: Grasses						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Andropogon	*gerardii*	big bluestem				
Bromus	*cillatus*	fringed brome				
Calamogrostis	*canadensis*	blue joint grass				
Cinna	*arundinacea*	wood reed grass				
Elymus	*canadensis*	canada wild rye				
Elymus	*riparius*	riverbank wild rye				
Elymus	*villosa*	silky wild rye				
Elymus	*virginicus*	Virginia wild rye				
Glyceria	*grandis*	reed manna grass				
Glyceria	*striata*	fowl manna grass				
Glyceria	*sp*	manna grass species				
Leersia	*oryzoides*	rice cut grass				
Phalaris	*arundinacea*	reed canary grass				
Spartina	*pectina*	prairie cordgrass				
Sporobolus	*heterolepis*	northern dropseed				

Ephemeral Ponds: Sedges and Rushes						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Carex	*Spp.*	At least 2 species of clonal sedge were naturally occurring in larger pond				
Carex	*annectens*	small yellow fox sedge				
Carex	*annectens*	small yellow fox sedge				
Carex	*aquatilis*	water sedge				
Carex	*aurea*	golden fruited sedge				
Carex	*bebii*	Bebb's oval sedge				
Carex	*bicknelii*	copper shouldered oval sedge				
Carex	*blanda*	woodland sedge				
Carex	*brevior*	plains oval sedge				
Carex	*cephalophora*	oval headed sedge				
Carex	*comosa*	longhair sedge				
Carex	*crinata*	fringed sedge				
Carex	*cristatella*	crested oval sedge				
Carex	*crus-corvi*	crowfoot fox sedge				
Carex	*davisii*	Davis' sedge				
Carex	*gravida*	heavy sedge				
Carex	*grayi*	common bur sedge				
Carex	*hystericina*	porcupine sedge				
Carex	*lacustris*	lake sedge				
Carex	*lupilina*	hop sedge				
Carex	*lurida*	bottlebrush sedge				
Carex	*meadii*	Mead's sedge				
Carex	*muehlenbergii*	Muhlenberg's sedge				
Carex	*muskingumenis*	swamp oval sedge				
Carex	*normalis*	spreading oval sedge				
Carex	*pensylvanica*	Penn sedge				
Carex	*pseudocyperus*	false bristly sedge				
Carex	*radiata*	eastern star sedge				
Carex	*retorsa*	deflexed bottlebrush sedge				
Carex	*sartwellii*	Sartwell's sedge				
Carex	*scoparia*	lance fruited oval sedge				
Carex	*sparganiodes*	bur-reed sedge				

Carex	*stipata*	common fox sedge				
Carex	*stricta*	tussock sedge				
Carex	*vulpinoidea*	brown fox sedge				
Cephalanthus	*occidentalis*	Buttonbush				
Eleocharis	*acicularis*	needle spikerush				
Juncus	*dudleyi*	Dudley's rush				
Juncus	*effuses*	common rush				
Juncus	*tenius*	poverty rush				
Juncus	*torreyi*	Torrey's rush				
Schoenoplectus	*acutus*	hardstem bulrush				
Schoenoplectus	*pungens*	common three-square				
Schoenoplectus	*tebernaemontani*	softstem bulrush				
Scirpus	*acutus*	hard stem bulrush				
Scirpus	*americanus*	three square bulrush				
Scirpus	*atrovirens*	Dark green bulrush				
Scirpus	*cyperinus*	Woolgrass				
Scirpus	*fluviatilis*	river bulrush				
Scirpus	*pendulus*	nodding bulrush				
Scirpus	*validus*	great bulrush				

Ephemberal Ponds: Ferns						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Onoclea	*sensibilis*	sensitive fern				
Osmunda	*claytonii*	Interrupted fern				
Osmunda	*regalis*	royal fern				
Osmndastrum	*cinnamomeum*	Cinnamon fern				
Thelypteris	*palustris*	marsh fern				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Oak Opening

Oak Opening:Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Carya	*ovata*	Shagbark hickory				
Quercus	*alba*	White Oak				
Quercus	*bicolor*	Swamp White Oak				
Quercus	*macrocarpa*	Bur Oak				
Quercus	*muehlebergii*	Chinkapin Oak				
Quercus	*rubra*	Red Oak				

Oak Opening: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Ceananthus	*americanus*	New Jersy Tea				
Corylus	*americana*	American Hazelnut				
Hypericum	*prolificum*	Shrubby St. Johnswort				
Rosa	*arkansa*	Prairie Wild Rose				
Rosa	*carolina*	Pasture Rose				

Oak Opening: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Amorpha	*canescens*	Leadplant				
Amphicarpa	*bracteata*	Hogpeanut				
Anemone	*cylindrica*	Candle Anemone				
Antennaria	*neglecta*	Field Pussytoes				
Apocynum	*androsaemifolium*	Spreading Dogbane				
Aquilegia	*canadensis*	Canada Columbine				
Aralia	*nudicaulis*	Wild Sarsaparilla				
Asclepias	*syriaca*	Common Milkweed				

Dales	*purpurea*	Purple Prairie Clover				
Cichorium	*intybus*	Common Chicory				
Coreopsis	*palmata*	Stiff Coreopsis				
Comandra	*richardsiana*	False Toadflax				
Desmodium	*glutinosum*	Pointed-leaf Ticktrefoil				
Euphorbia	*Corollata*	Flowering Spurge				
Fragaria	*virginiana*	Woodland Strawberry				
Galium	*Boreale*	Northern Bedstraw				
Galium	*concinnum*	Shining Bedstraw				
Geranium	*maculatum*	Wild Geranium				
Helianthus	*Laetiflorus*	Showy Sunflower				
Helianthus	*strumosus*	Pale-leaf Woodland Sunflower				
Heliopsis	*helianthoides*	Ox-eye Sunflower				
Lespedeza	*capitata*	Roundheaded Bush Clover				
Liatris	*aspera*	rough blazingstar				
Liatris	*ligulistylus*	meadow blazingstar				
Liatris	*pycnostachya*	prairie blazing star				
Lithospermum	*canescens*	Hoary Puccoon				
Monarda	*fistulosa*	Bergamot				
Phlox	*divaricata*	Woodland Phlox				
Phlox	*pilosa*	Downy Phlox				
Polygonatum	*canaliculatum*	Solomon's Seal				
Prenanthes	*alba*	White Rattlesnakeroot				
Maianthemum	*racemosum*	False Solomon's Seal				
Smilax	*herbacea*	Smooth Carrionflower				
Viola	*sororia*	Marsh Blue Violet				
Viola	*pubescens*	Downy Yellow Violet				
Zizia	*aptera*	Heart Leaved Gold. Alex.				
Zizia	*aurea*	Golden Alexander				

Oak Opening: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Carex	*pensylvanica*	Pennsylvania Sedge				
Elymus	*repans*	Quackgrass				
Lolium	*perenne*	Perennial Ryegrass				
Panicum	*leibergii*	Prairie Panic Grass				
Poa	*annua*	Annual Bluegrass				
Poa	*pratensis*	Kentucky bluegrass				

Schizachyrium	*scoparium*	Little Bluestem				
Sporobolus	*Heterolepis*	Prarie Dropseed				

Oak Opening: Ferns						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Pteridium	*aquilinum*	Western Brakenfern				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Savanna

Savanna: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Acer	*saccharinum*	Silver Maple				
Alnus	*glutinosa*	Black Alder				
Celtis	*occidentalis*	Hackberry				
Carya	*ovata*	Shagbark hickory				
Quercus	*alba*	White Oak				
Quercus	*bicolor*	Swamp White Oak				
Quercus	*ellipsoidalis*	Hill's Oak				
Quercus	*macrocarpa*	Bur Oak				
Quercus	*muehlebergii*	Chinkapin Oak				
Quercus	*rubra*	Red Oak				
Ulmus	*americana*	American Elm				
Salix	*babylonica*	Weeping Willow				
Salix	*spp*	various willows				

Savanna:Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Amelanchier	*stolonifera*	Running Serviceberry				

Ceanothus	*americana*	New Jersey tea				
Corylus	*cornuta*	American hazelnut				
Cornus	*amomum*	Silky Dogwood				
Cornus	*racemosa*	Grey Dogwood				
Cornus	*sericea*	Red Twigged Dogwood				
Rhamnus	*cathartica*	Common Buckthorn				
Ribes	*missouriense*	Missouri Gooseberry				
Sambucus	*canadensis*	American Elderberry				
Sambucus	*racemosa*	Scarlet Elderberry				
Viburnum	*opulus*	Euro. Highbush Cran.				

Savanna:Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Agastache	nepetoids	Yellow Giant Hyssop				
Agastache	scrophulariifolia	Purple Giant Hyssop				
Amorpha	canescens	Leadplant				
Anemone	quinquefolia	Wood Anemone				
Anemone	virginiana	Tall Anemone				
Antennaria	plataginifolia	Pussy Toes				
Apocynum	androsaemifolium	Spreading Dogbane				
Apocynum	sibiricum	Indian Hemp				
Arnoglossum	atroplicifolium	Pale Indian Plantain				
Asclepias	purpurascens	Purple Milkweed				
Asclepias	tuberosa	Butterfly Weed				
Aster	laevis	Smooth Blue Aster				
Aster	oolentagiensis	Azure Aster				
Astragalus	canadensis	Canadian Milk Vetch				
Aureolaria	grandiflora	Yellow False-foxglove				
Baptisia	alba	White Wild Indigo				
Baptisia	bracteata	Cream Wild Indigo				
Camassia	scilloides	Wild Hyacinth				
Cirsium	discolor	Field Thistle				
Claytonia	virginica	Spring Beauty				
Comandra	umbellata	False Toadflax				
Coreopsis	tripteris	Tall Coreopsis				
Coreopsis	palmata	Prairie Coreopsis				
Dalea	candida	White Prairie Clover				
Dalea	purpurea	Purple Prairie Clover				
Dasistoma	macrophylla	Mullein Foxglove				

Desmodium	canadense	Showy Tick Trefoil				
Desmodium	illinoense	Illinois Tick Trefoil				
Dodecatheon	meadia	Shooting Star				
Erigeron	pulchellus	Robin's Plantain				
Eryngium	yuccifolium	Rattlesnake Master				
Euphorbia	corollata	Flowering Spurge				
Gallium	boreale	Northern Bedstraw				
Gallium	concinnum	Shining Bedstraw				
Gentiana	alba	Yellowish Gentian				
Gentiana	andrewsii	Bottle Gentian				
Geranium	bicknelli	Northern Cranesbill				
Geranium	carolinianum	Carolina Cranesbill				
Geranium	maculatum	Wild Geranium				
Helianthus	pauciflorus	Showy Sunflower				
Helianthus	strumosus	Pale-leaved Sunflower				
Heliopsis	helianthoides	False Sunflower				
Heuchera	richardsonii	Prairie Alum Root				
Heiracium	scabrum	Rough Hawkweed				
Hypoxis	hirsuta	Yellow Star Grass				
Krigia	biflora	False Dandelion				
Lactuca	canadensis	Wild Lettuce				
Lactuca	floridana	Blue Lettuce				
Lathyrus	venosus	Veiny Pea				
Lespedeza	capitata	Round-headed Bush Clover				
Lespedeza	violacea	Violet Bush Clover				
Liatris	aspera	Rough Blazing Star				
Liatris	scariosa nieuwlandii	Savanna Blazing Star				
Lilium	philadelphicum	Prairie Lily				
Lithospermum	canascens	Hoary Puccoon				
Lobelia	caradinalis	Cardinal Flower				
Lobelia	siphilitica	Great Blue Lobelia				
Maianthemum	stellatum	Starry False Solomon's Seal				
Moehringia	lateriflora	Wood Sandwort				
Monarda	fistulosa	Wild Bergamot				
Oenothera	perenis	Small Sundrops				
Oxalis	violacea	Violet Wood Sorrel				
Parthenium	integrifolium	Wild Quinine				
Pedicularis	canadensis	Lousewort				
Penstemon	calycosus	Smooth Beard Tongue				

