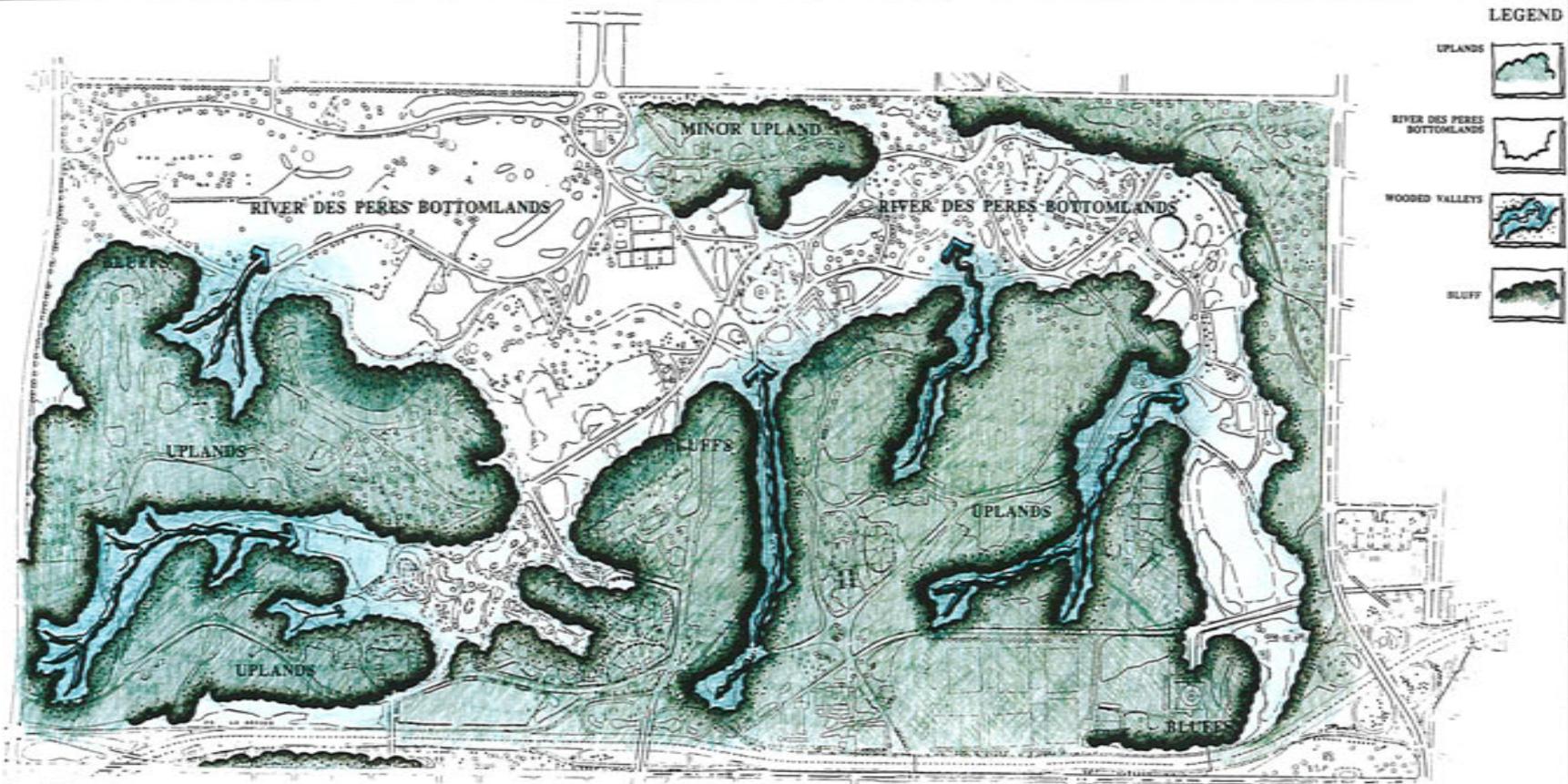


1995 VIEWS AND AXIS MAP

C. Design Principles

- Emphasize land forms to define park experience.
- Emphasize site relationships.
- Integrate historically significant landmarks, landscape and site relationships.



*This map is not intended to illustrate the precise location and boundaries of features but rather to highlight the general characteristics of the system.

DESCRIPTION

- Site planning should respect and accentuate the character of the River Des Peres Bottomlands, Uplands, Bluffs and Wooded Valleys.
- Site planning should utilize design approaches which are most suitable for each particular landform.
- The park's original River Des Peres corridor created a series of land forms which define the spatial character of the park. They are defined as follows:
 - River Des Peres:** River Des Peres was buried underground but its historic floodplain Bottomlands still remains as the low flat areas in the northern and eastern sections of the park.
 - Uplands:** Higher elevations which once drained into the River Des Peres Bottomlands.
 - Bluff:** Transitional, sloping hill faces between the Bottomlands and Uplands above.
 - Wooded Valleys:** Some of the original intermittent tributaries of River Des Peres which direct runoff water flow down from the Uplands to the River Des Peres Bottomlands below.
- Where possible, steep slopes in excess of 10% should be left as natural areas and as passive recreation areas due to erosion hazards and development limitations.

DESIGN PRINCIPLE
Land Forms Define Park Experience



FOREST PARK MASTER PLAN

ST. LOUIS,

MO

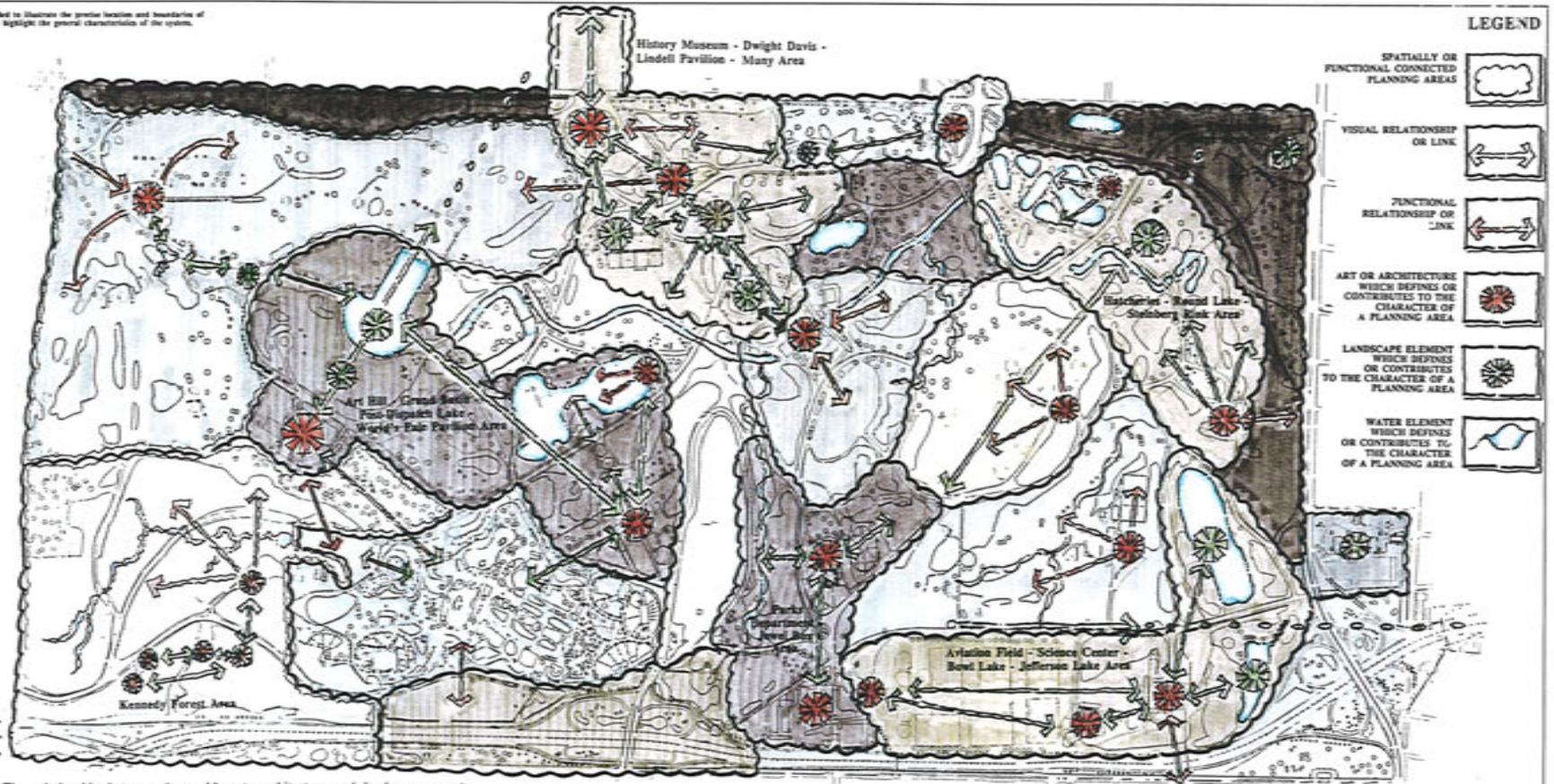


27 FEBRUARY 1995

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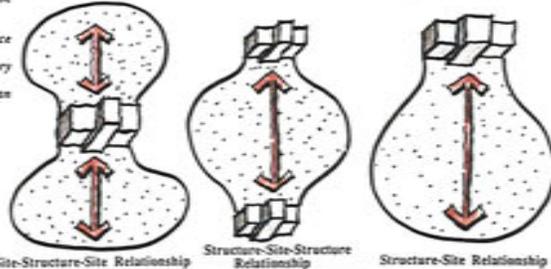


The relationship between the park's art, architecture and landscapes can be classified as follows (see diagram):

- Site-Structure-Site A central structure unites adjacent sites (i.e. Science Center-Bowl Lake-Archery Range relationship).
- Structure-Site-Structure A central site unites adjacent structures (i.e. History Museum-Lindell Pavilion relationship).
- Structure-Site A single structure and associated site function as an independent unit (Art Hill-Art Museum).

DESIGN PRINCIPLE

Emphasize Site Relationships



DESCRIPTION

- Sites containing art, architecture and landscapes should be linked together through a series of spatial and functional relationships. Clusters of individual sites often have spatial and/or functional relationships as well.
- Sites with spatial or functional connections should be treated as continuous, composite planning areas.
- Site design within planning areas should enhance their spatial and functional connections.



FOREST PARK MASTER PLAN

ST. LOUIS, MO

SCALE 1" = 400'

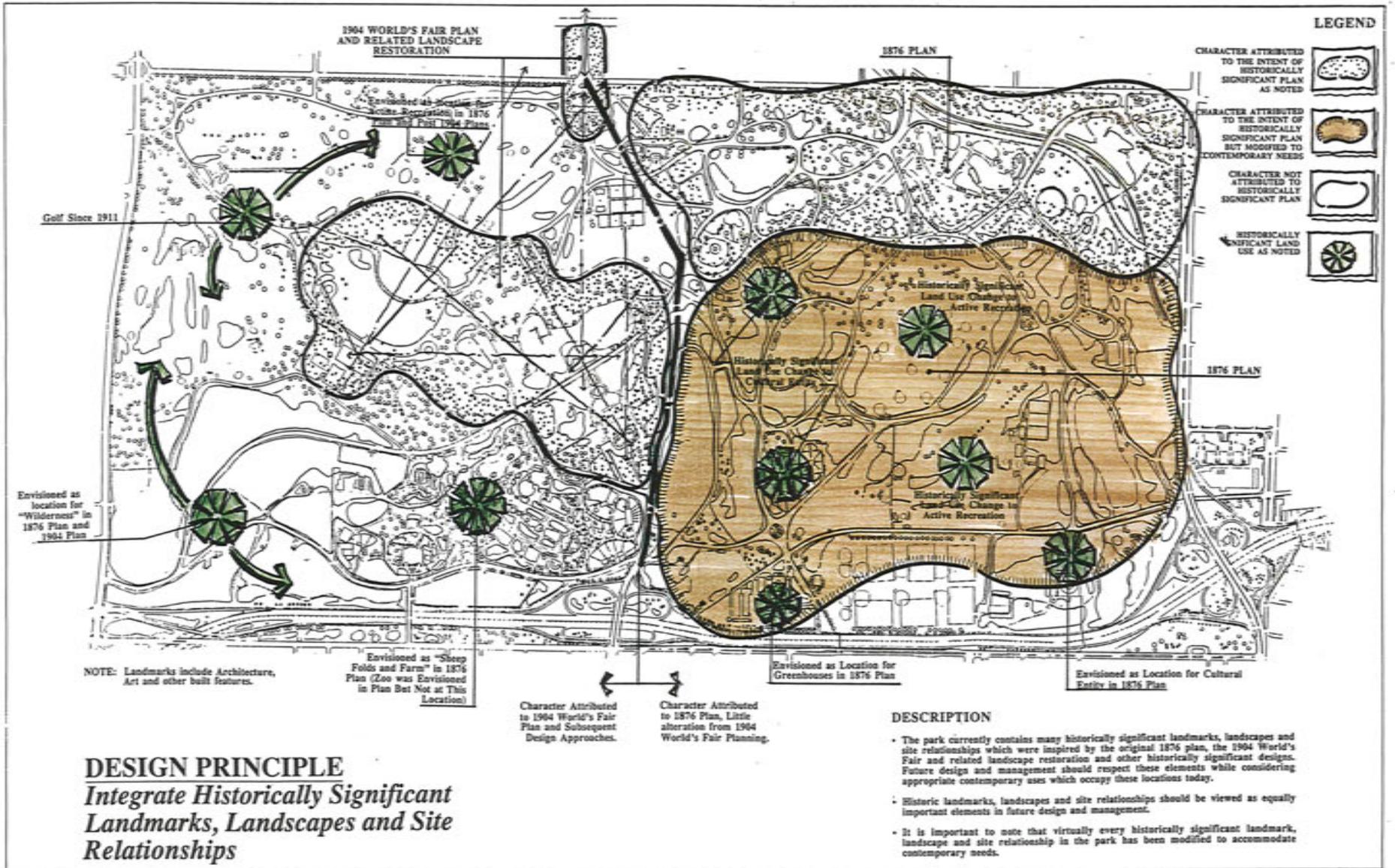


15 MARCH 1935

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DESIGN PRINCIPLE

Integrate Historically Significant Landmarks, Landscapes and Site Relationships

DESCRIPTION

- The park currently contains many historically significant landmarks, landscapes and site relationships which were inspired by the original 1876 plan, the 1904 World's Fair and related landscape restoration and other historically significant designs. Future design and management should respect these elements while considering appropriate contemporary uses which occupy these locations today.
- Historic landmarks, landscapes and site relationships should be viewed as equally important elements in future design and management.
- It is important to note that virtually every historically significant landmark, landscape and site relationship in the park has been modified to accommodate contemporary needs.