Perideridia	americana	Thicket Parsley				
Phlox	pilosa	Prairie Phlox				
Physostegia	virginiana	Obedient Plant				
Polygala	senega	Seneca Snakeroot				
Polygonatum	biflorum	Smooth Solomon's Seal				
Prenanthes	aspera	Rough White Lettuce				
Preanthes	racemosas	Glaucous White Lettuce				
Ratibida	pinnata	Grey-headed Coneflower				
Rudbeckia	subtomentosa	Sweet black-eyed Susan				
Rudbeckia	triloba	Brown-eyed Susan				
Scrophularia	lanceolata	Early Figwort				
Silene	stellata	Starry Campion				
Silphium	laciniatum	Compass Plant				
Silphium	terebinthinaceum	Prairie Dock				
Sisyrinchium	angustifolium	Pointed Blue-eyed Grass				
Solidago	juncea	Early Goldenrod				
Solidago	nemoralis	Old-field Goldenrod				
Solidago	speciosa	Showy Goldenrod				
Solidago	ulmifolia	Elm-leaved Goldenrod				
Taenidia	integerrima	Yellow Pimpernel				
Thaspium	trifoliatum aureum	Meadow Parsnip				
Tradescantia	ohiensis	Common spiderwort				
Trillium	recurvatum	Red Trillium				
Triosteum	aurantiacum	Early Horse Gentian				
Triosteum	perfoliatum	Late Horse Gentian				
Veronicastrum	virginicum	Culver's Root				
Vicia	american	American Vetch				
Viola	pedatifida	Prairie Vetch				
Zizia	aptera	Heart-leaved Meadow Parsnip				
Zizia	aurea	Golden Alexanders				

Savanna:Vines						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Lonicera	*dioica*	Red Vine Honeysuckle				
Lonicera	*prolificum*	Yellow Vine Honeysuckle				
Smilax	*ecirrhata*	Upright Carrion Flower				

Savanna: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Andropogon	*gerardii*	Big Bluestem				
Brachyelytrum	*erectum*	bearded short husk				
Bromus	*ciliatus*	pringed brome				
Bromus	*kalmii*	prairie brome				
Carex	*bebbii*	Bebb's sedge				
Carex	*blanda*	common wood sedge				
Carex	*bicknellii*	Bicknell's sedge				
Carex	*brevior*	Plains oval sedge				
Carex	*spicata*	Prickly sedge				
Carex	*sparganioides*	Bur-reed sedge				
Carex	*tenera*	Narrow leaved sedge				
Carex	*pensylvanica*	Pennsylvania sedge				
Carex	*cristatella*	Crested oval sedge				
Carex	*gravida*	Heavy sedge				
Carex	*normalis*	Spreading oval sedge				
Carex	*vulpinoidea*	Brown fox sedge				
Diarhena	*obovata*	beak grass				
Elymus	*virginicus*	virginia wild rye				
Elymus	*villosus*	downy wild rye				
Elymus (Hystrix)	*patula*	bottle brush grass				
Elymus	*repans*	quackgrass				
Festuca	*subverticillata*	nodding fescue				
Leersia	*virginica*	white grass				
Muhlenbergia	*frondosa*	common satin grass				
Poa	*pratensis*	Kentucky bluegrass				
Sorgashtrum	nutans	Indian Grass				

Savanna: Ferns						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Botrychium	*multifida*	leathery-leaved grape fern				
Botrychium	*virginicum*	rattlesnake fern				
Oenoclea	*sensibilis*	sensitive fern				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Natural Play Area

Natural Play Area: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Acer	*saccharinum*	Silver Maple				
Acer	*saccharum*	Sugar Maple				
Amelanchier	*laevis*	Alleghany Serviceberry				
Carya	*ovata*	Shagbark Hickory				
Celtis	*occidentalis*	Hackberry				
Cornus	*alterifolia*	Pagoda Dogwood				
Crataegus	*crus-galli* var. *inermis*	Thornless Cockspur Hawthorn				
Fraxinus	species	Ash				
Juglans	*cinera*	White Walnut				
Juglans	*nigra*	Black Walnut				
Malus	*Ioensis*	Prairie Crabapple				
Prunus	*americana*	American Plum				
Tilia	*americana*	Basswood				
Quercus	*alba*	White Oak				
Quercus	*muhlenbergii*	Chinkapin Oak				
Quercus	*rubra*	Red Oak				
Ulmus	*rubra*	Slippery Elm				

Natural Play Area: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Amelanchier	*stolonifera*	Running Serviceberry				
Aronia	*melanocarpa*	Black Chokeberry				
Ceanothos	*americanus*	New Jersey Tea				
Rosa	*arkansasa*	Prairie Rose				
Cornus	*alternifolia*	Pagoda Dogwood				
Cornus	*racemosa*	Gray Dogwood				

Corylus	*americana*	American Hazelnut				
Ribes	*cynosbati*	Prickly Gooseberry				
Rubus	*allegheniensis*	Alleghaney Blackberry				
Zanthoxylum	*americanum*	Prickly Ash				

Natural Play Area: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Agrimonia	*gryposepala*	Tall Hairy Agrinomy				
Amphicarpa	*bracteata*	Hogpeanut				
Anemone	*quinquefolia*	Wood Anemone				
Anemone	*virginiana*	Tall Thimbleweed				
Aralia	*nudicaulis*	Wild Sarsaparilla				
Aralia	*racemosa*	American Spikenard				
Arisaema	*triphyllum*	Jack-in-the-Pulpit				
Aster	*saggitfolius*	Arrow-leaved Aster				
Aster	*shortii*	Short's Aster				
Caulophyllum	*thalictroides*	Blue Cohosh				
Cryptotaenia	*canadensis*	Canadian Honewort				
Desmodium	*glutinosum*	Pointed-leaf Ticktrefoil				
Dioscorea	*villosa*	Wild Yam				
Fragaria	*virginiana*	Woodland Strawberry				
Galium	*aparine*	Stickywilly				
Galium	*concinnum*	Shining Bedstraw				
Geranium	*maculatum*	Wild Geranium				
Geum	*canadensis*	Spring Avens				
Helianthus	*strumosis*	Pale-leaved Sunflower				
Hydrophyllum	*virginianum*	Virginia Waterleaf				
Lactuca	*spicata*	Woodland Lettuce				
Maianthemum	*racemosum*	False Solomon's Seal				
Osmorhiza	*claytoni*	Sweet Cicely				
Parietaria	*pensylvanica*	Pennsylvania Pellitory				
Phryma	*leptostachya*	American Lopseed				
Podophyllum	*peltatum*	Mayapple				
Polygonatum	*pubescens*	Hairy Solomon's Seal				
Prenanthes	*alba*	Lion's Foot				
Ranunculus	*abortivus*	Little-leaf Buttercup				
Sanicula	*gregaria*	Canadian Black Snakeroot				

Smilax	*ecirrhata*	Upright Carrionflower				
Smilax	*herbacea*	Smooth Carrionflower				
Solidago	*ulmifolia*	Elm-leaved Goldenrod				
Thalictrum	*dioicum*	Early Meadow-rue				
Triosteum	*perfoliatum*	Late Horse Gentian				
Uvularia	*grandiflora*	Largeflower Bellwort				
Veronicastrum	*virginicum*	Culver's Root				
Viola	*cucullata*	Marsh Blue Violet				
Viola	*pubescens*	Downy Yellow Violet				

Natural Play Area: Vines						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Celastrus	*scandens*	Bittersweet				
Lonicera	*prolifera*	Yellow Vine Honeysuckl				
Parthenocissus	*vitacea*	Thicket Creeper				

Natural Play Area: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Brachyelytrum	*erectum*	Bearded Shorthusk				
Carex	*pensylvanica*	Pennsylvania Sedge				
Hystrix	*patula*	Bottlebrush Grass				
Juncus	*tenuis*	Pathrush				
Lolium	*perenne*	Perennial Ryegrass				
Poa	*pratensis*	Kentucky bluegrass				
Poa	*sylvestris*	Woodland bluegrass				

Natural Play Area: Ferns						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Adiantum	*pedatum*	Maidenhair Fern				
Athyrium	*filix-femina*	Lady Fern				
Botrychium	*virginianum*	Rattlesnake Fern				
Osmunda	*claytonia*	Interrupted Fern				
Pterdium	*aquilinum*	Western Bracken Fern				

Plant Species Working List

Date: February 26th, 2014
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees Target Plant Community: Orchard

Orchard: Trees						
Genus	**Species**	**Common Name**	**Pre-Existing**	**Planted**	**Future Planting**	**Remove**
Acer	*saccharinum*	Silver Maple				
Asimina	*Triloba*	Pawpaw				
Fraxinus	*pennsylvancia*	Green Ash				
Malus	*domestica 'Honeycrisp'*	Honeycrisp Apple				
Malus	*domestica 'Red Regent'*	Red Regent Apple				
Malus	*domestica 'Winecrisp'*	Winecrisp Apple				
Malus	*domestica 'Jonathan'*	Jonathan Apple				
Malus	*domestica 'Cortland'*	Cortland Apple				
Malus	*domestica 'Sweet Sixteen'*	Sweet Sixteen Apple				
Malus	*domestica 'Honey Gold'*	Honey Gold Apple				
Prunus	*'Sungold'*	Sungold Apricot				
Prunus	*'Moongold'*	Moongold Apricot				
Prunus	*'Compass'*	Compass Cherry				
Prunus	*'Meteor'*	Meteor Cherry				
Prunus	*'North Star'*	North Star Cherry				
Prunus	*avium 'Rainier'*	Rainier Cherry				
Prunus	*avium 'Montmorency'*	Montmorency Cherry				
Prunus	*avium 'Lapin'*	Lapin Cherry				
Prunus	*cerasus 'Bali'*	Evan's Bali Cherry				
Prunus	*'Blues Jam'*	Blues Jam Plum				
Prunus	*'Superior'*	Superior Plum				
Prunus	*persica 'Contender'*	Contender Peach				
Prunus	*persica 'Reliance'*	Reliance Peach				
Pyrus	*communis 'Bartlett'*	Bartlett Pear				
Pyrus	*communis 'Parker'*	Parker Pear				
Pyrus	*communis 'Seckel'*	Seckel Dwarf Pear				
Pyrus	*ussuriensis 'Golden Spice'*	Golden Spice Pear				

Orchard: shrubs						
Genus	**Species**	**Common Name**	**Pre-Existing**	**Planted**	**Future Planting**	**Remove**
Amelanchier	*laevis*	Alleghany Serviceberry				
Euonymus	*atropurpurea*	Eastern Wahoo				
Hypericum	*kalmianum*	Kalm's St. Johns-Wort				
Ilex	*verticillata*	Winterberry				
Ribes	*americanum*	American Black Currant				
Ribes	*missouriense*	Missouri Gooseberry				
Physocarpus	*opulifolius*	Common Ninebark				
Viburnum	*prunifolium*	Blackhaw Viburnum				

Orchard: Forbs						
Genus	**Species**	**Common Name**	**Pre-Existin**	**Planted**	**Future Planting**	**Remove**
Achillea	*millefolium*	Wild Yarrow				
Allium	*cernuum*	Wild Onion				
Anemone	*cylindrical*	Thimbleweed				
Anemone	*patens multiflora*	American Pasqueflowe				
Anemone	*virginiana*	Tall Thimbleweed				
Asarum	*canadense*	Wild Ginger				
Asclepias	*tuberosa*	Butterfly Weed				
Aster	*laevis*	Smooth Aster				
Aster	*lateriflorus*	Calico Aster				
Astragalus	*canadensis*	Canadian Milkvetch				
Caulophyllum	*thalictroides*	Blue Cohosh				
Echinacea	*pallida*	Pale Coneflower				
Eryngium	*yuccifolium*	Rattlesnake Master				
Geranium	*maculatum*	Wild Geranium				
Lespedeza	*capitata*	Roundheaded				
Liatris	*aspera*	Rough Blazingstar				
Liatris	*lateriflorus*	Prairie Blazingstar				
Mertensia	*virginica*	Virginia Bluebells				
Petalostemum	*candidum*	White Prairie Clover				
Petalostemum	*prupureum*	Purple Prairie Clover				
Phlox	*pilosa*	Prairie Phlox				
Podophyllum	*peltatum*	Mayapple				

Solidago	*flexicaulis*	Zigzag Goldenrod				
Solidago	*nemoralis*	Gray Goldenrod				
Solidago	*riddellii*	Riddell's Goldenrod				
Solidago	*speciosa*	Showy Goldenrod				
Taraxacum	*officinale*	Common Dandelion				

Orchard: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-Existin**	**Planted**	**Future Planting**	**Remove**
Andropogon	*scoparium*	Little Bluestem				
Juncus	*tenius*	Path Rush				
Koeleria	*cristata*	June Grass				
Lolium	*perenne*	Perennial Ryegrass				
Poa	*annua*	Annual Bluegrass				
Poa	*pratensis*	Kentucky Bluegrass				
Sporobolus	*heteroplepis*	Prairie Dropseed				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Native Screen

Native Screen:Trees/Conifer						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Acer	*negundo*	Boxelder				
Acer	*saccharinum*	Silver Maple				
Crataegus	*crus-galli*	Cockspur Hawthorn				
Fraxinus	*species*	Ash				
Gleditsia	*tricanthos* var. *inermis*	Thornless Honeylocust				
Juglans	*nigra*	Black Walnut				
Thuja	*occidentalis*	White Cedar				

Native Screen: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Hamamalis	*virginicus*	Common Witchhazel				
Lonicera	*tatarica*	Tatarian Honeysuckle				
Rhamnus	*cathartica*	Common Buckthorn				
Taxus	*x media*	Hybrid yew				
Viburnum	*lentago*	Nannyberry				
Viburnum	*prunifolium*	Blackhaw Viburnum				
Viburnum	*trilobum*	American Cranberry Viburnum				

Native Screen: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Alliaria	*petiolata*	Garlic Mustard				
Desmodium	*glutinosum*	Pointed-leaf Ticktrefoil				
Geranium	*maculatum*	Wild Geranium				
Hydrophyllum	*virginianum*	Virginia Waterleaf				
Impatiens	*capensis*	Orange Jewelwee				
Maianthemum	*racemosum*	False Solmon's Seal				
Podophyllum	*peltatum*	Mayapple				
Polygonatum	*biflorum*	Solomon's Seal				

Native Screen: Grasses						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Elymus	*virginicus*	Virginia Wild Rye				
Poa	*annua*	Annual Bluegrass				
Poa	*pratensis*	Kentucky Bluegras				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Wet-mesic Prairie

Wet-mesic Prairie:Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Quercus	*macrocarpa*	Bur Oak				
Rhus	*typhina*	Staghorn Sumac				

Wet-mesic Prairie:Shrub						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Ceanothus	*americanus*	New Jersey Tea				
Rosa	*Species*	Native Rose				

Wet-mesic Prairie:Forb						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Achillea	*millefolium*	Common Yarrow				
Ambrosia	*artemisiifolia*	Common Ragweed				
Amorpha	*canescens*	Leadplant				
Anemone	*cylindrica*	Candle Anemone				
Antennaria	*neglecta*	Field Pussytoes				
Apocynum	*androsaemifolium*	Spreading Dogbane				
Asclepias	*syriaca*	Common Milkweed				
Asclepias	*tuberosa*	Butterfly Weed				
Aster	*azureus*	Sky Blue Aster				
Aster	*ericoides*	Heath Aster				
Aster	*laevis*	Smooth Aster				
Baptisia	*leucophaea*	Wild Indigo				
Cirsium	*discolor*	Field Thistle				
Comandra	*richardsiana*	Toad Flax				

Convolvulus	*sepium*	Hedge Bindweed				
Coreopsis	*palmata*	Stiff Tickseed				
Desmodium	*canadensis*	Showy Ticktrefoil				
Desmodium	*illinoense*	Illinois Ticktrefoil				
Dodecatheon	*meadia*	Shooting Star				
Echinacea	*pallida*	Pale Coneflower				
Eryngium	*yuccifolium*	Rattlesnake Master				
Euphorbia	corollata	Flowering Spurge				
Fragaria	virginiana	Woodland Strawberry				
Galium	*boreale*	Northern Bedstraw				
Gentiana	*puberula*	Downy Gentian				
Helianthus	*grosseserratus*	Sawtooth Sunflower				
Heliopsis	*helianthoides*	Smooth Oxeye				
Helianthus	laetiflorus	Showy Sunflower				
Helianthus	*occidentalis*	Fewleaf Sunflower				
Lactuca	*canadensis*	Canada Lettuce				
Lathyrus	*venosus*	Veiny Pea				
Lespedeza	*capitata*	Round-head Bush Clover				
Liatris	*aspera*	Tall Blazing Star				
Liatris	*pycnostachya*	Prairie Blazing Star				
Lithospermum	*canescens*	Hoary Puccoon				
Monarda	*fistulosa*	Bergamot				
Oxalis	*violacea*	Violet Woodsorrel				
Dalea	*purpurea*	Purple Prairie Clover				
Phlox	*pilosa*	Downy Phlox				
Physalis	*virginiana*	Virginia Groundcherry				
Ratibida	*pinnata*	Prairie Conflower				
Rudbeckia	*hirta*	Black-eyed Susan				
Silphium	*integrifolium*	Rosinweed				
Silphium	*laciniatum*	Compass Plant				
Solidago	*missouriensis*	Missouri Goldenrod				
Solidago	*rigida*	Stiff Goldenrod				
Solidago	*speciosa*	Showy Goldenrod				
Tradescantia	*ohiensis*	Spiderwort				
Viola	*pedatifida*	Prairie Violet				
Zizia	*aptera*	Heart-leaved Golden Alexanders				

Wet-mesic Prairie:Grasses/ Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Andropogon	*gerardi*	Big Bluestem				
Schizacrium	*scoparium*	Little Bluestem				
Elymus	*canadensis*	Canadian Wildrye				
Elymus	*repans*	quackgrass				
Festuca	*rubra*	Fine Fescue				
Lolium	*perenne*	Perennial Ryegrass				
Panicum	*leibergii*	Prairie Panic Grass				
Poa	*palustris*	Kentucky Bluegrass				
Sorghastrum	*nuntans*	Indian Grass				
Sporobolus	*heterolepis*	Prairie Dropseed				
Stipa	*spartea*	Porcupine Grass				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Southern Lowland Forest

Southern Lowland Forest: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Acer	*negundo*	Box Elder				
Acer	*saccharinum*	Silver Maple				
Alder	*glutinosa*	European Black Alder				
Betula	*nigra*	River Birch				
Crataegus	*crus-galli var. inermis*	Thornless Cockspur Hawthorn				
Fraxinus	*species*	Ash				
Malus	*species*	Hybrid Crabapple				
Populus	*deltoides*	Eastern Cottonwood				
Salix	*nigra*	Black Willow				
Salix	*babylonica*	Weeping Willow				
Rhus	*typhina*	Staghorn Sumac				

Southern Lowland Forest: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Cephalanthus	*occidenatalis*	Buttonbush				
Euonymus	*atropurpurea*	Eastern Wahoo				
Rhamnus	*cathartica*	Common Buckthorn				
Sambucus	*canadensis*	American Elderberry				

Southern Lowland Forest: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Amphicarpa	*bracteata*	Hogpeanut				
Aster	*lateriflorus*	Calico Aster				
Apios	*americana*	Potato Bean				
Boehmeria	*cylindrica*	Smallspike False Nettle				
Cryptotaenia	*canadensis*	Canadian Honewort				
Geum	*canadense*	Spring Avens				
Impatiens	*biflora*	Jewelweed				
Laportea	*canadensis*	Wood Nettle				
Leersia	*uniflorus*	Wild Mint				
Lobelia	*cardinalis*	Cardinal Flower				
Lysimachia	*numularia*	Moneywort				
Menispermum	*canadensis*	Canadian Moonseed				
Muhlenbergia	*frondosa*	Wirestem Muhly				
Physostegia	*virginiana*	Obedient Plant				
Pilea	*pumila*	Canadian Clearweed				
Rudbeckia	*laciniata*	Tall Coneflower				
Scutellaria	*lateriflora*	Blue Skullcap				
Solidago	*gigantea*	Giant Goldenrod				
Stachys	*hispida*	Hairy Hedge Nettle				
Steironema	*ciliatum*	Fringed Loosestrife				
Teucrium	*canadense*	Canada Germander				
Urtica	*dioica*	Stinging Nettle				
Viola	*cucullata*	Marsh Blue Violet				

Southern Lowland Forest: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Carex	*typhina*	Cattail Sedge				
Carex	*grayii*	Bur Sedge				
Carex	*lupulina*	Hop Sedge				
Carex	*vulpinoidea*	Fox Sedge				
Cinna	*arundinaceae*	Sweet Wood-reed				
Elymus	*virginicus*	Virginina Wild Rye				
Lolium	*perenne*	Perennial Ryegrass				
Phalaris	*arundinaceae*	Reed Canarygrass				
Poa	*pratensis*	Kentucky bluegrass				
Typha	*species*	Hybrid Cattail				

Southern Lowland Forest: Ferns						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Onoclea	*sensibilis*	*Sensitive Fern*				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Southern Mesic Forest

Southern Mesic Forest: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Acer	*negundo*	Box Elder				
Acer	*platanoides*	Norway maple				
Acer	*saccarum*	Sugar Maple				
Carya	*cordiformis*	Bitternut Hickory				
	crus-galli var.	Thornless Cockspur Hawthorn				

Crataegus	*inermis*					
Fagus	*grandifolia*	American Beech				
Fraxinus	species	Ash				
Gymnocladus	*dioica*	Kentucky Coffeetree				
Juglans	*cinera*	Butternut				
Ostyra	*virginiana*	Ironwood				
Prunus	*serotina*	Black Cherry				
Tilia	*americana*	Basswood				
Ulmus	*rubra*	Slippery Elm				
Quercus	*alba*	White Oak				
Quercus	*rubra*	Red Oak				

Southern Mesic Forest: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Cornus	racemosa	Gray Dogwood				
Euonymus	*fortunei*	Wintercreeper				
Prunus	*virginiana*	Chokecherry				
Prunus	*tomentosa*	Nanking Cherry				
Rhamnus	*calathartica*	Common Buckthorn				
Ribes	*cynosbati*	Prickly Gooseberry				
Rosa	*multiflora*	Multiflora Rose				
Staphylea	*trifolia*	Bladdernut				
Viburnum	*opulus*	European Cranberry Viburnum				

Southern Mesic Forest: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Actea	*alba*	Doll's Eyes				
Allium	*tricoccum*	Wild Leeks				
Amphicarpa	*bracteata*	Hogpeanut				
Anemone	*quinquefolia*	Wood Anemone				
Arisaema	*triphyllum*	Jack-in-the-Pulpit				
Caulophyllum	*thalictroides*	Blue Cohosh				
Claytonia	*virginica*	Spring Beauty				

Cryptotaenia	*canadensis*	Canadian Honewort				
Dentaria	*laciniata*	Cutleaf Toothwort				
Erythronium	*albidum*	White Troutlily				
Floerkea	*proserpinacoides*	False Mermaid				
Galium	*aparine*	Stickywilly				
Galium	*concinnum*	Shining Bedstraw				
Galium	*triflorum*	Fragrant Bedstraw				
Geranium	*maculatum*	Wild Geranium				
Geum	*canadensis*	Spring Avens				
Habenaria	*viridis*	Longbract Frog Orchid				
Hepatica	*acutiloba*	Sharp Loped Hepatica				
Hydrophyllum	*virginianum*	Virginia Waterleaf				
Impatiens	*pallida*	Yellow Jewelweed				
Laportea	*canadensis*	Wood Nettle				
Phlox	*divaricata*	Woodland Phlox				
Phryma	*leptostachya*	American Lopseed				
Podophyllum	*peltatum*	Mayapple				
Polygonatum	*pubescens*	Hairy Solomon's Seal				
Prenanthes	*alba*	Lion's Foot				
Sanguinaria	*canadensis*	Bloodroot				
Maianthemum	*racemosum*	False's Solomons Seal				
Solidago	*flexicaulis*	Zigzag Goldenrod				
Thalictrum	*dioicum*	Early Meadowrue				
Trillium	*grandiflorum*	White Trillium				
Trillium	*recurvatum*	Prairie Trillium				
Uvularia	*grandiflora*	Large Bellwort				
Viola	*cucullata*	Marsh Blue Violet				
Viola	*pubescens*	Downy Yellow Violet				

Southern Mesic Forest: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Brachyelytrum	*erectum*	Bearded Shorthusk				
Carex	*convoluta*	Rosy Sedge				

Carex	*laxiflora*	Broad Looseflower Sedge				
Carex	*pensylvanica*	Pennsylvania Sedge				
Lolium	*perenne*	Perennial				
Poa	*pratensis*	Kentucky bluegras				