FOREST PARK MASTER PLAN

ST. LOUIS,

MO

SCALE 1" = 100'



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D. Design Recommendations

1. General Approach

When determining a landscape plan for the park two factors should be considered.

The first and most general consideration is the “aesthetic type” or typology of landscape that is appropriate in any given location of the park. This typology is based upon the park’s history and landscape tradition, current trends in park design and existing conditions. This is overlaid with the second factor, the functional considerations of landscape (i.e., what is the most appropriate plant community given the site’s topography and soil condition). These two factors must be equally weighed in order to achieve hardy vegetation with the desired visual effect.

The typology and plant community factors are modified and made site specific when other factors such as spatial character and quality, public safety, land uses, wildlife, and maintenance are taken into account.

The recommendations presented here focus on one major objective: to rebuild and reconfigure the park’s landscapes in a way that will build upon the positive aspects of well designed and functioning spaces while providing new and exciting spaces with character and potential uses not currently present in Forest Park. The park’s existing informal, largely “English Romantic Style” designed landscapes will be accentuated along with the addition of new midwestern or “Prairie Style” landscapes, particularly along the water system and bottomlands, the Steinberg Rink area, Central Isthmus, and the Lindell edge east of Lindell Pavilion. The existing formally designed spaces of the Art Hill-Grand Basin and Government Hill areas will be accentuated, along with the addition of a highly formal treatment of Aviation Field.

The resulting landscape system will provide more dramatic views, more seasonal flower and leaf displays, improved biodiversity and general environmental health, and increased opportunities for passive recreation. Suggested plant species also aim to create a landscape which is better suited to site specific conditions and therefore requires less maintenance. Coordination with design solutions for the water system will also improve the quality and livability of the landscape system through pollution prevention and reduced soil erosion.

Aesthetically, Forest Park’s landscapes have been designed with a mix of grand scale open meadows, sweeping bends, meandering linear spaces and intimate landscape rooms. There will be a variety of aesthetic treatments, ranging from naturalistic emergent vegetation to formal alées of trees. Throughout the landscape system, the water system will function as a unifying element.

As park users travel from Kennedy Forest to Bowl Lake, they will encounter a broad spectrum of vegetative communities and spatial experiences. Beginning in a mature upland forest, they will traverse the bluff system, which remains from the original River Des Peres before it was buried underground down to the River Des Peres bottomlands - the river’s old flood plain. While following the bottomlands, they will encounter the formally designed Art Hill-Grand Basin area with its promenades and dramatic seasonal color displays. From Grand Basin, they will experience The Spillways — a naturalistic setting of cascading waters, stone outcroppings, and emergent vegetation. Across the lagoon they will find

The Clearing, a dramatic circular outdoor room with views of Government Hill and a “council ring” sculptural seating area at the center. As they travel down the linear, prairie style Central Isthmus, they will experience its sweeping views and horizontal plantings which lead the eye to the new Post-Dispatch Lake boathouse, virtually at the center of the park.

After a brief rest at the boathouse, park users can experience the formally designed Pagoda Lake area and the wetlands of the Union Entrance area. As the journey continues, they encounter the Hatchery Lakes area and the new Oxbow Lake. They will pass the dramatic Round Lake area with its semi-circle of bald cypress and the area’s new flowering ornamental plantings, which welcome the park user into the prairie style Steinberg Rink area and its wetlands, horizontal plantings, and prairie river. From here they will pass the expansive Jefferson Lake, with its crabapple groves and finally arrive at Bowl Lake and Seven Pools, with their naturalistic edge plantings, crabapple groves, and nature trails.

To assure a vegetative legacy for future generations, the Master Plan contains an extensive reforestation program which recommends 7,500 new plantings and provides adequate maintenance budgets and equipment to ensure long term health. Biodiversity, consisting of many different plant species, is recommended to avoid mass vegetative loss due to disease or climatic conditions. A variety of plant size and age is also recommended to assure maximum age and spatial diversity.

2. Typology of Landscapes

There are two basic types of landscapes in Forest Park: formal and informal. Both formal and informal landscapes can be further defined as large, intermediate, small, or linear.

The park contains all of these various landscape types, which must be unified through the design of transitional areas or by common elements. These transitional areas should be designed to achieve the following:

- Continuity of space, regardless of roads, paths, or other barriers or disruptions.
- Smooth transitions with occasional dramatic or abrupt changes where appropriate.
- Visual links between distinctly separate spaces and adjacent landscapes via vistas and open visual corridors, creating a park with many diverse, yet unified and connected spaces. This creates site specific variety yet overall park unity.
- A variety of dynamic places, created through the design of the edges of spaces, land uses, plant communities, roads and paths, transitions between vegetation types, light and shade conditions, and land use change.

Formal Landscapes

Forest Park was designed as a romantic, informal park with occasional touches of formality. As envisioned in the original plan, the formal landscapes create “diamonds in the rough” when used to punctuate larger, organic, informal settings. These formal landscapes are unique to Forest Park and should remain and be upgraded. They include:

Grand-scale Formal Landscapes:

Grand Basin
Art Hill
Government Hill
Aviation Field

Intermediate- to Small-scale Formal Landscapes:

Pagoda Lake
Round Lake
Jewel Box Gardens

Most of Forest Park’s formal landscapes are situated within informal surroundings, creating dramatic surprises when one encounters them. This element of surprise must be accentuated in the transitional spaces between the formal and informal landscapes.

Specific design recommendations for formal landscapes include:

- Accentuate highly regular large-scale formal landscapes with multi-level, ornamental plantings for edge definition. These should be consistent with spatial and historic character, site context, and the overall design of the particular space.
- Utilize straight line axes as well as dramatic curves and circles when designing formal landscapes.
- Emphasize simplicity and cost effectiveness in order to maintain formal or highly regular landscapes with current low level maintenance budgets.

Informal Landscapes

The majority of Forest Park is a tapestry of informal landscapes with irregular forms and edges. Most are intermediate to small scale landscapes, highlighted by canopy trees and grassy meadows, naturalistic settings, and woodland areas. One example of this type of informal area would be the Cricket Field. Other informal landscape areas may be much larger, grand-scale landscapes, such as Central Field, Triple A Golf Course, or the Municipal Golf Course upland holes. Finally, there are also a number of linear scale informal landscapes, which include Lindell Edge: DeBaliviere to Union, Langenberg Field, Central Isthmus, Steinberg Area, and spaces which follow the lagoon system.

Design recommendations for these various informal spaces include:

- Accentuate highly regular large-scale informal landscapes with multi-level, ornamental plantings for edge definition. These should be consistent with spatial and historic character, site context, and the overall design of the particular space.

- Design linear landscapes in sweeping curves and bends, avoiding straight lines and unnatural or tight curves unless part of a formally designed area.
- Connect and unify many diverse spaces by creating visual open, linear corridors, some of which parallel the water system.
- Create edge definition for linear landscapes through multi-level plantings, paths and water features.
- Visually constrict or “pinch” spaces at key locations to provide spatial diversity and to create the visual illusion of limitlessness along linear landscapes.
- Select plantings for road and path edges which reflect park location and associated plant composition (i.e., informal bottom land plantings for a road/path through an informal bottom land area).
 - Avoid applying a single road or path planting “theme” for the entire park.
 - Utilize trees with a high branching angle to provide adequate clearance for circulation.
 - Reduce the scale and height of path edge plantings to match the more intimate human scale as opposed to the larger scale required for automobiles and buses.

LINDELL EDGE - SKINKER TO DE BALIVIERE

- Maintain the existing air of trees along Lindell, replacing missing trees where necessary.

MUNICIPAL GOLF COURSES

- Enhance water bodies, wetlands and valleys.
- Redesign the bottomlands to create unique landscape character which aesthetically relates to surrounding topography and water features.
- Provide a landscape transition to the Art Hill/Grand Basin visual axis.
- Increase the use of evergreen plantings to accentuate uplands and hillside and to provide visual interest to winter recreation.

SPILLWAYS AREA

- Enhance the naturalistic cascading character with emergent vegetation and additional stone outcroppings which replace existing industrial appearing spillways.
- Provide naturalistic shoreline plantings which improve water quality, aesthetics and provide wildlife habitat.

UNION ENTRANCE AREA

- Create a unique entrance landscape in this highly visible location with a wetland or wet meadow which displays dramatic seasonal variations of color and texture.
- Accentuate this wetland with scattered canopy and flowering ornamental trees.

LINDELL EDGE - DE BALIVIERE TO UNION

- Highlight this linear landscape with extensive mid-size ornamental trees which display a more horizontal character.
- Reconfigure inappropriately placed plantings located to the south of the Daughters of the Confederacy monument to frame views and provide visual linkages with surrounding landscapes, roads and paths.

HATCHERIES AREA

- Accentuate the existing informal landscape character around the meadow/lake.
- Provide plantings that frame some views from Forest Park Parkway and informal lake while buffering noise and negative views from the lake area in areas closest to the roadway.
- Provide informal shoreline plantings along the lagoon as it runs through this area and accentuate the grassy lagoon it creates.

CENTRAL FIELDS

- Install informal perimeter plantings with shade trees and mid-secondary plantings of flowering ornamentals to minimize visual impact of backlogs and dirt sidewalks while framing grand scale, expansive open green spaces.
- Improve the quality of the adjacent meadow through ornamental and naturalistic edge plantings and occasional rock outcroppings, retaining existing bridges and culverts.

GRAND BASIN AREA

- Create the basin and accentuate its grand pedestrian avenues with formal rows of flowering ornamental trees, backed by canopy trees which relate to surrounding landscapes. Utilize trees with a high branching pattern to provide least clearance for pedestrian circulation.
- Create an informal open picnic meadow west of the basin with views to Grand Basin, Art Hill, Basin Viaduct and surrounding landscapes.
- Provide more naturalistic plantings in appropriate areas of adjacent lagoons.

CASCADES

- Install low secondary plantings suitable for this moist, north facing shady slope.

ART HILL AREA

- Provide ornamental tree plantings and paths at the east and west sides of the hill which spatially define this grand scale formal open and frame dramatic views.
- Show the grassy hill in a way that creates horizontal light and dark green bands when viewed from Grand Basin.
- Create spaces to the east and west of the hill which are more informal than the central hill, relating to the regions which travel through them. Consider utilizing seasonal wildflowers and/or other showy groundcover in these areas.
- Configure plantings to frame the Art Museum when viewed from Grand Basin or the base of the hill. Plant the sweeping promenade and overlook at the hill's crest with flowering ornamentals, canopy and evergreen trees.
- Increase evergreen and upland lower plantings which relate to the area's winter use, form a green backdrop to seasonal color of ornamental plantings and to give the impression of a change of vegetation as one moves higher in elevation from the bottomlands to the uplands.

KENNEDY FOREST

- Provide native canopy, mid-secondary and groundcover plantings which improve ecological and aesthetic quality while allowing safe recreation and educational use. Support MODOC's plans to provide regenerative management and nature trail operation and interpretation.
- Install plantings along area roads and highway 6400 which reduce the visual and audible impact on park users while providing dramatic visual effects for evening illumination.
- Implement naturalistic, erosion controlling plantings along intermittent tributaries.

PICNIC ISLAND

- Create an informal woodland of canopy trees and scattered ornamentals.
- Provide dramatic water edge plantings while maintaining an open grassy central portion for public use and visual corridor.

CENTRAL ISTHMUS AND CLEARING

- Provide ridge plantings of canopy trees, flowering ornamentals and mid-secondary vegetation. Locate plantings to highlight the sweeping linear landscape and create intrigue with open spaces which appear to vanish around the bend of water or vegetation. Utilize extensive mid-size ornamental trees which display a more horizontal character.
- Locate an open, circular grassy area "The Clearing", surrounded by canopy trees and select ornamental mid-story trees. Locate a large circular stone seating or "Council Ring" (approx. 40' diameter) in the center.

POST-DISPATCH LAKE

- Provide plantings, public art and site furnishings to focus the eye on dramatic views, historic sites, water reflections and area architecture.
- Accentuate "The Promenade" with flowering ornamental trees in the hillside behind the pathway, utilizing trees with a high branching pattern to provide head clearance for pedestrian circulation.
- Locate plantings around the Johns monument to frame views and provide visual linkages with surrounding landscapes and paths.
- Accentuate the dramatic pedestrian plaza with flowering ornamental trees and decorative site furnishings.

SUCCESSIONAL FOREST

- Promote native canopy, mid-secondary and groundcover plantings.
- Implement naturalistic, erosion controlling plantings along intermittent tributaries.

GOVERNMENT HILL

- Supplement the existing mature evergreen plantings with additional ornamental trees and shrubs.
- Restore this historic landscape with ornamental plantings, restored pavement and stairs, seating and lighting. Restore some of the formal formal displays which were adjacent the hillside.
- Accentuate and spatially define small sub-spaces or rooms to the east and west of the central hill. Consider placement of public art and other small displays which focus furnishings in these locations.

PAGODA LAKE AREA

- Install formal decorative plantings of canopy trees, evergreen, flowering ornamentals, groundcovers and perennial plantings along with appropriate site furnishings to highlight this space as the center of the park.
- Utilize plantings and site furnishings to accentuate visual axes from adjacent roads, paths and between area public art.
- Install dramatic seasonal plantings on the hillside island. Protect plantings from moisture waterfowl by installing a hedge, either permanent or event based, to allowed access for natural predators.

AVIATION FIELD

- Install formal perimeter plantings with regularly spaced shade trees and mid-secondary plantings or flowering ornamentals to minimize visual impact of backlogs and dirt sidewalks and diffuse some traffic noise while framing grand scale, expansive open green spaces.
- Replace missing trees from the existing highly regular plantings.

TRIPLE A CLUB

- Accentuate valleys and uplands with trees and shrubs which display dramatic seasonal color and control erosion. Utilize a mixture of splayed and horizontal species.
- Replacing the existing barberry border hedge with more aggressive, multi-level plantings of low shrubs, flowering ornamental mid-story trees and canopy trees which accentuate the Clayton Road streetcape. Utilize plantings which discourage random pedestrian access to the golf course.
- Increase evergreen plantings to accentuate uplands and hillside and to provide visual interest to winter recreation.

ROUND LAKE AREA

- Accentuate the missing semi-circular planting of Red Cypress trees which surround the east side of the circular lake with similar plantings to the west, adding an additional layer of flowering ornamental trees.
- Redesign the existing lagoons to mirror the shape of Round Lake and the plantings to its west.
- Re-align the path to take users from a connected tree lined setting south of the lake to the dramatic, open views of Round Lake and its fountain as one travels north from Steinberg Link.
- Accentuate views from automobiles using green walls, framing views with vegetation.

STEINBERG LINK AREA

- Install permanently mid-size ornamental trees which display a more horizontal character which relates to surrounding landscape character and Steinberg Link architecture.
- Create the effect of a "Prairie River" in this portion of the water system, with scattered meadowland meadows and naturalistic shoreline plantings. Consider creating nature trails/birdwalks through these meadows.

KINGSHIGHWAY EDGE

- Restore the existing canopy of trees and add an additional row of flowering ornamentals to the adjacent lake and meadows.
- Improve landscaping and overall spatial character of the triangle area at Lindell and Kingshighway.
- Provide dramatic flowering ornamental plantings which accentuate the sweeping, curvilinear paths which link the new Children's Place pedestrian plaza to the existing playground.
- Provide flowering ornamental and seasonal perennial/annual flowering displays along paths.

JEFFERSON LAKE AREA

- Create a "Crispberry Grove" along the grass embankment along the east side of Jefferson Lake, accentuating landscape character currently present along the western edge of Triple A to the west side of the lake.
- Enhance the dramatic cascading water input at the south end of the lake with lush, cascading vegetation.

BOWL LAKE AREA

- Create a "Crispberry Grove" along the highly visible east embankment of Bowl Lake, accentuating this spot masses of evergreen plantings and flowering meadow ornamentals.
- Construct an earthen berm at the southern end of the lake along the Highway 4600, with evergreen and flowering ornamentals to visually define the space, screen undesirable views of traffic and obscure scenic Hwy. 6400 noise.
- Create a unique water outfall at the north end of the lake.
- Accentuate Seven Falls with appropriate secondary plantings.
- Accentuate the plantings which define the lake's bend and make it appear much larger than it really is.
- Provide naturalistic shoreline plantings and possibly birdwalks and overlooks.

CONCEPTUAL DIAGRAM Landscape Recommendations

FOREST PARK MASTER PLAN
ST. LOUIS, MO



SCALE 1" = 400'

November 18, 1995

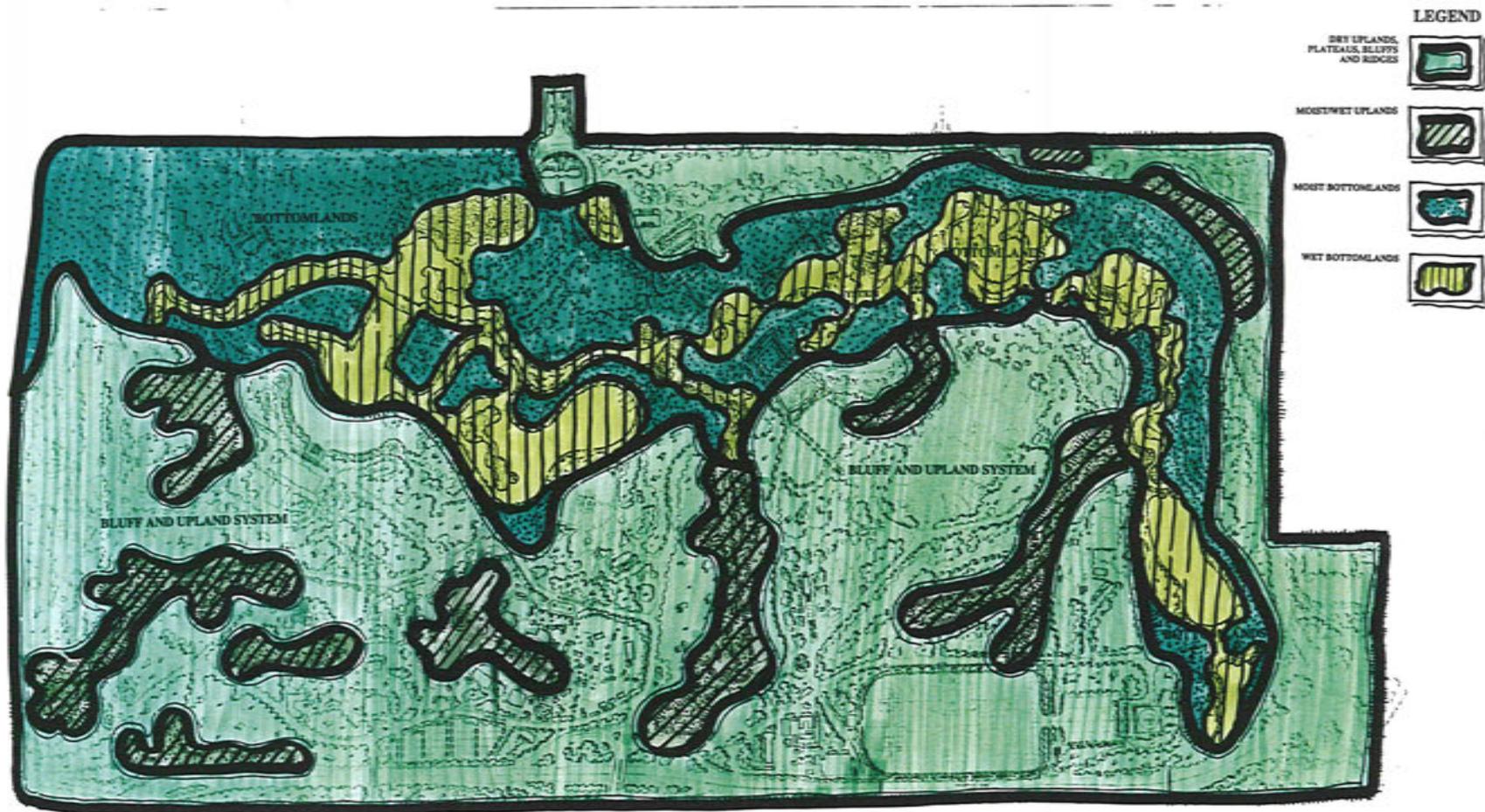
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FOREST PARK MASTER PLAN

3. Plant Communities

A natural approach to landscaping is best accomplished by determining what plant communities originally existed on a site, selecting the desirable plant species from that community (and/or other similar species), preparing the site for rehabilitation, and then replanting. This approach reduces maintenance costs and susceptibility to disease and pest infestation. This approach can be applied to the different height levels or size components of the landscape (such as the ground level, shrub level or tree level) or can involve a mixed, multi-level approach.

- Implement a natural design approach which:
 - Emphasizes planting of native vegetation to reduce maintenance costs and susceptibility to disease and pest infestation.
 - Utilizes trees and shrubs that enhance the fall color display.
 - Utilizes trees and shrubs that increase spring flowering display.
 - Utilizes trees, shrubs, and herbaceous species that have a high aesthetic appeal (ex. decorative foliage, fruit, etc.).
 - Avoids selecting plant species that are characteristically aggressive (for example, spread rapidly by root suckers).
 - Increases the park's biodiversity to reduce the chances for natural catastrophes caused by insects and diseases (According to the park tree inventory, 31% of the trees surveyed in the park belong to five tree species and 58% belong to 15 tree species.).
 - Increases wildlife habitat for aesthetically-pleasing species such as songbirds and butterflies.
 - Increases the vitality of the park's evergreen tree component — primarily coniferous trees (Although over 20% of the trees surveyed in the park are conifers, a majority of these trees are in decline, suffering from pest damage).
 - Select plant species that will stabilize steep banks and reduce soil erosion.
- Utilize plantings which are typical of a particular site's topographic character, soil and geological qualities, drainage, slope orientation, light/shade requirements, wind, and element tolerance.
- Establish trees and shrubs of similar species and varying sizes in arrangements or communities over large geographic areas to achieve a naturalistic character and ensure future age and size diversity.
- Plant steeply sloped areas with trees, shrubs and ground cover/perennials to reduce foot traffic, resulting soil erosion, and the need to mow while providing dramatic seasonal vegetative displays.
- Relocate plantings at a young age, whenever possible and dictated by land use decisions, to improve the survival rate of these trees and reduce the need to provide new plantings elsewhere.
- Utilize plants from the following species composition list in future landscape designs (organized according by size and topography/site moisture categories):



LEGEND

- DRY UPLANDS, PLATEAUS, BLUFFS AND RIDGES
- MOIST WET UPLANDS
- MOIST BOTTOMLANDS
- WET BOTTOMLANDS

GENERAL GUIDELINES

Establish trees and shrubs of similar species in arrangements or "communities" over large geographic areas to achieve a naturalistic character. Plant trees of varying size to enhance this effect and ensure future age and size diversity.

Utilize plantings which are typical of a particular site's topographic character, soil and geological qualities, drainage, slope orientation, light/shade requirements, wind and element tolerance, etc.

Emphasize planting of native vegetation to reduce maintenance costs and susceptibility to disease and pest infestation.

- Consider the following:
- Utilizes trees and shrubs that enhance the Park's fall color display.
 - Utilizes trees and shrubs that increase the Park's spring flowering display.
 - Utilizes trees, shrubs, and herbaceous species that have a high aesthetic appeal (ex. decorative foliage, fruit, etc.).
 - Avoids selecting plant species that are characteristically aggressive (ex. spread rapidly by root suckers).
 - Increases the Park biodiversity to reduce the chances for natural catastrophes caused by insects and diseases (According to the Park tree inventory, 30% of the trees surveyed in the Park belong to 5 tree species and 58% belong to 15 tree species.).
 - Increases wildlife habitat for aesthetically-pleasing species such as songbirds and butterflies.
 - Increases the vitality of the Park's evergreen tree component—primarily coniferous trees.
 - Select plant species that will stabilize steep banks and reduce soil erosion.