Southern Mesic Forest: Ferns						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Adiantum	*pedatum*	Maidenhair Fern			g	
Athyrium	*filix-femina*	Lady Fern				
Botrychium	*virginianum*	Rattlesnake Fern				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Northern Mesic Forest

Northern Mesic Forest: Trees/Conifers						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Plantin**	**Remove**
Abies	*balsamea*	Balsam Fir			g	
Acer	*negundo*	Boxelder				
Acer	*platanoides*	Norway Maple				
Acer	*rubrum*	Red Maple				
Acer	*saccharum*	Sugar Maple				
Betula	*alleghaniensis*	Yellow Birch				
Fagus	*grandiflora*	American Beech				
Crataegus	*crus-galli* var. *inermis*	Thornless Cockspur Hawthorn				
Malus	species	Hybrid Crabapple				
Tilia	*americana*	Basswood				
Ostrya	*virginiana*	Ironwood				

Quercus	*rubra*	Red Oak				
Tsuga	*canadensis*	Canadian Hemlock				

Northern Mesic Forest: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Cornus	*cornuta*	Beaked Filbert				
Dirca	*palustris*	Eastern Leatherwood				
Lonicera	*oblongifolia*	Swampfly Honeysuckle				
Rhamnus	*cathartica*	Common Buckthorn				
Sambucus	*pubens*	Scarlet Elderberry				

Northern Mesic Forest: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Actea	*alba*	Doll's Eyes				
Alliaria	*petiolata*	Garlic Mustard				
Anemone	*quinquefolia*	Wood Thimbleweed				
Aralia	*nudicaulis*	Wild Sarsaparilla				
Aralia	*racemosa*	American Spikenar				
Aster	*macrophyllus*	Big-leaved Aster				
Clintonia	*borealis*	Bluebeard				
Galium	*triflorum*	Fragrant Bedstraw				
Maianthemum	*canadense*	Canada Mayflower				
Maianthemum	*racemosum*	False Solomon's Seal				
Mitchella	*repens*	Partridgeberry				
Mitella	*nuda*	Naked Miderwort				
Osmorhiza	*claytoni*	Sweet Cicely				
Polygonatum	*pubescens*	Hairy Solomon's Seal				
Streptopus	*roseus*	Rosy Twistedstalk				
Trientalis	*borealis*	Starflower				

Trillium	*grandiflorum*	White Trillium				
Uvularia	*grandiflora*	Largerflowe r Bellwort				
Uvularia	*sessilifolia*	Sessile Bellwort				
Viola	*cucullata*	Marsh Blue Violet				
Viola	*pubescens*	Downy Yellow Violet				

Northern Mesic Forest: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Lolium	*perenne*	Perennial Ryegrass				
Oryzopsis	*asperifolia*	Roughleaf Ricegrass				
Phalaris	*arundinacea*	Reed Canarygrass				
Poa	*annua*	Annual Bluegrass				
Poa	*pratensis*	Kentucky Bluegras				
Typha	angustifolia	Narrow-leaved Cattail				

Northern Mesic Forest: Ferns						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Adiantum	*pedatum*	Maidenhair Fern				
Athyrium	*filix-femina*	Lady Fern				
Botrychium	*virginianum*	Rattlesnake Fern				
Gymnocarpium	*dryopteris*	Northern Oak Fern				

Plant Species Working List

Date: 19-Mar-14
Observer: Michaela Molter
Location: Washington Park
Plant Community: Urban Park- Mowed Grass under Planted Trees
Target Plant Community: Emergent Aquatic

Emergent Aquatic: Trees						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Alnus	*glutinosum*	European Alder				
Fraxinus	*species*	Ash				
Populus	*deltoides*	Eastern Cottonwood				

Emergent Aquatic: Shrubs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Ilex	*verticillata*	Winterberry				

Emergent Aquatic: Forbs						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Decodon	*verticillatus*	Swamp Loosestrife				
Alisma	*species*	Narrow-leafed Water Plantain				
Cypripedium	*parviflorum*	Yellow Lady's Slipper				
Iris	*shrevei*	Shreve's Iris				
Lemna	*minor*	Common Duckweed				
Lemna	*trisulca*	Forked Duckweed				
Potederia	*cordata*	Pickerelweed				
Sagittaria	*latifolia*	Broadleaf Arrowhead				
Sagittaria	*rigida*	Sessilefruit Arrowhead				
Utricularia	*vulgaris*	Great Bladderwort				

Emergent Aquatic: Grasses/Sedges						
Genus	**Species**	**Common Name**	**Pre-existing**	**Planted**	**Future Planting**	**Remove**
Eleocharis	*acicularis*	Needle-spike Rush				
Eleocharis	*palustris*	Common Spike Rush				
Juncus	*torreyi*	Torrey's Rush				
Phragmites	*communis*	Common Reed				
Scirpus	*acutus*	Hardstem Bulrush				
Scirpus	*americancus*	Chairmaker's Bulrush				
Scirpus	*fluviatilis*	River Bulrush				
Scirpus	*heterochaetus*	Slender Bulrush				
Scirpus	*validus*	Soft-stemmed Bulrush				
Sparanium	*eurycarpum*	Giant Bur-reed				
Typha	*angustifolia*	Narrow-leaved Cattail				
Typha	*latifolia*	Broad-leaf Cattail				

Unit Restoration Performance Assessment

UEC Land Stewards shall conduct a vegetation monitoring survey based on permanent and temporary transects at the end of each growing season for two full growing seasons following initial planting.

The comparative results of the monitoring surveys shall show a positive trajectory in performance that there are more native species and less non-native and/or invasive species present at the end of the second full growing season.

a) Survey plots will have 60% native species cover.

b) 80% or greater vegetation cover by cover crop and/or native plant species.

At the end of the plant community establishment period,

a) No invasive species as defined below, or other noxious weeds for the Great Lakes region as defined by the USDA Natural Resources Conservation Service (http://plants.usda.gov) or the Midwest Invasive Plant Network (www.mipn.org) shall, individually or combined, have a Relative Importance (RIV 100) higher than 50%.

- Bird's Foot Trefoil (*Lotus corniculatus)*, Crown Vetch (*Coronilla varia*), Spotted Knapweed (*Centaurea stoebe* L. ssp. *micranthos*), Teasel species (*Dipsacus sp.*), White Sweet Clover (*Melilotus alba*), Yellow Sweet Clover (*Melilotus officinalis)*, Field Thistle (*Cirsium arvense)*, Burdock (*Arctium sp.*), Common Buckthorn (*Rhamnus spp.)*, Eurasian honeysuckles (*Lonicera spp*.), or other noxious weeds for the Great Lakes region as defined by the USDA Natural Resources Conservation Service (http://plants.usda.gov) or the Midwest Invasive Plant Network (www.mipn.org).

b) 100% of the woody material shall be alive and growing in a healthy condition, including replanting efforts.

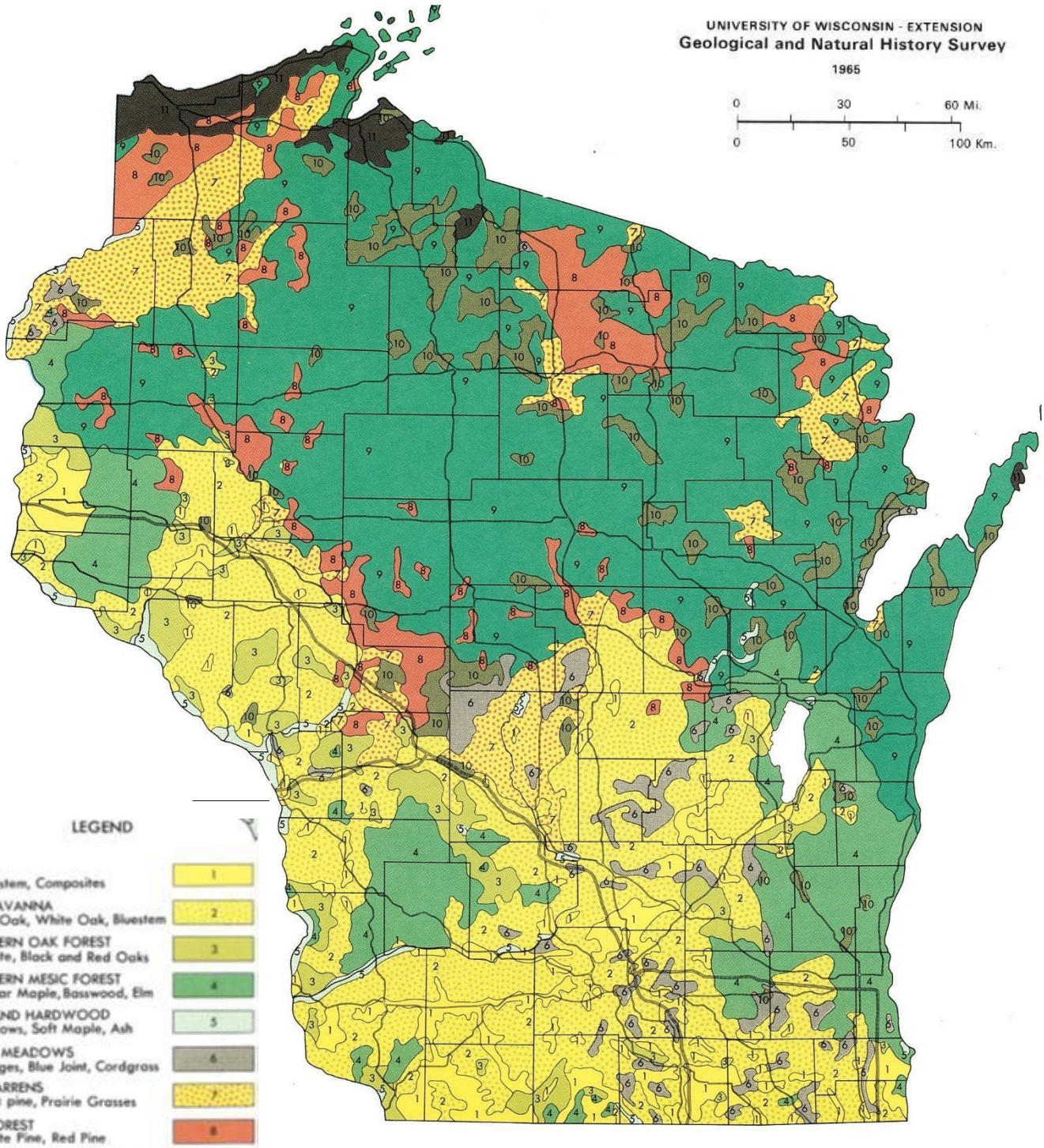
c) 70% of the planted plugs (rootstock) shall be alive and growing in a healthy condition, including replanting efforts.

d) Bare soil exposure will be no larger than 1 meter squared in any given location.

EARLY VEGETATION OF WISCONSIN

UNIVERSITY OF WISCONSIN - EXTENSION
Geological and Natural History Survey
1965

0 30 60 Mi.
0 50 100 Km.



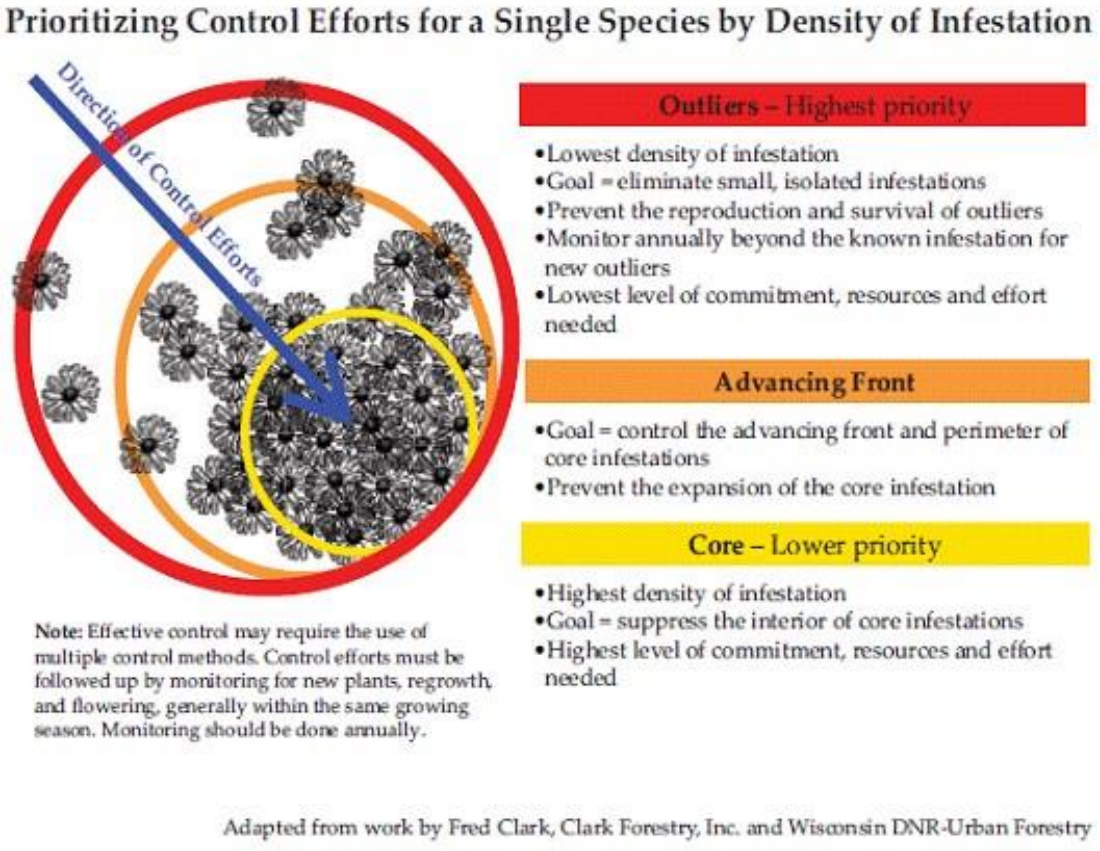
LEGEND

PRAIRIE Bluestem, Composites	1
OAK SAVANNA Bur Oak, White Oak, Bluestem	2
SOUTHERN OAK FOREST White, Black and Red Oaks	3
SOUTHERN MESIC FOREST Sugar Maple, Basswood, Elm	4
LOWLAND HARDWOOD Willows, Soft Maple, Ash	5
SEDGE MEADOWS Sedges, Blue Joint, Cordgrass	6
PINE BARRENS Jack pine, Prairie Grasses	7
PINE FOREST White Pine, Red Pine	8
NORTHERN MESIC FOREST Maple, Hemlock, Yellow Birch	9
CONIFER SWAMPS Black Spruce, Tamarack, Cedar	10
BOREAL FOREST Balsam Fir, White Spruce	11

Washington Park Urban Ecology Center Invasive Plant Removal Procedures

Invasive species management best practices: the invasive plant removal approaches implemented at Washington Park will follow the most sustainable and environmentally-friendly integrated pest management practices and techniques used throughout this region of Wisconsin as well as the United States. When and if possible, invasive plant species will be removed through mechanical means. If a plant species cannot be eliminated using manual techniques, chemical applications will serve as the later option for removal. Priority control efforts by density of infestation will follow the techniques mentioned in Diagram A below provided by the Wisconsin Department of Natural Resources – Urban Forestry.

Diagram A.



Tables 1-16 show specific invasive plant species as well as control methods and timing of their removal. These species are found growing throughout Washington Park. If additional species invade the Park a control table with be created and added to the management plan. A methods of herbicide treatment procedure diagram as well as an herbicide concentration table is provided below.

Table 1.

Buckthorn - *Rhamnus cathartica*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Pull												
Burn												
Girdle												
Cut-stump Treatment: treat with 20% Round-up or 12.5% Garlon												

Table 2.

Burning Bush - *Euonymus alatus*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Hand-pull seedlings (Up to 2ft)												
Dig-out larger plants												
Cut-stump Treatment: treat with 20% Round-up												

Table 3.

Black Alder - *Alnus glutinosa*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Dig-out smaller plants												
Cut-stump Treatment: treat with 50% Round-up or 12.5% Garlon												

Table 4.

Honeysuckle - *Lonicera sp.*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Dig/Pull removing all roots												
Burn												
Cut-stump Treatment: treat with 20% Round-up or 12.5% Garlon												

Table 5.

Multiflora Rose - *Rosa multiflora*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Dig/Pull out (all roots must come out)												
Mow 3-6 times during growing season												
Burn												
Cut-stump Treatment: 20% Round-up or 12.5% Garlon												

Table 6.

Norway Maple - *Acer platanoides*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Hand-pull												
Tree Felling												
Cut-stump Treatment: 20-25% Roundup or 12.5% Garlon												
Girdle and treat with 12.5% Garlon												

Table 7.

Tree-of-Heaven - *Ailanthus altissima*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Pull seedlings removing all roots												
Basal bark treatment with 12.5% Garlon (may need a follow-up treatment)												
Small trees - foliar treatments of 2-5% Roundup												

Table 8.

Burdock - *Actium minus*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Remove flower and seed heads												
Remove flower head at peak bloom then apply 5% Round-up to cut surface												
Taproot can be sliced through with a shovel 3-4" below soil surface before flowering												
Treat leaves with 5% Round-up												

Table 9.

Canada Thistle - *Cirsium arvense*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Cut and bag flower heads												
Mow or cut down stems 3 times during the growing season												
Burn late spring or fall												
1-2% Round-up with 6-10" tall in heavily infested areas only												

Table 10.

Cattails - *Typha angustifolia*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Cut cattails below water line												
Burn												
Spray foliage with 2-5% Round-up, cut and remove dead material 1 week later												

Table 11.

Crown Vetch - *Coronilla varia*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Mowing for several successive years timed by the leaf-out period												
Burn (must be repeated for several years)												

Table 12.

Dame's Rocket - *Hesperis matronalis*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Pull and bag when soil is moist												

Table 13.

Garlic Mustard - *Alliaria petiolata*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Pull and bag												
Dig out plant (all of root must be removed)												
Cut (as close to soil surface as possible												
Burn												

Table 14.

Sweet Clover - *Melilotus spp.*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Pull					1st year plants					2nd year plants		
Cut at ground level with a brush lopper just before flowering												
Burn 2 years in a row			1st year plants		2nd year							

Table 15.

Reed Canarygrass - *Phalaris arundinacea*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Remove Seedheads and mow												
Burn												
5-10% Roundup, bundle, cut and treat												

Table 16.

Common Reed Grass - *Phragmites australis*												
Control Method	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Clip seed heads by hand (small areas)												
Mow												
Burn												
After regrowth, use bloody glove method, 1.5% Roundup												

Methods of Herbicide Treatment

Invasive Plants of the Upper Midwest: An Illustrated Guide to Their Identification and Control
By: Elizabeth Czarapata

1. Cut-stump Treatment: Applying herbicide to freshly cut stump's cambium layer. Garlon should be mixed with a penetrating bark oil and Round-up can be mixed with just water. Round-up with bark only needs to be applied to the cambium layer; Garlon should be applied to the cambium layer and down the sides of the cutstump to the root crown.

2. Foliar Treatment: Applying to the green leaves of an invasive plant with a sprayer or wick applicator. Leaves should be thoroughly covered, but not have chemical dripping of them, or just leafing out. For foliage with a waxy coating it is recommended that the solution be mixed with 0.5% of a surfactant such as bark oil. "Bloody Glove" technique refers to soaking a cloth glove in a chemical solution, wearing it over your rubber glove and wiping the glove along the blades of grass.

3. Basal Bark Treatment: Applying herbicide in a 6-15inch band around the entire trunk of a tree or the stems at the base of a shrub. The root collar around the base of the plant may be treated as well.

4. Girdling and Frilling Treatments: Girdling is cutting and removing a band (1-2inches wide on smaller trees, 6-8inches wide on larger trees) of bark around the entire trunk of the tree to interrupt the flow of sap between the roots and the crown of the tree. Should be treated with herbicide prior to spring sap flow.

Frilling is cutting a continuous ring of overlapping notches through the bark around the tree trunk, within 12 inches of the base. Should be treated with herbicide prior to spring sap flow.

Table 17.

Herbicide Mixture Rate Application							
	% Concentration of Herbicide (mL)						
Quantity (L)	**1.5**	**2**	**3**	**4**	**5**	**12.5**	**20**
1	15	20	30	40	50	125	200
3	45	60	90	120	150	375	600
5	75	100	150	200	250	625	1000
6	90	120	180	240	300	750	1200
9	135	180	270	360	450	1125	1800
10	150	200	300	400	500	1250	2000
12	180	240	360	480	600	1500	2400
15	225	300	450	600	750	1875	3000
20	300	400	600	800	1000	2500	4000
40	600	800	1200	1600	2000	5000	8000
50	700	1000	1500	2000	2500	6250	10000
* Indicates adding 0.5% surfactant, add 5 mL of bark oil/1 L of mixture							

Washington Park Management

URBAN ECOLOGY CENTER
So much life

Washington Park
Invasives Control Zones
2017-2018

Invasives Control Zone

0 125 250 500
ft

Washington Park Urban Ecology Center Burn Procedures

Refer to the Urban Ecology Center Washington Park Proposed Prescribed Burn Areas map for details on which units within the park will receive prescribed burns. Every burn year will have a customize map highlighting which units and sections within the unit are to be burned. A burn schedule will be established so every unit will be burned on a 3-5 year rotation. Different sections within a unit will be burned per rotation with at least a third of the unit remaining un-burned each rotation to protect invertebrates, small mammals, and nesting birds. Both spring and fall burns will be conducted so different species of plants will benefit. Prescribed burns will be contracted out to a professional burn contractor. Prescribed burns will be paid for by the UEC. Below is the step-by-step process for acquiring a burn permit and the actions necessary to perform the day of and leading up to the burn.

1. Discuss possibility of a burn 6 months in advance of burn season with MKE County Parks' staff and seek approval.
2. Contact and conduct walk-through, if necessary, with Fire Battalion Chief of Special Operations of the MKE Fire Department [Currently, Brian Smith blsmith@milwaukee.gov (414)286-8943; c(414)788-2404].
3. Set potential date with at least 2 "rain" dates.
4. Post RFP for prescribed burn contractors.
5. Share burn plan with MKE County Parks' staff and Fire Battalion Chief.
6. MKE County Parks' staff give feedback to burn plan. Revise if necessary. Then receive approval.
7. Contact WI-Dept of Natural Resources for permit for "malodorous conditions" NR 420.04(1)
    a. [Currently, Dan Schramm or Mike Griffin Mike.Griffin@Wisconsin.gov (414)263-8554].
8. Contact MKE County Park's for Right of Entry Permit for the prescribed burn contractor.
9. The week prior to a Park burn:
    a. Make flyers to leaflet the surrounding neighborhood to notify and give information of the benefits of prescribed fire as a management tool.
    b. Contact local MKE Police Dept precinct to let them know a prescribed fire will be occurring.
10. Morning of burn contact list (Pre-fire):
    a. MKE County Parks Natural Areas Coordinator
    b. MKE Fire Battalion Chief of Special Operations
11. Police District 3 (non-emergency) (414)933-4444
12. WI-DNR - if requested (some years they say not necessary)
13. UEC WP Branch Manager
14. Washington Park Unit Coordinator (Presently Sue Gillman)
15. Contact MKE County Parks Natural Areas Coordinator and Washington Park Unit Coordinator post- burn to report on conditions, etc.

Washington Park Proposed Prescribed Burn Areas

URBAN ECOLOGY CENTER
So much life

Proposed burn areas
Management Units

Not all sections will be burned in the same year. Refer to individualized management unit maps.

Unit 1 - Southern Dry Mesic Forest
Unit 2 - Mesic Prairie
Unit 3 - Oak Woodland
Unit 4 - Savanna
Unit 6 - Southern Dry Mesic Forest
Unit 7 - Wet-Mesic Prairie
Unit 9 - Savanna
Unit 11 - Savanna

N

0 130 260 520 ft

Washington Park Recreation Landings

Washington Park Orchard Harvesting Schedule

Washington Park Fruit Orchard Ripening Table																				
	June				July				August				Septembe				October			
Compass Cherry																				
Rainier Cherry																				
Lapin Cherry																				
Evan's Bali Cherry																				
Montmorency Cherry																				
Meteor Cherry																				
North Star Cherry																				
Sungold Apricot																				
Moongold Apricot																				
Reliance Peach																				
Contender Peach																				
Superior Plum																				
Blues Jam Plum																				
Bartlett Pear																				
Golden Spice Pear																				
Parker Pear																				
Seckel Dwarf Pear																				
Pawpaw																				
Honey Gold Apple																				
Honeycrisp Apple																				
Jonathan Apple																				
Cortland Apple																				
Sweet Sixteen Apple																				
Red Regent Apple																				
Winecrisp Apple																				

West Side Park Plan for Olmsted Border Plantation (1892)

Table 1.