Vegetative Communities



FOREST PARK MASTER PLAN

ST. LOUIS,

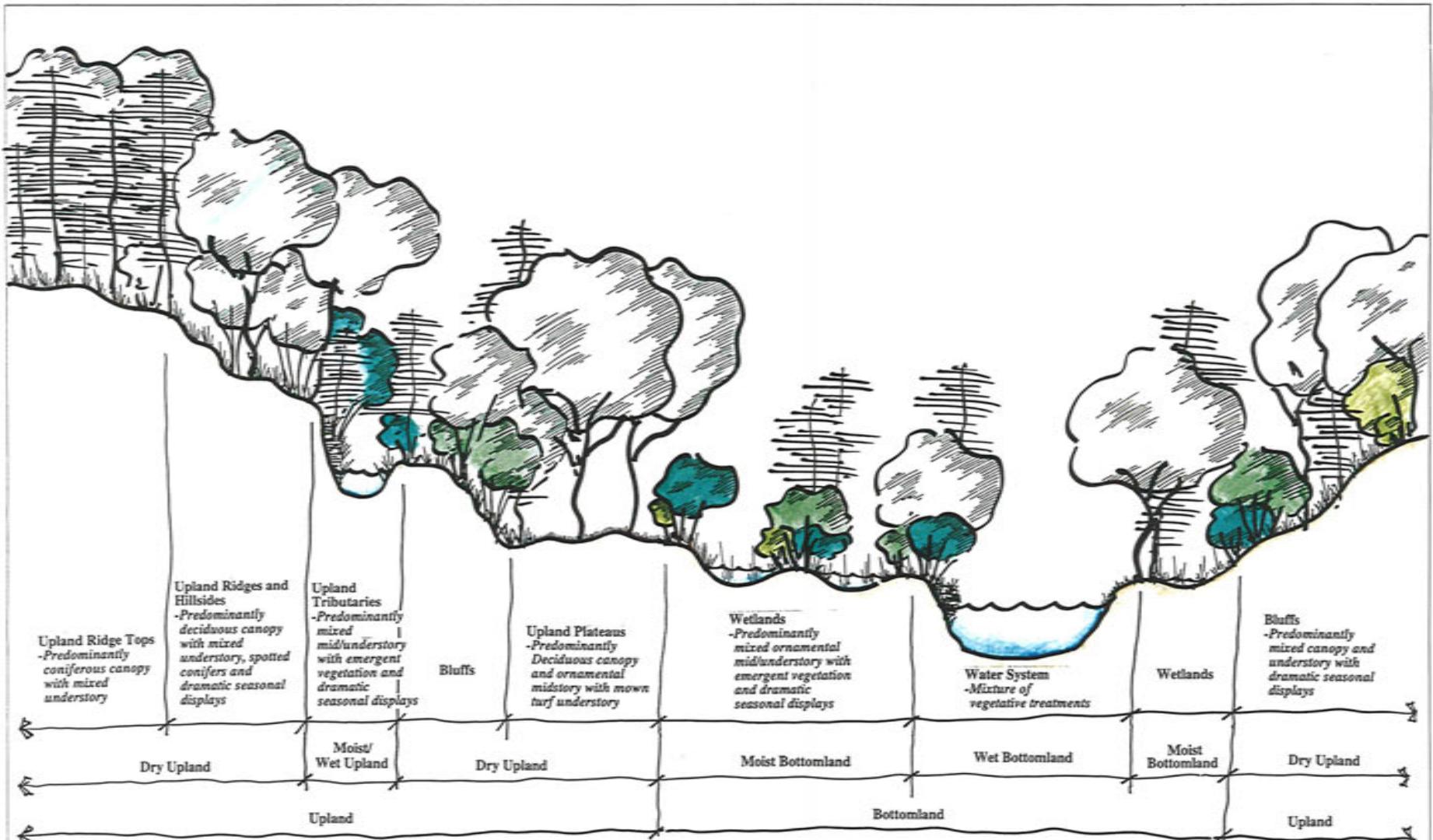
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CONCEPTUAL DIAGRAM
Vegetative Community Section



FOREST PARK
ST. LOUIS, MO

MASTER PLAN

SCALE: 1" = 400'



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UPLAND PLANT COMMUNITIES

Dry Upland Plant Species

Large Tree Category (30 feet tall or more)

- American beech
- bitternut hickory
- black cherry
- black or sour gum
- green ash
- mockernut hickory
- persimmon
- pignut hickory
- red maple
- sassafras
- shagbark hickory
- shellbark hickory
- sugar maple
- sweet gum*
- white ash

Small Tree & Large Shrubs (10 to 30 feet tall)

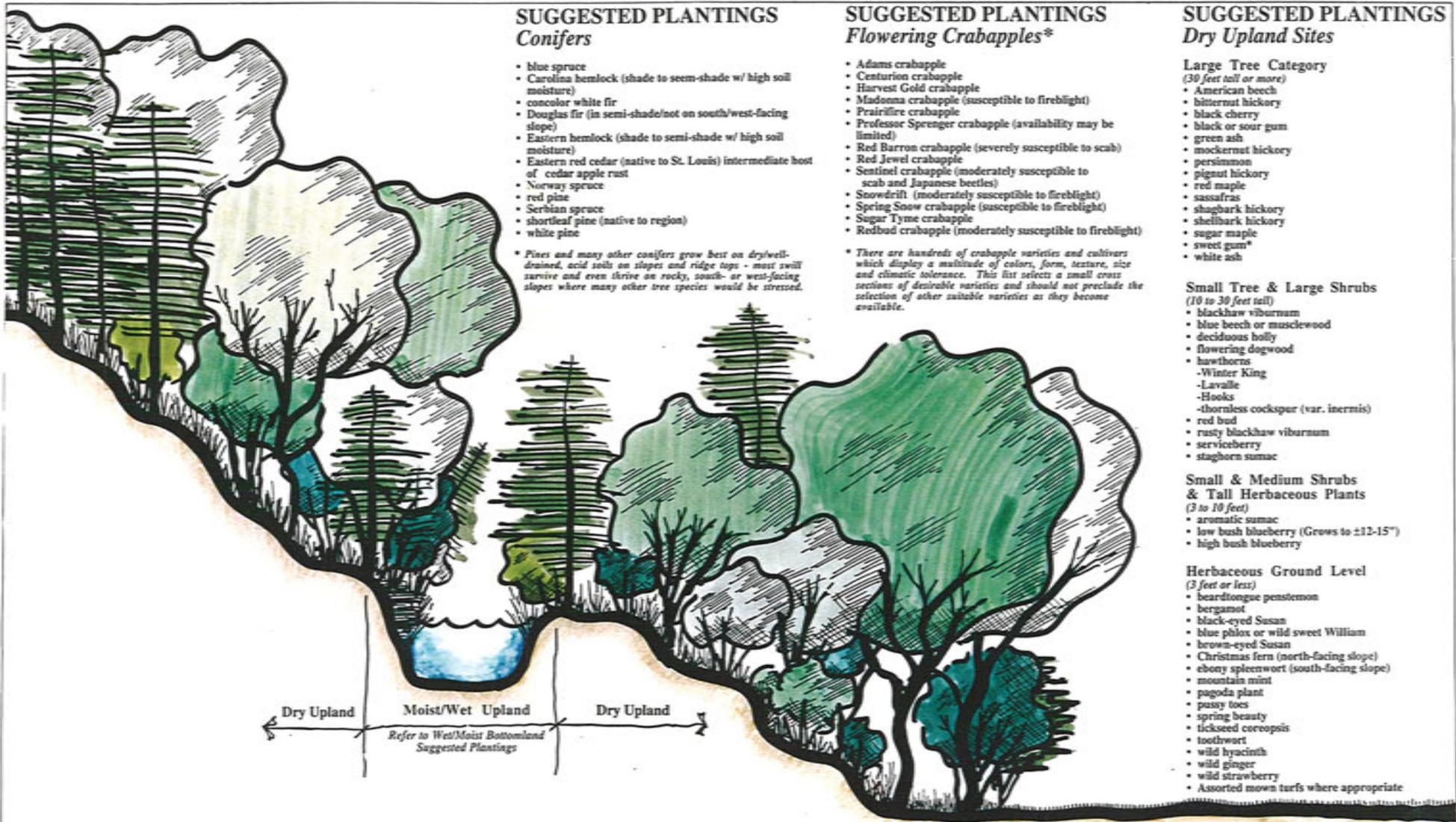
- blackhaw viburnum
- blue beech or musclewood
- deciduous holly
- flowering dogwood
- hawthorns
 - Winter King
 - Lavalle
 - Hooks
 - thornless cockspur (var. inermis)
- red bud
- rusty blackhaw viburnum
- serviceberry
- staghorn sumac

Small & Medium Shrubs & Tall Herbaceous Plants (3 to 10 feet)

- aromatic sumac
- low bush blueberry (grows only about 12-15" tall)
- high bush blueberry

Herbaceous Ground Level (3 feet or less)

- beardtongue penstemon
- bergamot
- black-eyed Susan
- blue phlox or wild sweet William
- brown-eyed Susan
- Christmas fern (north-facing slope)
- ebony spleenwort (south-facing slope)
- mountain mint
- pagoda plant
- pussy toes
- spring beauty
- tickseed coreopsis
- toothwort
- wild hyacinth
- wild ginger
- wild strawberry



SUGGESTED PLANTINGS

Conifers

- blue spruce
- Carolina hemlock (shade to seem-shade w/ high soil moisture)
- concolor white fir
- Douglas fir (in semi-shade/not on south-west-facing slope)
- Eastern hemlock (shade to semi-shade w/ high soil moisture)
- Eastern red cedar (native to St. Louis) intermediate host of cedar apple rust
- Norway spruce
- red pine
- Serbian spruce
- shortleaf pine (native to region)
- white pine

* Pines and many other conifers grow best on dry/well-drained, acid soils on slopes and ridge tops - most will survive and even thrive on rocky, south- or west-facing slopes where many other tree species would be stressed.

SUGGESTED PLANTINGS

*Flowering Crabapples**

- Adams crabapple
- Centurion crabapple
- Harvest Gold crabapple
- Madonna crabapple (susceptible to fireblight)
- Prairiefire crabapple
- Professor Sprenger crabapple (availability may be limited)
- Red Barron crabapple (severely susceptible to scab)
- Red Jewel crabapple
- Sentinel crabapple (moderately susceptible to scab and Japanese beetles)
- Snowdrift (moderately susceptible to fireblight)
- Spring Snow crabapple (susceptible to fireblight)
- Sugar Tyme crabapple
- Redbud crabapple (moderately susceptible to fireblight)

* There are hundreds of crabapple varieties and cultivars which display a multitude of colors, form, texture, size and climatic tolerance. This list selects a small cross section of desirable varieties and should not preclude the selection of other suitable varieties as they become available.

SUGGESTED PLANTINGS

Dry Upland Sites

Large Tree Category

(30 feet tall or more)

- American beech
- bitternut hickory
- black cherry
- black or sour gum
- green ash
- mockernut hickory
- persimmon
- pignut hickory
- red maple
- sassafras
- shagbark hickory
- shellbark hickory
- sugar maple
- sweet gum*
- white ash

Small Tree & Large Shrubs

(10 to 30 feet tall)

- blackhaw viburnum
- blue beech or musclewood
- deciduous holly
- flowering dogwood
- hawthorns
- Winter King
- Lavalle
- Hooks
- thornless cockspur (var. inermis)
- red bud
- rusty blackhaw viburnum
- serviceberry
- staghorn sumac

Small & Medium Shrubs & Tall Herbaceous Plants

(3 to 10 feet)

- aromatic sumac
- low bush blueberry (Grows to ±12-15")
- high bush blueberry

Herbaceous Ground Level

(3 feet or less)

- beardtongue penstemon
- bergamot
- black-eyed Susan
- blue phlox or wild sweet William
- brown-eyed Susan
- Christmas fern (north-facing slope)
- ebony spleenwort (south-facing slope)
- mountain mint
- pagoda plant
- pussy toes
- spring beauty
- tickseed coreopsis
- toothwort
- wild hyacinth
- wild ginger
- wild strawberry
- Assorted mown turfs where appropriate

* sweet gum not recommended in grassy areas where ball-shaped fruits accumulate and knobby/hallow root system causes mowing problems

Upland Vegetative Communities



FOREST PARK MASTER PLAN

ST. LOUIS,

MO

SCALE 1" = 40'



November 18, 1995

CITY OF SAINT LOUIS
DEPARTMENT OF PARKS,
RECREATION AND FORESTRY
ST. LOUIS DEVELOPMENT CORPORATION
URBAN DESIGN

FOREST
PARK
MASTER
PLAN

Moist Upland Plant Species

Large Tree Category (30 feet tall or more)

- bald cypress (deciduous conifer)
- black or sour gum
- burr oak
- butternut
- dawn redwood (deciduous conifer)
- green ash
- Nuttall's oak
- persimmon
- red maple
- river birch
- sugar maple
- swamp white oak
- sweet gum*
- white ash
- willow oak

Small Tree & Large Shrubs (10 to 30 feet tall)

- blackhaw viburnum
- blue beech or muscledwood
- deciduous holly
- witchhazel

Small & Medium Shrubs & Tall Herbaceous Plants (3 to 10 feet)

- aromatic sumac
- buttonbush
- pointed broom sedge (Carex scoparia)
- silky dogwood
- summersweet clethra
- vernal witchhazel or cultivars such as Carnea, Christmas Cheer, or Squib
- Virginia sweetspire

Herbaceous Ground Level (3 feet or less)

- bluebells or mertensia
- celandine poppy
- columbines
- false Solomon's seal
- foamflower
- impatiens or touch-me-nots
- Jacob's ladder
- maidenhair fern
- phloxes
- Solomon's seal
- spring beauties
- trillium
- trout lily
- turtleheads
- violets
- wild geranium

SUGGESTED PLANTINGS

Wetlands/Wet Marshes

*Moist to Saturated Soil
with No Permanent Standing Water*

- arrowhead
- cinnamon fern
- dark green bulrush (*Scirpus atrovirens*) (up to 5 feet)
- fox sedge (*Carex vulpinoidea*)
- Frank's sedge (*Carex frankii*)
- iris (ex. blue flags *Iris virginica* & red-flag *Iris fulva*)
- jewelweed or touch-me-nots
- marsh spikerush (*Eleocharis palustris*)
- monkey flowers (ex. *Mimulus alatus* & *Mimulus ringens*)
- royal fern
- sweet flag or calamus
- switch grass (up to 5 feet tall)
- tussock sedge (*Carex stricta*)
- wool grass (*Scirpus cyperinus*) (up to 6 feet tall)

SUGGESTED PLANTINGS

Moist Sites

Large Tree Category

(30 feet tall or more)

- bald cypress (deciduous conifer)
- black or sour gum
- burr oak
- butternut
- dawn redwood (deciduous conifer)
- green ash
- Nuttall's oak
- persimmon
- red maple
- river birch
- sugar maple
- swamp white oak
- sweet gum*
- white ash
- willow oak

Small Tree & Large Shrubs

(10 to 30 feet tall)

- blackhaw viburnum
- blue beech or musclewood
- deciduous holly
- witchhazel

Small & Medium Shrubs

& Tall Herbaceous Plants
(3 to 10 feet)

- aromatic sumac
- buttonbush
- pointed broom sedge (*Carex scoparia*)
- silky dogwood
- summersweet clethra
- vernal witchhazel or cultivars such as Carnea, Christmas Cheer, or Squib
- Virginia sweetspire