Woody Plant Specifications: Section I-VIII					
Total Number Planted	**Olmstedt Species (modern synonym)**	**Common name**	**Olmsted Plant Spacing**	**UEC Plant Spacing**	**Form**
Shrubs:					
500	*Cornus stolonifera*	bunchberry	3ft	2ft	shrub-groundcover
150	*Euonymous americanus var. obovatus*	running strawberry (*Euonymous*)	3ft	3ft	shrub-groundcover
580	*Acer spicatum*	mountain maple	4ft	15ft	shrub-large
150	*Hamamelis virginiana*	common witch hazel	4ft	12ft	shrub-large
50	*Ligustrum vulgare*	privet	4ft	na	shrub-large
30	*Lindera benzoin*	spicebush	3ft	12ft	shrub-large
1,150	*Rhamnus catharticus (R. cathartica)*	common buckthorn	4ft	na	shrub-large
200	*Rosa multiflora*	multiflora rose	3ft	na	shrub-large
100	*Sambucus canadensis*	common elderberry	3ft	15ft	shrub-large
550	*Sambucus pubens (S. racemosa)*	Red Elderberry	4ft	15ft	shrub-large
550	*Viburnum lentago*	nannyberry viburnum	4ft	15ft	shrub-large
120	*Viburnum opulus*	European highbush cranberry viburnum	4ft	na	shrub-large
750	*Zanthoxylum americanum*	prickly ash	4ft	10ft	shrub-large
1000	*Rhus typhina*	staghorn smumac	4ft	15ft	shrub-large clonal
200	*Berberis thunbergii*	Japanese barberry	3ft	na	shrub-medium
50	*Berberis vulgeris*	European barberry	4ft	na	shrub-medium
10	*Clethra alnifolia*	summersweet	4ft	4ft	shrub-medium
100	*Cornus sericea*	red-twig dogwood	3ft	6ft	shrub-medium
50	*Euonymous atropurpureus*	eastern wahoo	4ft	10ft	shrub-medium
100	*Philadelphus coronarius*	mock orange	3ft	na	shrub-medium
100	*Philadelphus gordonianus (Philadelphus lewisii Var. gordonians)*	American mock-orange	3ft	5ft	shrub-medium
200	*Pyrus arbutifolia (Aronia arbutifolia)*	red chokeberry	3ft	5ft	shrub-medium
500	*Ribes cynosbati*	prickly gooseberry	3ft	4ft	shrub-medium

200	*Rosa blanda*	smooth wild rose	3ft	6ft	shrub-medium
500	*Rosa canina*	dog rose	3ft	na	shrub-medium
50	*Rubus odoratus*	flowering raspberry	4ft	6ft	shrub-medium
1210	*Salix caprea*	Eurasian pussy willow	4ft	na	shrub-medium
150	*Spirea salicitolia*	willow-leaf meadowsweet	3ft	na	shrub-medium
130	*Viburnum acerifolium*	maple leaved viburnum	4ft	6ft	shrub-medium
70	*Viburnum cassinoides*	witherod viburnum	3ft	8ft	shrub-medium
100	*Viburnum dentatum*	arrowood viburnum	4ft	10ft	shrub-medium
100	*Diervilla trifida (D. lonicera)*	dwarf bush honeyscuckle	3ft	3ft	shrub-small
50	*Potentilla fruticosa*	shrubby cinquefoil	3ft	3ft	shrub-small
100	*Rosa carolina*	Caronlina rose	3ft	3ft	shrub-small
350	*Symphoricarpus vulgaris (S. alba)*	western snowberry	4ft	5ft	shrub-small
300	*Symphoriocarpus racemosus (S. alba)*	snowberry	3ft	5ft	shrub-small
Trees:					
2300	*Abies canadensis (Tsuga canadensis)*	Canada hemlock	4ft	25ft	tree-large
5000	*Acer dasycarpum* (Acer sacchirinum)*	silver maple	4ft	30ft	tree-large
1000	*Acer negundo*	box elder	4ft	25ft	tree-large
300	*Acer rubrum*	red maple	4ft	25ft	tree-large
500	*Acer saccharinum*	silver maple	4ft	30ft	tree-large
320	*Betula alba*	European white birch	4ft	na 20ft (B. papyrifera)	tree-large
200	*Celtis occidentalis*	hackberry	4ft	30ft	tree-large
10	*Cymocladus canadensis (Gymnocladus dioicus?)*	Kentucky Coffee Tree	3ft	25ft	tree-large
200	*Fraxinus alba (F. americana)*	white ash	4ft	25ft	tree-large
500	*Fraxinus viridis (F. pennsylvanica)*	green ash	4ft	25ft	tree-large
1000	*Gleditzia triacanthos*	honey locust	4ft	25ft	tree-large
900	*Pinus resinosa*	red pine	4ft	20ft	tree-large
300	*Platanus occidentalis*	American sycamore	4ft	30ft	tree-large
300	*Quercus coccinea*	scarlet oak	4ft	30ft	tree-large
200	*Tilia americana*	basswood	4ft	30ft	tree-large
1000	yellow cottonwood *(Populus sp)*	unknown cottonwood species	4ft	15ft	tree-large
2,700	*Acer campestre*	hedge maple	4ft	na	tree-medium
210	*Betula lenta*	sweet birch	4ft	na	tree-medium

1600	*Carpinus (species not given)*	hornbeam	4ft	10ft	tree-medium
430	*Cornus florida*	white flowering dogwood	3ft	20ft	tree-medium
10	*Cornus florida rubra*	pink flowering dogwood	3ft	20ft	tree-medium
300	*Laurus sassafras (Sassafras albidum)*	sassafras	4ft	20ft	tree-medium
100	*Maclura aurantiace*	osage orange	4ft	20ft	tree-medium
800	*Morus alba*	white mulberry	4ft	na	tree-medium
200	*Morus morettii (Morus macroura)*	Tibetan mulberry	4ft	na	tree-medium
100	*Salix alba regalis*	unknown variety of white willow	3ft	na	tree-medium
500	*Salix alba var britzensis*	coral bark willow	3ft	na	tree-medium
100	*Salix alba vitellina*	golden willow	3ft	na	tree-medium
850	*Amelanchier botryapium (A. arborea)*	downy serviceberry	4ft	15ft	tree-small
230	*Cornus alternifolia*	Pagoda dogwood	4ft	20ft	tree-small
100	*Crataegus coccinea*	scarlet hawthorn	3ft	15ft	tree-small
100	*Crataegus crus gali*	cockspur hawthorn	3ft	15ft	tree-small
30	*Pyrus americanus (Sorbus americana)*	American mountain ash	4ft	15ft	tree-small
700	*Pyrus coronaria (Malus coronaria)*	sweet wild crabapple	4ft	15ft	tree-small
2,450	*Prunus mahaleb*	Mahaleb cherry	4ft	na	tree-small clonal
500	*Prunus Thorny Plum (Prunus spinosa or americana?)*	thorny plum	4ft	na	tree-small clonal
10	*Aralia pertaphylla (no synonym)*	unknown Aralia species	3ft	na	unkown

Table 2.

Woody Plants Past, Present, Future: Sections I-VIII				
Olmstedt Species (modern synonym)	**Common name**	**Origin**	**Legacy in the Park**	**Action**
Abies canadensis (Tsuga canadensis)	Canada hemlock	native	absent; replanted by UEC	replant additional
Acer campestre	hedge maple	exotic-Europe	absent	invasive in E. USA, do not plant
Acer dasycarpum (Acer sacchirinum)	silver maple	native	extant	maintain
Acer sacchirinum (Acer saccharum)	sugar maple	native	extant	maintain and replant additional

Acer negundo	box elder	native	extant	maintain where appropriate
Acer rubrum	red maple	native	extant	replant
Acer spicatum	Mountain maple	native	absent	replant
Amelanchier botryapium (A. arborea)	downy serviceberry	native	absent; replanted by UEC	replant additional
Aralia pertaphylla (no synonym)	unknown Aralia species	unkown	absent	plant Aralia racemosa
Berberis thunbergii	Japanese barberry	exotic-Asia	absent; WDNR invasive	invasive, do not plant
Berberis vulgeris	European barberry	exotic-Europe	absent; WDNR Invasive	invasive, do not plant
Betula alba	European white birch	exotic-Europe	absent; native paper birch planted by UEC	Replace with native white birch (B. papyrifera)
Betula lenta	sweet birch	native-E.USA	absent	Replace with black cherry (P. serotina) ironwood (Ostrya virginiana), similar in appearance
Carpinus (species not given)	Hornbeam	unkown	absent	UEC replanted Carpinus caroliniana; replant additional
Celtis occidentalis	hackberry	native	extant	maintain
Clethra alnifolia	summersweet	native-E.USA	absent	East Coast Native
Cornus alternifolia	Pagoda dogwood	native	absent; replanted by UEC	replant additional
Cornus florida	white flowering dogwood	native-midwest, E. USA	absent	Marginally hardy in zone 5 & alkaline soil. Plant a few in protected sites with rich neutral soil.
Cornus florida rubra	pink flowering dogwood	native-midwest, E. USA	absent	Marginally hardy in zone 5 & alkaline soil. Plant few in protected sites with rich neutral soil.
Cornus sericea	red-twig dogwood	native	extant	maintain
Cornus stolonifera	bunchberry	native	absent	replant
Crataegus coccinea	scarlet hawthorn	native	extant?	replant
Crataegus crus gali	cockspur hawthorn	native	extant?	replant
Cymocladus canadensis (Gymnocladus dioicus?)	Kentucky Coffee Tree	native	extant; replanted by UEC	replant additional
Diervilla trifida (D. lonicera)	dwarf bush honeyscuckle	native	absent; replanted by UEC	replant additional
Euonymous americanus var. obovatus	running strawberry Euonymous	native-E.USA possibly WI	absent	replant

Euonymous atropurpureus	eastern wahoo	native	absent; replanted by UEC	replant additional
Fraxinus alba (F. americana)	white ash	native	extant	removal in process due to Emeral Ash Borer (EAB)
Fraxinus viridis (F. pennsylvanica)	green ash	native	extant	removal in process due to EAB
Gleditzia triacanthos	Honey Locust	native	extant	maintain
Hamamelis virginiana	common witch hazel	native	absent; replanted by UEC	replant additional
Laurus sassafras (Sassafras albidum)	sassafras	native	absent	replant, prefers acidic soil, plant in protected sites with neutral organic soil
Ligustrum vulgare	privet	exotic-Eurasia	absent WDNR Invasive	Invasive, do not plant
Lindera benzoin	spicebush	native-Midwest, E. USA	absent	replant
Maclura aurantiace	Osage orange	native-S.E. USA	extant	maintain
Morus alba	white mulberry	exotic-Eurasia	extant; WDNR invasive	Replace with native red mulberry (Morus rubra)
Morus morettii (Morus macroura)	tibetan mulberry	exotic-Asia	absent	Replace with native red mulberry (Morus rubra)
Philadelphus coronarius	Mock Orange	exotic-Eurasia	extant; (or P. lewisii Var. goronians)	replace with P lewisii Var. gordonians
Philadelphus gordonianus (Philadelphus lewisii Var. gordonians)	American mock-orange	native-S.E. USA	extant; (or P. coronarius)	maintain
Pinus resinosa	red pine	native	extant	maintain
Platanus occidentalis	American sycamore	native	extant	maintain; plant additional
Potentilla fruticosa	shrubby cinquefoil	native	absent; replanted by UEC	replant additional
Prunus mahaleb	Mahaleb cherry	exotic-Eurasia	absent, replanted in Community Orchard	Maintain in UEC orchard. Plant P. americanus and P. canadensis in natural areas
Prunus Thorny Plum (Prunus spinosa or americana?)	thorny plum	unkown	absent?	Plant P. americanus and P. canadensis in natural areas
Pyrus americanus (Sorbus americana)	American mountain ash	native	absent	replant
Pyrus arbutifolia (Aronia arbutifolia)	red chokeberry	native-E.USA	absent	plant black chokecherry (A. melanocarpa)
Pyrus coronaria (Malus coronaria)	sweet wild crabapple	native	absent	replant