Herbaceous Ground Level

(3 feet or less)

- bluebells or mertensia
- celandine poppy
- columbines
- false Solomon's seal
- foamflower
- impatiens or touch-me-nots
- Jacob's ladder
- maidenhair fern
- phloxes
- Solomon's seal
- spring beauties
- trillium
- trout lily
- turtleheads
- violets
- wild geranium
- Assorted mown turfs where appropriate



Moist Bottomland

Wet Bottomland

Moist Bottomland Vegetative Communities

* sweet gum not recommended in grass/turf areas where ball-shaped fruits accumulate and knobby/shallow root system causes mowing problems



FOREST PARK MASTER PLAN

ST. LOUIS,

MO

SCALE: 1" = 400'



November 18, 1995

CITY OF SAINT LOUIS

DEPARTMENT OF PARKS,
RECREATION AND FORESTRY

ST. LOUIS DEVELOPMENT CORPORATION
URBAN DESIGN

FOREST
PARK
MASTER
PLAN

BOTTOMLAND PLANT COMMUNITIES

Moist Bottomland Plant Species

Large Tree Category (30 feet tall or more)

- bald cypress (deciduous conifer)
- black or sour gum
- burr oak
- butternut
- dawn redwood (deciduous conifer)
- green ash
- Nuttall's oak
- persimmon
- red maple
- river birch
- sugar maple
- swamp white oak
- sweet gum*
- white ash
- willow oak

Small Tree & Large Shrubs (10 to 30 feet tall)

- blackhaw viburnum
- blue beech or musclewood
- deciduous holly
- witchhazel

Small & Medium Shrubs & Tall Herbaceous Plants (3 to 10 feet)

- aromatic sumac
- buttonbush
- pointed broom sedge (Carex scoparia)
- silky dogwood
- summersweet clethra
- vernal witchhazel or cultivars such as Carnea, Christmas Cheer, or Squib
- Virginia sweetspire

Herbaceous Ground Level (3 feet or less)

- bluebells or mertensia
- celandine poppy
- columbines
- false Solomon's seal
- foamflower
- impatiens or touch-me-nots
- Jacob's ladder
- maidenhair fern
- phloxes
- Solomon's seal
- spring beauties
- trillium
- trout lily
- turtleheads
- violets
- wild geranium

Wet Bottomland Plant Species

Large Tree Category (30 feet tall or more)

- bald cypress (deciduous conifer)
- Nuttall's oak
- red maple
- river birch
- swamp white oak
- sweet gum*
- willow oak

**sweet gum not recommended in grass/turf areas where ball-shaped fruits accumulate and knobby/shallow root system causes mowing problems*

Small Tree & Large Shrubs (10 to 30 feet tall)

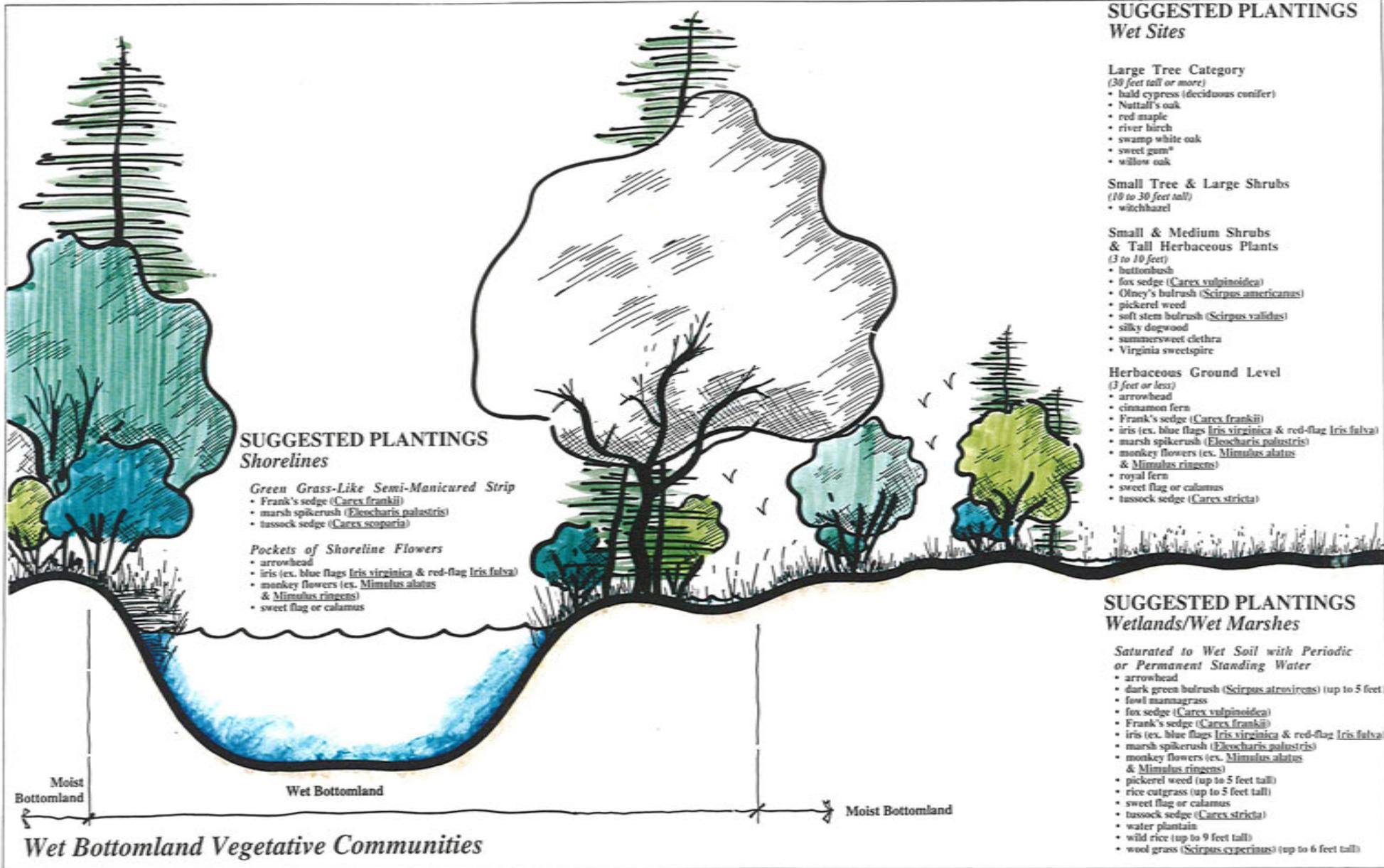
- witchhazel

Small & Medium Shrubs & Tall Herbaceous Plants (3 to 10 feet)

- buttonbush
- fox sedge (Carex vulpinoidea)
- Olney's bulrush (Scirpus americanus)
- pickerel weed
- soft stem bulrush (Scirpus validus)
- silky dogwood
- summersweet clethra
- Virginia sweetspire

Herbaceous Ground Level (3 feet or less)

- arrowhead
- cinnamon fern
- Frank's sedge (Carex frankii)
- iris (ex. blue flags Iris virginica & red-flag Iris fulva)
- marsh spikerush (Eleocharis palustris)
- monkey flowers (ex. Mimulus alatus & Mimulus ringens)
- royal fern
- sweet flag or calamus
- tussock sedge (Carex stricta)



SUGGESTED PLANTINGS Shorelines

- Green Grass-Like Semi-Manicured Strip*
- Frank's sedge (*Carex frankii*)
 - marsh spikerush (*Eleocharis palustris*)
 - tussock sedge (*Carex scoparia*)
- Pockets of Shoreline Flowers*
- arrowhead
 - iris (ex. blue flags *Iris virginica* & red-flag *Iris fulva*)
 - monkey flowers (ex. *Mimulus alatus* & *Mimulus ringens*)
 - sweet flag or calamus

SUGGESTED PLANTINGS Wet Sites

- Large Tree Category**
(30 feet tall or more)
- bald cypress (deciduous conifer)
 - Nuttall's oak
 - red maple
 - river birch
 - swamp white oak
 - sweet gum*
 - willow oak
- Small Tree & Large Shrubs**
(10 to 30 feet tall)
- witchhazel
- Small & Medium Shrubs & Tall Herbaceous Plants**
(3 to 10 feet)
- buttonbush
 - fox sedge (*Carex vulpinoidea*)
 - Olney's bulrush (*Scirpus americanus*)
 - pickerel weed
 - soft stem bulrush (*Scirpus validus*)
 - silky dogwood
 - summersweet clethra
 - Virginia sweetspire

- Herbaceous Ground Level**
(3 feet or less)
- arrowhead
 - cinnamon fern
 - Frank's sedge (*Carex frankii*)
 - iris (ex. blue flags *Iris virginica* & red-flag *Iris fulva*)
 - marsh spikerush (*Eleocharis palustris*)
 - monkey flowers (ex. *Mimulus alatus* & *Mimulus ringens*)
 - royal fern
 - sweet flag or calamus
 - tussock sedge (*Carex stricta*)

SUGGESTED PLANTINGS Wetlands/Wet Marshes

- Saturated to Wet Soil with Periodic or Permanent Standing Water*
- arrowhead
 - dark green bulrush (*Scirpus atrovirens*) (up to 5 feet)
 - fowl mannagrass
 - fox sedge (*Carex vulpinoidea*)
 - Frank's sedge (*Carex frankii*)
 - iris (ex. blue flags *Iris virginica* & red-flag *Iris fulva*)
 - marsh spikerush (*Eleocharis palustris*)
 - monkey flowers (ex. *Mimulus alatus* & *Mimulus ringens*)
 - pickerel weed (up to 5 feet tall)
 - rice cutgrass (up to 5 feet tall)
 - sweet flag or calamus
 - tussock sedge (*Carex stricta*)
 - water plantain
 - wild rice (up to 9 feet tall)
 - wool grass (*Scirpus cyperinus*) (up to 6 feet tall)

4. Spatial Character and Quality

a. Borrowed Landscapes

Forest Park is vast when compared to other City parks, but still not of the scale to offer grand, endless views and vistas without the use of some “visual tricks” to create the illusion of a much larger scale.

- Design water bodies and landscapes to meander and bend around landforms and vegetation to create the illusion of limitlessness and mystery and entice the park user to explore further, hoping to find a unique element or space “around the bend.”
- Utilize multi-stem varieties of trees and shrubs, as well as cascading plantings in locations along the water system, to emphasize this large-scale illusion effect.
- Utilize “borrowed landscapes” to create the impression of much larger and dramatic space (i.e., Central Fields with view of CWE, Government Hill view of much of the park).

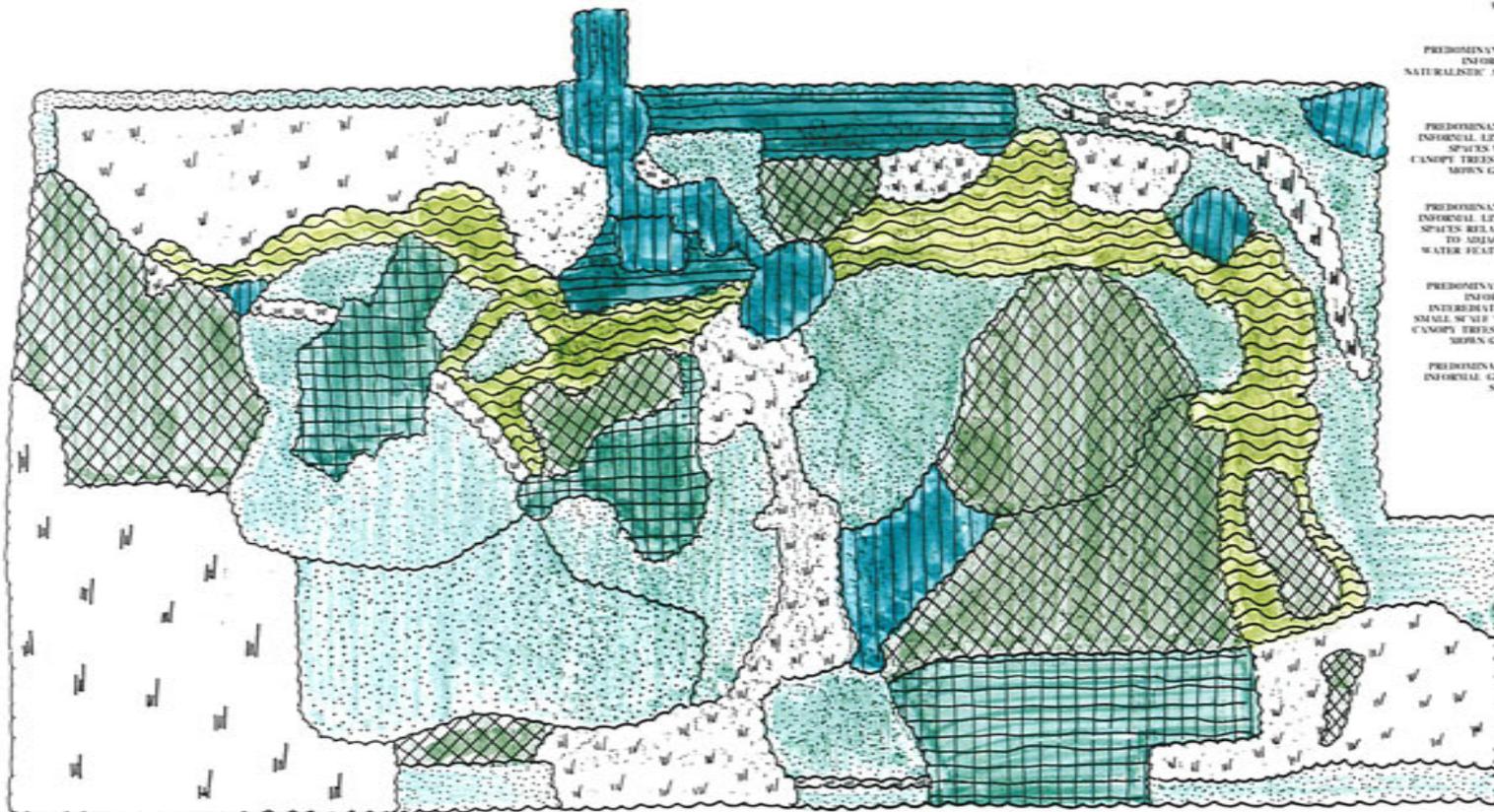
b. Scale and Variety

- Ensure balance and variety of spatial character, scale and visual drama in the park by providing a mixture of grand open spaces, linear landscapes, intimate landscape rooms, formal vistas and open spaces, woodland settings, informal naturalistic open spaces, specialty landscapes of evergreens, flowering trees, and wildflowers, and landscapes whose character changes with every season.
- Maintain the park’s grand-scale, expansive spaces and visually accentuate them with multi-level ornamental edge plantings to improve spatial definition and to provide a visual backdrop for grassy fields and open water. These include:

Central Fields	Aviation Field
Cricket Field	Art Hill
Grand Basin	Post-Dispatch Lake
Jefferson Lake	Bowl Lake

c. Views, Vista's and Focal Points

- Accentuate openings, vistas and visual corridors with unique plantings which display dramatic seasonal character or create a unique spatial experience by framing views, drawing the eye and possibly the park user into the space beyond.
- Place dramatic features (landscape elements, specimen trees, public art or architecture) at the ends of vistas or around the bend of landforms or vegetation to entice and reward landscape exploration.
- Place occasional surprise features, such as a natural spring, rock outcropping, public art, interpretive signage, or relic, in locations which reward landscape exploration and expand the learning experience of park use.
- Accentuate selective openings or clearings in closed mature forest settings where there is little or no regeneration taking place to allow for natural reforestation or to re-plant indigenous forest species. Increase



LEGEND

- PREDOMINANTLY INFORMAL FOREST OR WOODLAND AREA
- PREDOMINANTLY INFORMAL NATURALISTIC AREA
- PREDOMINANTLY INFORMAL LINEAR SPACES WITH CANOPY TREES AND OPEN GRASS
- PREDOMINANTLY INFORMAL LINEAR SPACES RELATING TO ADJACENT WATER FEATURES
- PREDOMINANTLY INFORMAL INTERSTITIAL TO SMALL SCALE WITH CANOPY TREES AND OPEN GRASS
- PREDOMINANTLY INFORMAL GROUND SCALE
- PREDOMINANTLY FORMAL INTERSTITIAL TO SMALL SCALE
- PREDOMINANTLY FORMAL GROUND SCALE

General Guidelines

- Provide balanced and diverse spatial character, scale and visual drama with a mix of:
 - Grand open spaces
 - Linear landscapes
 - Intimate landscape rooms
 - Formal vistas and open spaces
 - Woodland settings
 - Informal naturalistic open spaces
 - Specialty landscapes of evergreens, flowering trees, wildflowers, etc.
 - Landscapes whose character changes with every season.

Highlight seasonal color displays such as Spring flowers, Fall leaf color and Winter berry displays, bark color and evergreen plantings along all roadways and paths and in highly visible open spaces, woodland settings and hillsides.

Increase the use of flowering ornamentals and other specimen trees selected for unique aesthetic characteristics (fall color, bark character, etc.) throughout the park.

Increase evergreen plantings to emphasize park entrances, hilltops, ridges or other marquee sites, as green backdrop to flowering ornamentals and fall color, as winter windbreaks for park facilities, as visual/audible buffers and screen/emphasize. Increase evergreens in areas of high winter use.

Landscape Spatial Character

NOTE: Broad, zonal spatial character is highlighted on this map. This does not preclude variations at a more detailed, site specific level.

visual diversity and quality with flowering ornamentals, trees and other appropriate plantings indigenous to this forest setting.

d. Site Relationships

- Install plantings which are compatible with architecture and public art and accentuate their particular spatial qualities.
- Provide marquee plantings and landscape effects at the termini of city streets which end at the park's perimeter. Consider use of public art and site furnishings to accentuate this effect.

e. Disruptions to Existing Landscape Features

- Relocate or remove plantings which disrupt visual axes, hide important park elements or compromise the design intent of a particular space (i.e., plantings in the center of an historic meadow).
- Prohibit the use of trees for signage placement, utility lines, and fence posts.

f. Screening

- Install plantings which screen or soften the visual effect of rigid site elements, such as tennis courts, parking lots, utility boxes, and maintenance structures.
- Implement plantings which minimize the noise and negative visual impact of Highway 64/40 and other major roadways and transportation systems.

g. Park Entrances

- Create a variety of park entrance effects which reflect site context, park location, and associated plant composition.
- Avoid applying a single design "theme" for all entrances.
- Utilize entrance/welcoming signage, public art, and site furnishings as visual punctuation.
- Design the entrance's scale to fit mode of entry (automobile, pedestrian, bike, transit).

h. Seasonal Color

- Highlight seasonal color displays such as Spring flowers, Fall leaf color and Winter berry displays, bark color, and evergreen plantings along all roadways and paths and in highly visible open spaces, woodland settings, and hillsides.
- Punctuate certain park locations with a greater level of attention to seasonal color displays, including:
 - Government Drive - McKinley to Wells
 - Wells Drive - Skinker to Tamm
 - McKinley Drive - Wells to Theater
 - Faulkner Drive
 - Highway 64/40 and Forest Park Parkway
 - Concourse Lane - McKinley to Washington

- Washington Drive
- Lagoon Drive - Skinker to Fine Arts
- Fine Arts Drive
- Kingshighway edge
- Government Hill and Post-Dispatch Lake
- Art Hill and Grand Basin
- Bowl Lake
- Jefferson Lake
- Hatchery Lakes area
- Round Lake area
- The Union entrance wetland area
- Pagoda Lake and the hillsides around the Muny
- Aviation and Central Athletic Fields
- Kennedy Forest and the Successional Forest
- The Zoo grounds

i. Sensory Qualities

- Increase the use of pleasantly fragrant plantings, particularly near paths, seating areas and park facilities.
- Increase the use of plantings which provide audible qualities, such as trembling leaves, rattling conifer cones, and seed pods.
- Minimize closely-mowed grass along shorelines and islands which increase waterfowl usage and subsequently create odor from waterfowl feces.

5. Accent and Specialty Planting

a. General

- Utilize evergreen plantings:
 - To emphasize park entrances or other marquee sites.
 - To offer a green backdrop to flowering ornamentals and fall color.
 - To highlight public art.
 - As winter windbreaks for park facilities.
 - As visual/audible buffers and screens.
 - In areas of high winter use.
 - To emphasize hilltops and ridges.
 - For wildlife habitat.
- Utilize flowering ornamentals and other specimen trees selected for unique aesthetic characteristics (fall color, bark character):
 - To spatially define and accentuate large open spaces (both informal and formal), linear landscapes, pedestrian paths and promenades, dramatic roadway bends and vistas, water features, park entrances, and forest openings.
 - As unifying transitional elements and along paths, park roadways, Highway 64/40, Forest Park Parkway, and MetroLink.
 - As colorful punctuation to highly visible hillsides, valleys, or other open spaces and water features.
 - As dramatic settings for public art and architecture.
 - For wildlife food source.
 - Near seating and public gathering spaces.
- Provide flowering meadows (mixtures of native and cultivated flowers growing to a height of around three feet that offer spectacular landscape

color while needing little maintenance during the growing season) at unique points in the park, including:

- Along the Highway 40 corridor.
 - Roadway accesses to the park.
 - Open area between Parks Department's large dirt mound and the Hampton Road entrance.
 - Along the gentle slopes along the Forest Park Expressway.
 - Slope east of Bowl Lake.
 - Slopes west of the Muny Opera.
- Implement a more naturalistic vegetative design:
 - On the steep slope southwest of Post Dispatch Lake.
 - On the steep slope west of Faulkner Drive along Triple A.
 - Along lagoon banks east and west of Grand Basin, opposite and behind walkways.
 - On the islands of the lagoon system.
 - On the slope east of Bowl Lake (This area should also be considered as a potential flowering meadow).
 - On the slopes west of the Successional Forest.

b. Evergreen Trees

- The majority of the Park's evergreen trees (primarily coniferous evergreens/conifers) appears to be in the mature to over-mature age classes. Additionally, several stands of these have not been planted in ideal habitats. Therefore, many of the Park's evergreens are not only susceptible to disease, but are in fact suffering from fungal and nematode infestations. Because of these reasons, many of the stands of pines in Forest Park are in serious decline.

Guidelines

- Upgrade the Park's evergreen component by:
 - Increasing the vitality of the park's coniferous tree component (although over 20% of the trees surveyed in the park are conifers, a majority of these trees are in decline, suffering from pest damage.)
 - Locating future conifer plantings in favorable habitats. (Pines and many other conifers grow best on dry/well-drained, acid soils on slopes and ridge tops. Most species of conifers will survive and even thrive on rocky, south- or west-facing slopes where many other tree species would be stressed.)
 - When feasible, strive to plant conifers in groves to reduce maintenance, provide visual screens, furnish year round green vegetation for the park, and increase habitat for songbirds, such as pine siskins and evening grosbeaks
- Utilize plants from the following conifer species composition list in future landscape designs:
 - blue spruce
 - Carolina hemlock (shade to seem-shade w/ high soil moisture)
 - concolor white fir
 - Douglas fir (in semi-shade/not on south/west-facing slope)
 - Eastern hemlock (shade to semi-shade w/ high soil moisture)
 - Eastern red cedar (native to St. Louis) intermediate host of cedar apple rust
 - Norway spruce
 - red pine
 - Serbian spruce
 - shortleaf pine (native to region)
 - white pine

c. Flowering Crabapples

- Flowering crabapples provide a dramatic seasonal display rarely matched in the landscape but they do suffer from some treatable ailments which demand attention to maintain park-wide vitality. Cedar apple rust is a fungus that significantly impacts crabapples. Fungal spores from cedar trees can be transported to crabapples via the wind, insects, birds, and dirty pruning shears. Even if there were no cedars in the park, cedars in the surrounding neighborhoods are still a source of infection for crabapple trees in the park. Some of the newer varieties have a reduced susceptibility to this rust. However, most foresters recommend two or three fungicide applications per year to crabapples.

Guidelines

- Utilize plants from the following crabapple species composition list* in future landscape designs:
 - Adams crabapple
 - Centurion crabapple
 - Harvest Gold crabapple
 - Madonna crabapple (susceptible to fireblight)
 - Prairiefire crabapple
 - Professor Sprenger crabapple (availability may be limited)
 - Red Barron crabapple (severely susceptible to scab)
 - Red Jewel crabapple
 - Sentinel crabapple (moderately susceptible to scab and Japanese beetles)
 - Snowdrift (moderately susceptible to fireblight)
 - Spring Snow crabapple (susceptible to fireblight)
 - Sugar Tyme crabapple
 - Redbud crabapple (moderately susceptible to fireblight)
- *There are hundreds of crabapple varieties and cultivars which display a multitude of colors, form, texture, size and climatic tolerance. This list selects a small cross sections of desirable varieties and should not preclude the selection of other suitable varieties as they become available.*

d. Flowering Meadows

- Flowering meadows are mixtures of native and cultivated flowers growing to a height of around 3 feet that offer spectacular landscape color while needing little maintenance during the growing season. Whereas the composition of annuals and perennials can vary widely, annual meadows require less maintenance and are more reliable to give continual color throughout the growing season. To maximize color show, annual meadows should be replanted every year. Because color schemes can be tailored to meet different themes each year and seed availability can vary, no species composition will be listed. Flowering meadows require full sun and do not do well in shaded or semi-shaded environments. Proper site preparation can greatly influence the success of this type of landscape.

Guidelines

- Adhere to the following guidelines when planning flowering meadows:
 - Emphasize planting of natives and cultivated flowers which have a long flowering period.
 - Select flower species that have a high aesthetic appeal (large petals decorative foliage, etc.).

- Ensure proper site preparation and elimination of opportunistic weeds such as fescue 31, plantain, dandelions, and crab grass to ensure establishment of flowering meadows.
- Plant annuals every year to maximize the intensity of flowering meadows.
- Avoid selecting plant species that are characteristically aggressive (spread rapidly by root suckers).
- Increase the park biodiversity to reduce the chances for natural catastrophes caused by insects and diseases.
- Select flowers that are good nectar sources (have the most desirable physical characteristics for butterflies and hummingbirds).
- Utilize woody plants rather for stabilization of steep slopes because of deeper root systems.
- Mowed the meadow at a high level during winter dormancy to increase aesthetics.

6. Public Use and Safety

- Use plant material in a way that will not adversely affect park functions.
- Locate armed (thorns, etc.) or mildly toxic plantings away from high use public areas where they can be viewed but not easily accessed.
- Avoid highly toxic plantings.
- Discourage criminal activity by choosing and arranging plantings to minimize areas for hiding:
 - Situate densely planted areas away from paths and seating areas.
 - Utilize multi-stem “clump” varieties of ornamental trees instead of densely planted shrubs to create a more naturalistic wooded effect rather than visually impenetrable banks of vegetation.
 - Consider subtle landscape lighting of naturalistic areas along pathways.