Quercus coccinea	scarlet oak	native	absent	prefers sandy acidic soil, plant Northern Pin (Q. ellipsoidalis) or Red (Q. rubra) instead.
Rhamnus catharticus (R. cathartica)	common buckthorn	exotic-Eurasia	extant; WDNR invasive	Invasive, remove
Rhus typhina	staghorn smumac	native	extant	maintain where appropriate
Ribes cynosbati	prickly gooseberry	native	absent	replant
Rosa blanda	smooth wild rose	native	absent	replant
Rosa canina	dog rose	exotic-Eurasia	absent	plant native wild roses
Rosa carolina	Caronlina rose	native	absent	replant
Rosa multiflora	multiflora rose	exotic-Eurasia	extant	Invasive, remove
Rubus odoratus	flowering raspberry	native-midwest	absent	replant?
Salix alba regalis	unknown variety of white willow	exotic-Eurasia	absent; WDNR Invasive	Invasive, do not plant
Salix alba var britzensis	coral bark willow	exotic-Eurasia	absent; WDNR Invasive	Invasive, do not plant
Salix alba vitellina	golden willow	exotic-Eurasia	absent; WDNR Invasive	Invasive, do not plant
Salix caprea	Eurasian pussy willow	exotic-Europe	absent	Replace with American pussy willow (Salix discolor)
Sambucus canadensis	common elderberry	native	extant	replant additional
Sambucus pubens (S. racemosa)	Red Elderberry	native	absent; replanted by UEC	replant additional
Spirea salicitolia	willow-leaf meadowsweet	exotic-Europe	absent	Replace w/ Spirea tomentosa & Spirea alba
Symphoricarpus vulgaris (S. alba)	western snowberry	native	absent; replanted by UEC	replant
Symphoriocarpus racemosus (S. alba)	snowberry	native	absent; replanted by UEC	replant additional
Tilia americana	Basswood	native	extant	maintain
Viburnum acerifolium	maple leaved viburnum	native	absent	replant
Viburnum cassinoides	witherod viburnum	native	absent	replant
Viburnum dentatum	Arrowood viburnum	native-midwest	absent; downy arrowood viburnum planted by UEC	plant additional downy arrowood (Vibrunum rafinesquianum)
Viburnum lentago	nannyberry viburnum	native	absent; replanted by UEC	maintain

Viburnum opulus	European highbush cranberry viburnum	exotic-Eurasia	extant; WDNR invasive	Invasive, replace with Viburnum trilobum
yellow cottonwood (Populus sp)	unknown cottonwood species	native	unkown	maintain some native cottonwood (Populus deltoides)
Zanthoxylum americanum		native	absent	replant where appropriate
*present in the park before UEC				

Summary of West Side Park Plan for Olmsted Border Plantation Plantings (1892)

Table 3.

Origin	Wisconsin native	Midwest Native (not WI)	Eastern USA Native	Unknown	Eurasia	Total Species
# Species	40	6	5	3	19	73
%	55%	8%	7%	4%	26%	
*If *Carpinus*, *Aralia*, and 'Spiny Plum' are unknown species						

Table 4.

Origin	Wisconsin native	Midwest Native (not WI)	Eastern USA	Uknown	Eurasia	Total Species
# Species	41	6	5	2	19	73
%	56%	8%	7%	3%	26%	
*If *Carpinus* assumed to be *Carpinus caroliniana* and not *Carpinus betulus*						

Table 5.

Origin	Wisconsin & N. American	Uknown	Eurasia	Total Species
# Species	51	3	19	73
%	70%	4%	26%	
**If Carpinus, Aralia,* and 'Spiny Plum' are unknown Species				

Table 6.

Total Number of Trees and Shrubs Planted Sections I-VIII		
Shrubs and trees from WI & N.A. North	22,710	63%
Shrubs and trees exotic/non-native	11,410	31%
Unknown Origin	2,110	6%
Total	36,230	

Interior Tree Plantings for West Side Park Plan (Olmsted - 1892)

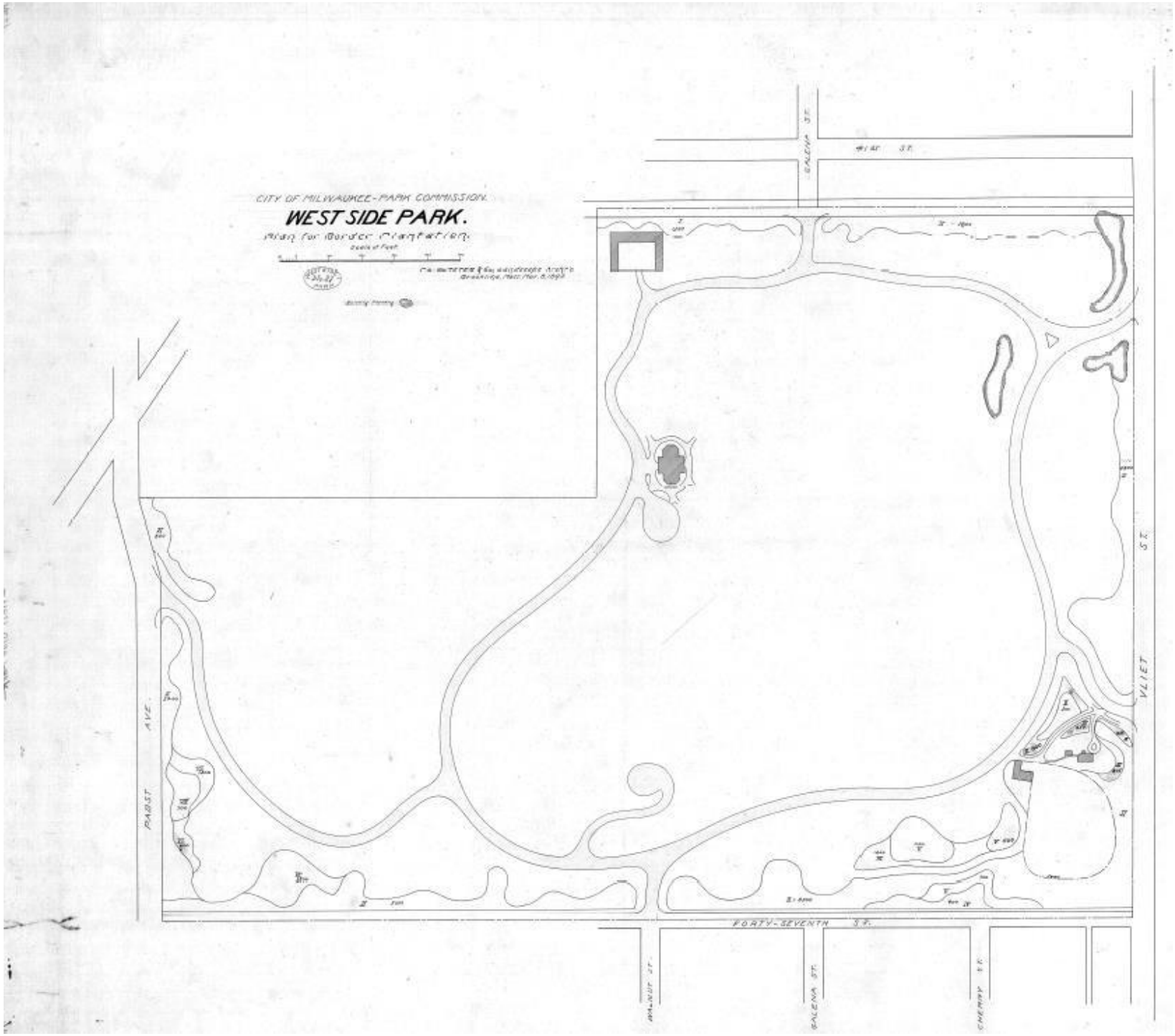
Table 7.

Olmsted Key	Olmsted Species (modern synonym)	Common Name	Quantity Planted	Origin	Legacy
1	*Acer dasycarpon (Acer saccharinum)*	silver maple	31	native	extant
2	*Acer negundo*	box elder	56	native	extant
3	*Acer saccharinum (Acer saccharum)*	sugar maple	52	native	extant
4	*Fagus ferruginia (F. feruginea = F. grandifolia)*	American beech	49	native	replanted by UEC
5	*Fraxinus Americana*	white ash	51	native	extant; Emerald Ash Borer
6	*Liriodendron tulipfera*	tulip tree	6	native-Midwest	extant; replanted by County Recently
7	*Populus monolifera (Populus deltoides)*	cottonwood	28	native	extant
8	*Pyrus aucuparia (Sorbus aucuparia)*	European mountain ash	60	Eurasia	extant
9	*Quercus alba*	white oak	11	native	extant
10	*Quercus marcocarpon (Q. macrocarpa)*	bur oak	16	native	extant
11	*Quercus palustris*	swamp pin oak	15	native	extant
12	*Quercus rubra*	red oak	50	native	extant
13	*Tilia americana*	basswood	47	native	extant
14	*Ulmus americana*	American elm	74	native	extant; Dutch Elm Disease
15	*Ulmus campestris (U. minor)*	field elm	12	Europe	extant ?
16	*Cary alba (C. tomentosa)*	mockernut hickory	22	native-Midwest	extant
17	*Juglans nigra*	black walnut	6	native	extant
18	*Juglans cinerea*	white walnut	14	native	extant; replanted by UEC
19	*Carpinus betulus*	European hornbeam	60	Europe	extant
20	*Betula alba (Betula pendula)*	European white birch	20	Eurasia	extant
21	*Pinus strobus*	white pine	3	native	extirpated; replanted by UEC
22	*Pinus resinosa*	red pine	4	native	extant (very few)
23	*Juniperus virginiana*	eastern ced cedar	7	native	extant; replanted by UEC

24	*Abies canadensis (Tsuga canadensis)*	Canada hemlock	12	native	extant; replanted by UEC
***86 unidentified (illegiable)**					

Washington Park Restoration and Management Plan Appendix

Historic References


CITY OF MILWAUKEE - PARK COMMISSION.
WEST SIDE PARK.
Plan for Border Planting.
Scale of Feet
GALENA ST.
VLIET ST.
PARK AVE.
FORTY-SEVENTH ST.
GALENA ST.

PLANTING LIST

Section I

Average width 36 ft., plants 4 ft. apart, 9 rows.

NOTE: When border is narrower than the average width the centre rows will be omitted; when wider they are to be increased. A shortage is to be made up with more of the same mixture of plants; a surplus is to be used in other plantations or placed in the nursery.

1300 Plants

First three rows next to park 400 plants

50 Viburnum cassinoides
35 Viburnum acerifolium
10 Clethra alnifolia
50 Ligustrum vulgare
50 Symphoricarpos vulgaris
10 Cornus alternifolia
20 Viburnum dentatum
25 Acer spicatum
50 Rubus odoratus
50 Sambucus pubens
400

Next four rows 550 plants

100 Carpinus
50 Cornus alternifolia
35 Cornus florida
50 Viburnum Opulus
130 Viburnum lantago
120 Prunus Mahaleb
50 Hamamelis Virginiana
50 Amelanchier botryapium
50 Evonymus atropurpureus
30 Pyrus Americana
10 Betula lenta
15 Betula alba
550

Last two rows next boundary 350 plants

100 Maclura aurantiaca
50 Viburnum dentatum
50 Berberis vulgaris
10 Salix caprea
10 Betula alba
30 Acer spicatum
350

Section II (7 divisions)

Average width 80 ft., plants 4 ft. apart, 20 rows.

NOTE: When border is narrower than the average width the centre rows will be omitted; when wider they are to be increased. A shortage is to be made up with more of the same mixture of plants; a surplus is to be used in other plantations or placed in nursery.