7. Wildlife Habitats

- Design and locate specific vegetative communities throughout the park which provide all season habitat, cover and food for desired park wildlife and furnish vegetated linkages or corridors between these communities.
- Implement measures to control terrestrial, aerial and aquatic nuisance wildlife.
- Maintain some dead trees and down dead wood to provide wildlife habitat, considering the issue of public safety and landscape context when determining location.

8. Reforestation

- Estimates for how many new trees the Park could reasonably accommodate range from 5,000 to 10,000 according to various urban foresters. The master plan proposes a middle number of 7,500 trees.
- Provide an additional maintenance crew of four people to maintain additional trees due to reforestation.
- Implement selected thinning of existing tree species and increase biodiversity by planting other native tree species in the Successional Forest.
- Begin moving and watering trees which will be relocated due to the Plan’s proposals, such as the new golf holes along Grand Drive.
- Update the existing tree survey and periodically update new tree plantings and dead tree removals.

9. Maintenance

- Implement design measures to make landscapes more cost effective:
 - Avoid monoculture or the repeated planting of single species to reduce the impact of mass die-off of a single species from disease (i.e. American Elm streetscapes lost to Dutch Elm Disease) or climatic reasons (Bradford Pears lost to ice and wind damage).

- Utilize multiple species with a common character (i.e. height, branching, form, color, etc.) to achieve the same visual effect with a more limited risk of mass die-off.
 - Introduce new species which do not compromise existing aesthetic effects when retrofitting an existing diseased or declining single species landscape.
 - Replace trees lost to disease or decline with an identical planting if no other species can accomplish the existing visual effect.
 - Establish a maintenance/replacement endowment to cover the long-term, high maintenance costs associated with frequent replacement.
 - Back the formal row(s) of trees or ornamentals with clusters of informal trees to avoid the “missing tooth” in a highly regular row of trees due to the death of single or spotted trees.
- Maintain accurate records and monitor chemicals used in the park, in particular on the golf courses, that could adversely affect the water system and overall park environmental quality.

Update the current Parks Department maintenance manual according to the following guidelines:

- Anything is possible regarding grounds maintenance. Any effect and quality can be obtained for any area of Forest Park even if the area is already planned, designed, and installed. The long term presentation and evolution of the landscape of Forest Park will depend on the annual and daily decisions made by grounds maintenance personnel. The grounds maintenance manual is a necessary document for those personnel to reference in order to plan and execute the work needed to improve and maintain the park’s conditions. It must provide general goals for the various areas of the park’s landscape and detailed information on the whos, whats, whens, wheres and hows necessary to meet those goals. In short it should be a general reference tool for all grounds maintenance staff.
- As it now exists, the current manual provides very general, dated guidelines on grounds management and needs to be completely overhauled to make it consistent with contemporary horticultural and grounds maintenance practices. The complicated setting for which the manual is written actually requires a much more in-depth, detailed treatment of the subject in order for the manual to be an effective tool for landscape maintenance personnel.
- Accomplish the following goals prior to writing a new detailed maintenance manual for Forest Park:
 - Select shrubs and trees from the approved species lists outlined in this document, which favor native species over cultivated species due to better climatic adaptation less required maintenance.
 - Provide proper care for shrubs and trees prior to planting and ensure that they are correctly planted (physically in the ground).
 - The planted shrubs and trees must be located in the proper habitat.
 - The maintenance staff should be properly trained to carry out maintenance procedures, have the necessary equipment, and have been assigned enough time to do the procedure correctly.

Specific recommendations for the development of a new grounds maintenance manual are as listed below:

- Include a section in the manual that briefly defines the overall plan for the landscape.
- Add a section on record keeping to document planning decisions, what works and what does not, pesticide applications, and other routine operations functions.
- Provide a section on job descriptions, qualifications and training to insure that staff performing grounds maintenance meets a minimum standard and level of competency to perform their assigned tasks.
- Provide a section to outline minimum equipment operations and maintenance standards and policies. Basically information pertains to what equipment can be used and by who (minimum training needed by staff before they can use any particular equipment). It also should address minimum maintenance intervals and persons responsible. Equipment operation instructions should be copied and placed in this section.
- Provide a section on safety and emergency policy and procedures. The guidelines should provide information on what to do and document in the event of an accident or pesticide spill. Minimum safety equipment and precautions for all situations also should be provided. This section should include material safety data sheets for all chemical products used.
- Reorganize the manual by vegetative cover type or communities. Some possible examples include annual and perennial beds, turf, forest, woody vegetation, natural vegetation, and flowering meadows. Address the specific landscape maintenance functions, such as watering, pruning, and fertilizing under each vegetative area. This type of presentation will be easier to use since all information on a vegetative community will be in one section of the manual.
- Clearly define each land use area or vegetative community in Forest Park in terms of characteristics as they pertain to overall vegetation and use objectives for that area. This will provide a framework for sound planning decisions.
- Include a section on the basics of pesticide and fertilizer usage. The principles of Integrated Pest Management should be outlined and encouraged in this section. (Specific needs for pest management should be addressed under each set of vegetative community guidelines.) This section should include tables for proper pesticide and fertilizer applications. Examples include, but are not limited to: conversion tables from pounds to ounces or other units of measure, wet to dry units of measure, formulas for calculating sizes of areas, and coverage rates of topsoil and various mulches. This section should include current copies of commonly used pesticides and other products.
- Application guidelines in the section on pesticide and fertilizers should clearly define appropriate timing with respect to season and weather conditions. Specifically, there should be statements to discourage applications on windy days and when rain is expected within 24-48 hours. All products or chemicals that require “watering in” should be done by controlled watering or irrigation at a rate that will not cause runoff. Rainfall never should be relied on to “water-in” fertilizers or pesticides, since there is no control over the amount or rate of water delivery in a natural event. This should be briefly repeated in each section discussing specific vegetative communities.
- Drop all blanket fertility, lime, and pesticide recommendations. These recommendations should be made based on soil tests and noted pest problems in relation to the plant community. A

- professional arborist or horticulture specialist should be consulted for these recommendations.
- Each vegetative community subsection should address the specific needs of each area. At a minimum, each section should address soil conditions and amendments, fertility, planting and seeding rates to replace damaged or lost vegetation (for what the grounds maintenance personnel may have responsibility for doing if not contracted out), pest control and watering. Other maintenance functions may need to be described as well depending on specific cultural requirements of each community.

Regarding annual and perennial beds:

- Include sections on soil conditions and amendments, fertilizing, planting and seeding, watering, and controlling pest.
- Include soil guidelines for obtaining a fertile, friable loam or silt loam soil. Organic amendments should specify the types acceptable, source, and degree to which it is free of pest problems. Inert amendments, like sand, perlite, and Turface should be of sufficient quantity to improve soil properties. The minimum volume of these amendments should be the same as the volume of soil to be worked when plenty of organic matter is added as well.
- Provide adequate planting instructions and tables to allow for annual plantings or reliable replacement of vegetation if necessary.
- Add a guideline specifically outlining that fertility and pH adjustments be made based on a reliable, composite soil test done by a professional horticulture specialist or soil scientist. Lime or sulfur rates to adjust soil pH should be made on soil test and needs of the particular plants in the bedding area. Specific recommendations should be calculated using target pH and cation exchange capacity. This should be done by a professional horticulturist. Generalized tables should be avoided.
- Make all fertilizer and lime or sulfur recommendations in pounds per 100 square feet. Recommendations for applications of nitrogen and/or complete fertilizers for minor increases in cultural intensity should be determined by a certified horticulture specialist and not generalized.
- Include watering guidelines that promote water conservation. Water requirements will be determined by cultural intensity and weather conditions. Generally, the standard rule of one inch of water per week will be sufficient except in the hottest, driest period of summer. Guidelines for additional water needs should be based on anticipated stress and visual quality requirements, not necessarily any prescribed time interval. Maximum water application, generally, should not exceed 1.5 inches per week, but may be done as split applications. All irrigation water should be applied at rates comparable to the soil percolation rate (0.2-0.6 inches per hour) and applied anytime of day except evening. Irrigation systems should be flexible in timing and application to allow for manual overrides. Irrigation systems should be set to water only the bedding areas and not walks, roads, parking lots or other paved surfaces.
- Center all pesticide guidelines on Integrated Pest Management (IPM). Pesticides should only be used as a last resort when cultural practices fail to deliver the desired result. The actual pesticide used should be determined by a professional horticulturist and a licensed pesticide applicator. Guidelines for selection should include identifying the target pest, plant

community to be protected, and environmentally sensitive issues and taking the appropriate safeguards to insure environmental integrity.

Regarding turf areas:

- Include sections on soil conditions and amendments, mowing, planting and seeding, fertilizing, watering, aerating, controlling thatch, and controlling pests.
- Divide turf areas into two management levels; low and high. Low maintenance areas are adjacent to forested areas and removed areas (away from institutional features). High maintenance areas include entrance ways, areas immediately adjacent to the cultural institutions, and athletic fields. Golf course turf management should be left to the golf course superintendent or head greens-keeper.
- Include soil guidelines to meet the needs of the turf area in question. Greens, tee boxes, and fairways have special requirements different from regular turf areas. Soil modifications for the golf courses should be made by a professional golf course architect or greens-keeper. Amendments for most turf areas in Forest Park will not be required, except for special high traffic areas. Each of these areas should be planned separately by a professional horticultural or turf specialist. Amendments for high traffic areas must resist compaction. These amendments should consist of a medium to coarse angular material (sand, Turface or similar material) and make up at least 65-70% or more of the resulting soil mix.
- Seedbeds for turf areas should be similar to those used for other planted areas (worked 6 inches deep to make firm, friable soil). Amendments are not usually practicable, but the topsoil should be re-spread over a newly graded area. Topsoil added to a compacted subsoil should have half the topsoil layer incorporated into the subsoil to create a transition zone between layers. Seed bed preparation is not required if the topsoil is present and the area is to be slit seeded into the existing, dead vegetation.
- Include planting specifications to permit seed and sod to be used as appropriate for the needs of a given area. Seeding rates should depend on grass species and desired level of cultural intensity. Mixes and blends should be developed to broaden turf pest resistance and provide for a durable, uniform turf. Sod, if used, should be uniform and in good condition, free of environmental and pest related stresses. No disease or weed problems should be apparent. Specific seed and/or sod guidelines for the various areas should be developed by a professional horticulturist or turf specialist.
- Include mowing guidelines that are based on management objectives and reflect low and high maintenance regimes. No more than one third of the leaf blade should be removed in a single mowing operation. Cool season grasses should not be mowed shorter than two inches in any season and summer mowing should be 3.5-4 inches in summer. (High maintenance areas can be three inches if appropriate adjustments are made in the watering regime.) Shady areas should never be cut shorter than three inches. Warm season grasses should be mowed according to maintenance objective, but generally one inch on average. Taller mowing should be done in the fall for better winter hardiness. More specific needs and guidelines should be developed by a professional horticulture or turf specialist.

- Develop fertilization guidelines based on planned maintenance level, turf species and soil test results. Sampling and lab analysis should be done by a professional horticulturist or soil scientist. Fertilizer recommendations should be expressed as a rate in pounds per 1000 square feet. Adjustments to pH, lime or sulfur, should only be applied according to soil test results and by an appropriate professional to meet the objectives of the turf area. Soil sampling and testing should be set at four-year intervals.
- Routine fertilizer application schedules in common practice in the turf industry should first consider soil tests and management levels for each turf area. Low maintenance turf should have fertilizer applications twice in the fall with no spring applications (cool season grass) and twice in the summer (warm season grass). High maintenance turf should be fed no more the three times in the fall and once in mid- to late-spring (cool season grass) and three or four times during late spring through summer (warm season grass). Each application should not exceed one pound of nitrogen per 1000 square feet. Specific timing should be determined by a horticulture specialist and in accordance with weather conditions.
- Watering specifications should be based on low or high management regime. The basic rule of one inch of rainfall per week will be sufficient for the low maintenance and many high maintenance areas. There will be some areas that additional water applications may be appropriate. The guidelines on timing and amounts should be determined by a professional based the site, turf species, weather conditions, and use of the area.
- Include watering guidelines that promote water conservation. All irrigation water should be applied at rates comparable to the soil percolation rate (0.2-0.6 inches per hour) and applied anytime of day except evening. Irrigation systems should be flexible in timing and application to allow for manual overrides. Irrigation systems should be set to water only the turf areas and not walks, roads, parking lots, or other paved surfaces.
- Aeration specifications should determine the depth, method, and frequency. General aeration should be four to six inches deep and done by a method that removes soil such as coring. Frequency should be determined by traffic and amount of compaction. General low maintenance areas may not need aeration or possibly once every two or three years. High maintenance areas may be aerated annually to several times a year. Timing should be based on the type of grass. Cool season grasses should be done in the fall and warm season grasses should be done in the spring. Other times and other specifics involving aeration should be determined by a professional horticulturist.
- Include thatch control guidelines that maintain not more than a half inch of thatch accumulation. Methods of removal and timing should be included in these specifications. Thatch removal operations or maintenance operations (aeration) should be done in the fall (cool season grasses) and spring (warm season grasses).
- Center all pesticide guidelines on Integrated Pest Management (IPM). Pesticides should be used only as a last resort when cultural practices fail to deliver the desired result. The actual pesticide used should be determined by a professional horticulturist and a licensed pesticide applicator. Guidelines for selection should include identifying the target pest, plant community to be protected, and environmentally sensitive issues

and taking the appropriate safeguards to insure environmental integrity.