24000 Plants

First five rows next park 6000 plants

500 Cornus florida
200 Cornus alternifolia
1000 Acer campestre
500 Viburnum lantago
500 Laurus sassafras
1000 Carpinus
500 Amelanchier botryapium
300 Pyrus arbutifolia
1000 Salix caprea
500 Rhus typhina
6000

Next ten rows 12000 plants

500 Quercus coccinea
500 Tilia Americana
1000 Acer dasycarpum
500 Acer saccharinum
500 Morus alba
500 Morus Moretti
1000 Acer negundo
500 Acer rubrum
500 Fraxinus alba
500 Gleditschia triacanthos
500 Fraxinus viridis
500 Platanus occidentalis
500 Betula lenta
500 Betula alba
500 Celtis occidentalis
2000 Yellow Cottonwood
12000

Five rows next boundary 6000 plants

1000 Acer campestre
1000 Rhamnus catharticus
1000 Prunus Mahaleb
500 Prunus Thorsby Plum
500 Morus alba
500 Gleditschia triacanthos
500 Carpinus
500 Zanthoxylum Americanum
500 Rhus typhina
6000

Section III (4 divisions)

Average width 26 ft., plants 3 ft. apart, 7 rows

NOTE: Extend the distance between rows and plants in rows farthest from edge, if there is a shortage: if a surplus, reserve for other plantations or nursery.

1700 Plants

Three outside rows next lane or park 700 plants

200 Berberis Thunbergii
150 Spiraea salicifolia
10 Aralia pentaphylla
50 Viburnum cassinoides
100 Symphoricarpos racemosus
100 Symphoricarpos vulgaris
100 Pyrus arbutifolia
50 Ligustrum vulgare
700

Four inside rows 1000 plants

10 Cornus florida rubra
150 Amelanchier botryapium
200 Acer campestre
200 Prunus Mahaleb
100 Rhamnus catharticus
10 Cymnocladus Canadensis
50 Lindera Benzoin
100 Philadelphus coronarius
150 Philadelphus Gordonianus
1000

Section IV

Plants to be planted 6 ft. apart over the whole surface.

900 Pinus resinosa (Red or Norway Pine)

Section V

Plants to be planted 6 ft. apart over the whole surface

2000 Abies Canadensis (Hemlock)

Section VI (3 divisions)

Average width 51 ft., plants 3 ft. apart, 17 rows

NOTE: Extend the distance between rows and plants in rows farthest from edge, if there is a shortage; if a surplus, reserve for other plantations or nursery.

5000 Plants

First seven rows next Park 2050 plants

500 Rosa multiflora
500 Rosa canina
200 Rosa blanda
200 Ribes Cynosbati
100 Symphoricarpos vulgaris
100 Symphoricarpos racemosus
100 Pyrus arbutifolia
50 Zanthoxylum Americanum
50 Potentilla fruticosa
100 Diervilla trifida
150 Evonymus Americanus v. obovatus
2050

Ten inside rows 2950 plants

100 Crataegus coccinea
100 Crataegus Crus-galli
100 Cornus florida
1000 Prunus Mahaleb
200 Zanthoxylum Americanum
500 Amelanchier botryapium
50 Pyrus coronaria
100 Viburnum Opulus
100 Hamamelis Virginiana
500 Acer spicatum
300 Sambucus pubens
2950

Section VII

Plants to be planted 3 ft. apart over the whole surface

1200 Plants

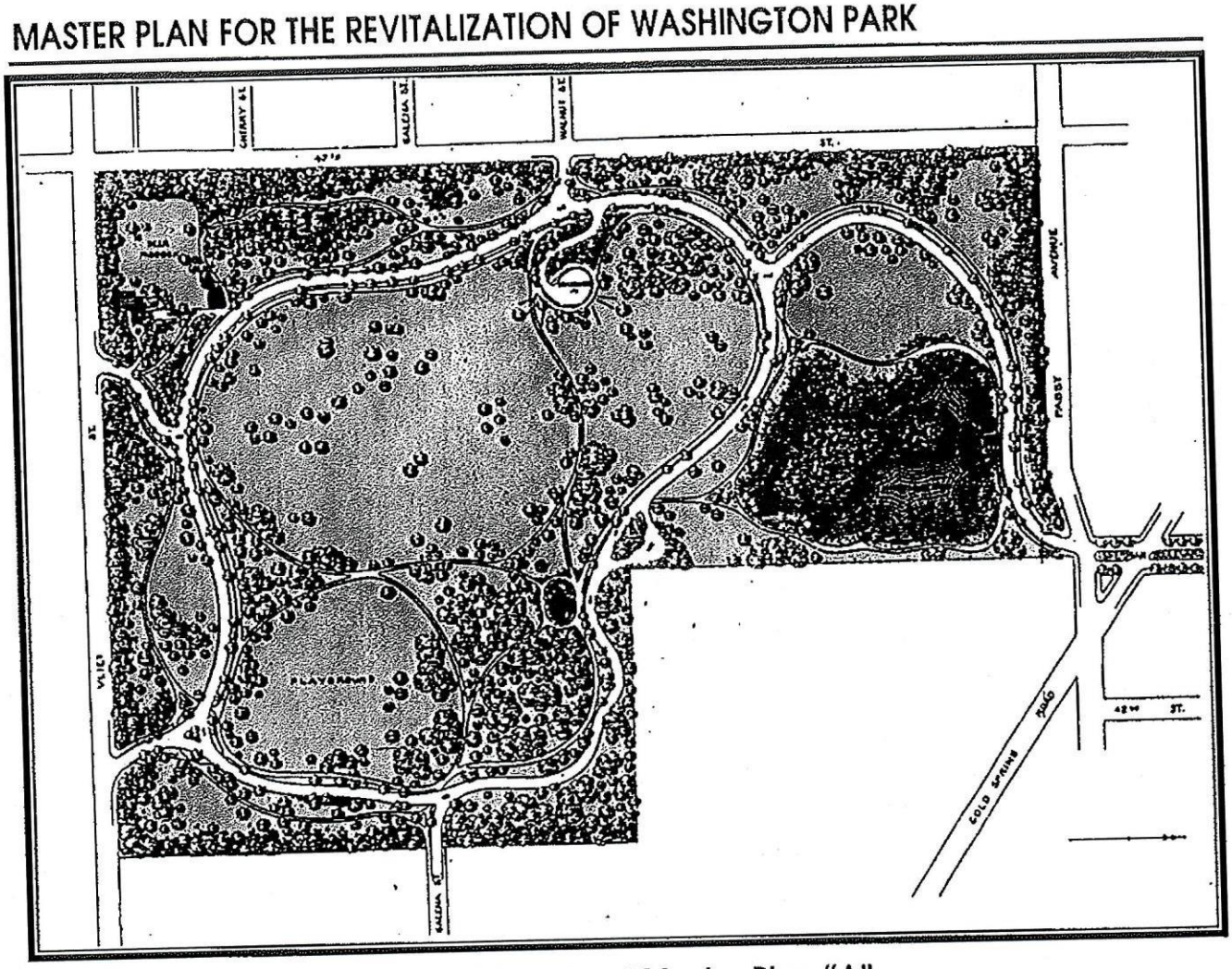
500 Cornus stolonifera
100 Cornus sericea
100 Rosa Carolina
100 Sambucus Canadensis
100 Symphoricarpos racemosus
100 Symphoricarpos vulgaris
200 Salix caprea
1200

Section VIII

Plants to be planted 6 ft. apart over the whole surface

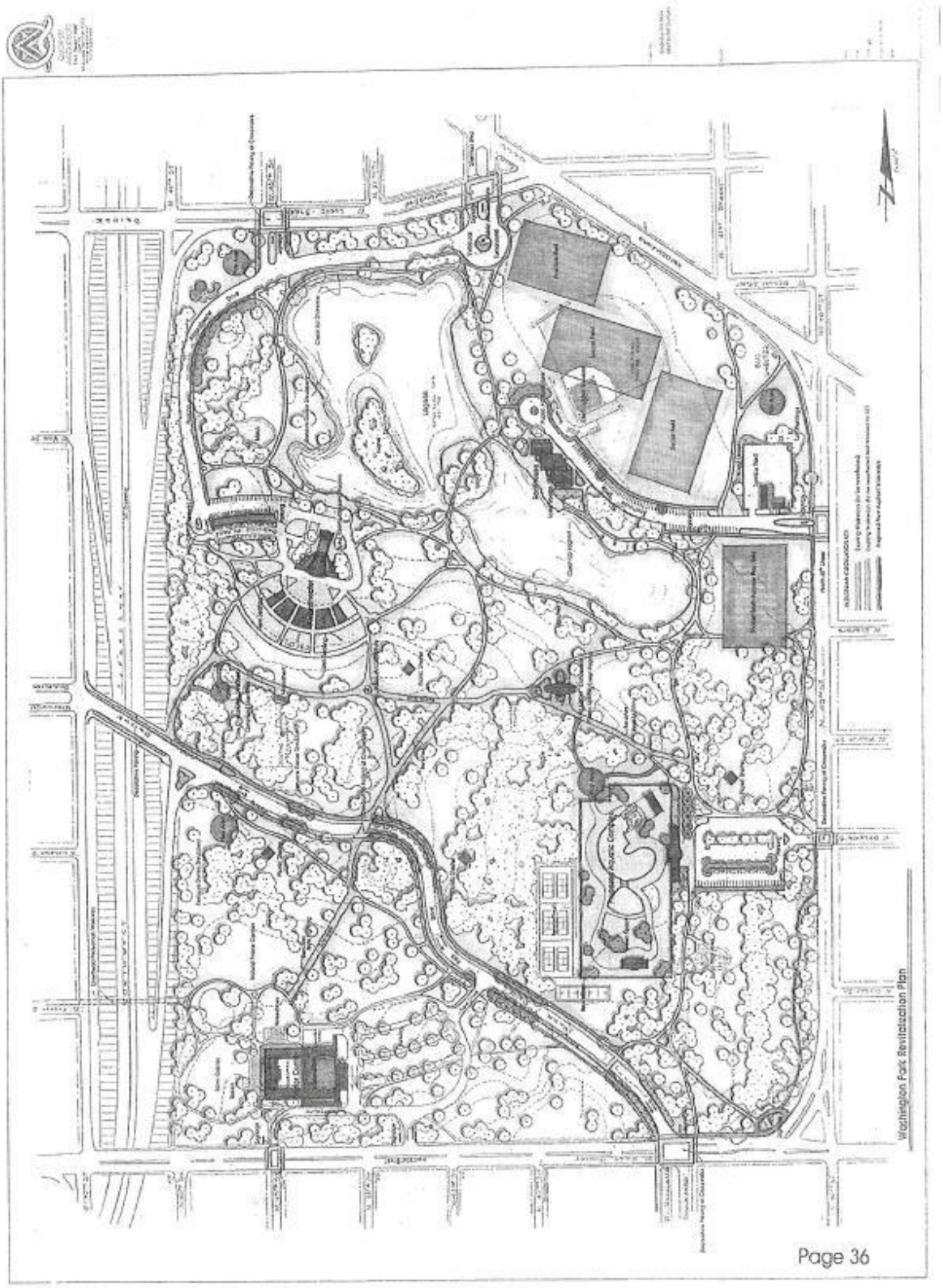
700 Plants

100 Salix alba Britzensis
500 Salix alba vitellina
100 Salix alba regalis
700



Original Olmstead Master Plan "A"

Photograph & Diagram Source:
Final Report | Revitalization Plan for Washington Park | Milwaukee County Departmetn of Parks June 1, 2000



Photograph & Diagram Source:
Final Report | Revitalization Plan for Washington Park | Milwaukee County Departmetn of Parks June 1, 2000

Nature Play Area – Outdoor Classroom & Play Structure

Diagram 4: Wood Fort

Diagram 5: Wood Fort

Diagram 6: Fallen Log/Course Woody Debris

Diagram 7: Outdoor Classroom with Log Seating

Photograph & Diagram Source:

The Place to Play: A vision for Warner Park
Manhattan, KS | Mikala Fitzgerald & Julia Kappelman | Prof. Beamish and Canfield |Kansas State University LAR 320 Spring 2018

Monitoring Maps and Survey Protocols

Protocols will be provided in February 2019

Bird Survey Protocol

Bat Survey Protocol

Mammals Survey Protocol

Snake Survey Protocol

Turtle Survey Protocol

Invertebrate Survey Protocol

Ephemeral Wetland Survey Protocol

Vegetation Survey Protocol

Additional Maps

Washington Park Management

URBAN ECOLOGY CENTER

Trails and Paths

- Cyclocross Trail
- Prairie Path
- Topography

0 50100 200 300
ft

Washington Park Management

URBAN ECOLOGY CENTER

Washington Park Wildlife & Vegetation Monitoring

- Snake Cover Boards
- Weekly Bird Walk Route
- Acoustic Bat Survey Route

0 130 260 390 ft