- Pesticide applications should be avoided for all pond and lagoon shorelines. More appropriate vegetation should be established along pond and lagoon shorelines to avoid the need to use herbicides in these locations. Plants should be selected from the approved plant materials list in the Forest Park Master Plan and be compatible with the vegetative community around the shoreline area.
- All general, routine pesticide application schedules should be avoided. Only need based applications should be done and only if cultural methods become inadequate.
- Map all Park landscapes by the level and type of maintenance that is required, including irrigation, special management practices (flooding/burning)
- Provide educational signage and extensive public notice in advance of any experimental or modified maintenance practices such as long grass meadows, etc.

Regarding watering of shrubs and trees:

- Newly planted trees need more watering than established trees; however, this is dependent upon species, location, soils, weather, etc. The first year is the most important.
- Although the general guideline of insuring 1" of water during a 7-day period can be used as standard for established woody vegetation (generally over 3 years old), the best rule of thumb is to maintain adequate field moisture around the plant. The soil around the shrubs and trees should be physically checked to maintain moisture in the upper 8-10 inches of soil where the majority of roots/rootlets are located.
- Balled & burlapped (B&B) planted stock should be watered for longer times to help insure deep penetration of the water to the entire root ball. Delivery rate should not exceed soil percolation rate (2/10 to 6/10 of an inch per hour).
- Container-planted stock should be watered more lightly and more frequently than B&B stock because the medium that originally surrounded the roots tends to dry out more quickly than the soil surrounding the B&B plants.
- Plants need adequate field moisture year round. The statement in the present maintenance manual that decreasing the amount of water in early fall will enrich fall color is incorrect.

Regarding fertilizing and maintaining optimal pH for shrubs and trees:

- In areas where the turf and trees are interspersed, if the turf is fertilized, the trees end up being fertilized as well.
- Some species do not require any fertilization. Native species generally do not need as much fertilization as cultivars; however, this is dependent upon species, location, soils, weather, etc.
- The need for fertilization should be determined by a professionally conducted/analyzed soil test.
- If fertilization is deemed necessary, use these guidelines:
 - Shallow broadcasting is preferred over deep feeding.
 - Split application is preferred over once-a-year.
 - A professional arborist (or horticultural specialist) should develop the rate of application, the NPK ratios, etc.
- Compost/mulch around any/all trees. This mimics natural forest conditions.

- Different species have different optimal pH ranges. The statement in the present maintenance manual that conifers prefer a neutral pH is incorrect. Conifers typically prefer an acidic soil. Elemental sulfur or iron sulfate should be applied if soil needs increased acidity. (Read label directions for toxicity risk.)

Regarding pruning and shaping of shrubs and trees:

- Avoid the broad, "cookbook" generalizations contained in the present maintenance manual (i.e. "deep wounds or pruning cuts of one inch or greater should be dressed with tree paint or orange shellac"). A professional arborist should develop a separate pruning plan for different woody species living under different conditions on various sites.

Regarding pesticides:

- Natives tend to need less spraying of pesticides than cultivars. Again, professional arborists/certified pesticide applicator should assess need, develop application rates and schedule times according to the latest information about Integrated Pest Management (IPM). IPM involves blending many approaches, including natural controls which generally have less impact on natural systems. Proposed crabapple groves will require fungicide spraying at least twice a year.

Regarding flowering meadows:

- These areas should be off-limits to regular mowing. However, to better define this feature, the turf surrounding the meadow should be consistently mowed with smooth, flowing edges (not straight-edged borders) to accentuate its meadow character.
- To increase aesthetics, the meadow should be mowed at a high height level during the late fall or early winter.

E. Site Specific Recommendations

ART HILL/GRAND BASIN AREA

- Provide ornamental tree plantings and paths at the east and west sides of the hill to spatially define this grand scale formal space and frame the dramatic views up the hill to the Art Museum and down towards Grand Basin.
- Mow the grassy hill in a way that creates horizontal light and dark green bands when viewed from Grand Basin.
- Create spaces to the east and west of the hill which are more informal in character and relate to the lagoons, and consider utilizing seasonal wildflowers and/or other showy ground cover in these informal areas.
- Configure landscaping to frame the Cass Gilbert Art Museum building when viewed from Grand Basin or the base of the hill.
- Provide sweeping pedestrian promenades at the hill crest which terminate at scenic overlooks near the existing circular parking areas.
- Surround the promenade and overlooks with flowering ornamental, canopy and evergreen trees, ornamental lighting, benches and possibly public art and/or historically informational interpretive material relating to the 1904 World's Fair.
- Provide major evergreen and upland forest plantings which relate to the area's winter use and give the impression of a change of vegetation as one moves higher in elevation from the bottomlands to the uplands.
- Flank the basin and accentuate its grand pedestrian avenues with formal rows of lighting and flowering ornamental trees, backed by canopy trees which relate to surrounding landscapes.
- Utilize trees with a high branching pattern to provide head clearance for pedestrian circulation.
- Improve the areas immediately adjacent to the basin for picnics, special events and other public passive recreation.
- Create an informal open meadow west of the basin with views to Grand Basin, Art Hill, Bates Monument and surrounding landscapes.
- Provide more naturalistic plantings in appropriate areas of adjacent lagoons.

POST-DISPATCH LAKE AREA

- Utilize plantings, public art, and site furnishings in ways to focus the eye on the dramatic seasonal color, historic axes and architecture, and water reflections.
- Maintain the lake's unpaved edges on the north side of the lake and provide a paved, 15'-wide pedestrian promenade, "The Promenade," with a stratified stone wall along the south side, linking Grand Basin with the boathouse.
- Emphasize "The Promenade" with flowering ornamental trees, utilizing trees with a high branching pattern to provide head clearance for pedestrian circulation.
- Create a dramatic pedestrian plaza with terraced water edge seating, flowering ornamental trees, and decorative site furnishings at the terminus of Government Hill, across from the fountain area.
- Create a naturalistic vegetative effect on the small islands in the southwest corner of the lake, utilizing ornamental mid- and understory plantings and diverse shoreline plantings.

CENTRAL ISTHMUS/THE CLEARING

- Accentuate the central isthmus between Post-Dispatch Lake and River Des Peres Lagoon with edge plantings of canopy trees, flowering, mid-size ornamentals and mid/understory vegetation, located to highlight the

sweeping linear landscape and create intrigue with open spaces which appear to vanish around the bend of water or vegetation.

- Locate an open, circular grassy clearing or room, “The Clearing,” surrounded by canopy trees and select ornamental mid-story trees, with a large circular stone seating or “Council Ring” (approx. 40’ diameter) in the center to serve as a terminus to surrounding axes and a node of destination within the central isthmus.

GOVERNMENT HILL

- Supplement the existing mature evergreen plantings along the east and west sides of the hill with additional evergreen plantings fronted by flowering ornamental trees and shrubs.
- Restore this historic landscape with ornamental plantings, repaired pavement and stairs, seating and lighting.
- Restore some of the formal floral displays which once adorned the hillside.
- Accentuate and spatially define small sub-spaces or rooms to the east and west of the central hill and consider placement of public art and other small scale site furnishings in these locations.

CASCADES

- Install lush understory plantings suitable for this moist, north-facing shady slope.

SPILLWAYS AREA

- Enhance the naturalistic cascading character with emergent vegetation and additional stone outcroppings which replace existing industrial appearing spillways.
- Provide naturalistic shoreline plantings which improve water quality, aesthetics and provide wildlife habitat.

THE ISLAND

- Create an informal woodland and island area once Post-Dispatch Lake is restored and enlarged.
- Provide dramatic water edge plantings while maintaining an open grassy central portion for public use and visual corridor.

PAGODA LAKE AREA

- Provide additional lagoon system connecting through Pagoda Lake and Angel Pond to Deer Lake.
- Maintain small water bodies adjacent to both sides of the Muny and maintain flow through the existing tunnel beneath the theater to ensure moisture for area trees.
- Install formal decorative plantings of canopy trees, conifers, flowering ornamentals, ground covers, and perennial plantings along with appropriate site furnishings.
- Utilize plantings and site furnishings to accentuate visual axes from adjacent roads, paths, Twin Lots, and between area public art.
- Increase water movement and filtration around Pagoda Lake and Angel Pond to improve water quality.
- Install dramatic seasonal plantings on the bandstand island.
- Install two new bridges in the Angel Pond and Deer Lake area.
- Install a bridge, either permanent or event based, to allow island access.

UNION ENTRANCE AREA

- Create a unique entrance landscape in this highly visible location with a wetland or wet meadow which displays dramatic seasonal variations of color and texture.

- Accentuate this wetland with scattered canopy and flowering ornamental trees.

FISH HATCHERIES AREA

- Accentuate the existing informal landscape character around the reconfigured lakes.
- Provide plantings that frame some views from Forest Park Parkway and MetroLink while buffering noise and negative views from the lake area in areas closest to the roadway.
- Provide informal shoreline plantings along the lagoon as it runs through this area, accentuating the grassy isthmus which is created between the lagoon and the hatchery lakes.

ROUND LAKE AREA

- Accentuate the existing semi-circular planting of bald cypress trees which surround the east side of the circular lake with similar plantings to the west, adding an additional layer of flowering ornamental trees.
- Redesign the existing lagoon to mirror the shape of Round Lake and the plantings to its west.
- Re-align the path to take users from a constricted tree lined setting south of the lake to the dramatic, open views of Round Lake and its fountain as one travels north from Steinberg Rink.
- Accentuate views from automobiles using Grand Drive, framing views with vegetation.

STEINBERG RINK AREA

- Design the area's landscape with predominantly mid-size ornamental trees which display a more horizontal character which relates to surrounding landscape character and Steinberg Rink architecture.
- Create the effect of a "Prairie River" in this portion of the water system, providing some wetlands/wet meadows which can be allowed to fill in times of peak rainfall and control water levels and erosion elsewhere in the park while providing a unique and ecologically sound landscape.
- Consider creating nature trails/boardwalks through these sensitive landscapes.

JEFFERSON LAKE AREA

- Create a crabapple grove along the highly visible grass embankment along the east side of Jefferson Lake.
- Create a dramatic cascading water input at the south end of the lake, utilizing water from Bowl Lake and enhance this feature with lush, cascading vegetation, and accentuate this highly visible feature.
- Extend the naturalistic, successional landscape character currently present along the eastern edge of Triple A to the west side of the lake.

BOWL LAKE AREA

- Create a unique, naturalistic and intimate landscape setting for Bowl Lake and its environs.
- Create a crabapple grove along the highly visible east embankment of Bowl Lake, accentuating this with spot masses of evergreen plantings and flowering meadow ground treatments.
- Create an earthen berm at the southern end of the lake along the Highway 64/40, with evergreen and flowering ornamentals to visually define the space, screen undesirable views of traffic and dilute extensive Highway 64/40 noise.
- Create a unique water outfall at the north end of the lake where water will vanish from the lake and be piped to Jefferson Lake.
- Accentuate the Seven Pools area with appropriate understory plantings and pedestrian path access.

- Restore the existing stone bridge.
- Accentuate the plantings near the south end of the lake which obscure the terminus of the lake, making it appear much larger than it really is.
- Provide naturalistic shoreline plantings to improve water quality while improving aesthetics and wildlife habitat.

KENNEDY FOREST

- Install native canopy, mid/understory and ground cover plantings and other site improvements which improve the Forest's ecological and aesthetic quality while allowing safe recreation and educational use.
- Support MODOC's plans to provide vegetative management and nature trail operation and supervision.
- Install plantings along area roads and Highway 64/40 which reduce the visual and audible impact on park users while providing dramatic visual effects for passing motorists.
- Implement naturalistic plantings along the area's intermittent tributaries which provide erosion control and sediment filtration measures to improve the park's water quality.

OAKLAND EDGE: HAMPTON TO SKINKER

- Consider allowing the wooded slope west of Tamm to revegetate or re-establish understory vegetation to reduce soil erosion.

SUCCESSIONAL FOREST

- Improve ecological and aesthetic quality while allowing safe recreation and educational use.
- Provide native canopy, mid/understory and ground cover plantings.
- Implement naturalistic, erosion controlling plantings along intermittent tributaries.

LANGENBERG FIELD

- Provide plantings of extensive mid-size ornamental trees to accentuate this linear landscape and to surround the athletic fields.
- Screen the Dwight Davis fence line in a more natural, meandering fashion.
- Provide naturalistic shoreline plantings to improve water quality while improving aesthetics and wildlife habitat.
- Provide wetlands area to improve water quality.

AVIATION FIELD

- Install formal perimeter plantings with regularly spaced shade trees and mid/understory plantings or flowering ornamentals to minimize the visual impact of backstops and dirt infields and diffuse some traffic noise while framing grand scale, expansive open green space.
- Replace missing trees from the existing highly regular plantings.

CENTRAL FIELDS

- Install informal perimeter plantings with shade trees and mid/understory plantings of flowering ornamentals to minimize visual impact of backstops and dirt infields while framing grand scale, expansive open green space.
- Improve the quality of the adjacent braided stream tributary with naturalistic edge plantings and occasional rock outcroppings, restoring existing bridges and culverts.

MUNICIPAL GOLF COURSES

- Provide water bodies and wetlands to improve drainage, golf course quality, and area aesthetics.

- Redesign the bottomlands significantly, creating unique new holes and landscape character which aesthetically relates to surrounding topography and water features.
- Provide a landscape terminus to the Art Hill/Grand Basin visual axis.
- Increase the use of evergreen plantings to accentuate uplands and hillsides and to provide visual interest to winter recreaters.
- Utilize plantings which discourage random pedestrian access to the golf course.
- Manage the grounds to minimize potential pollutants from entering the Park's water system.
- Consider increased use of naturalized plantings where appropriate to reduce maintenance costs and soil loss and to filter potential pollutants before water runoff from the courses enters the water system.
- Maintain accurate records and monitor chemicals used on the golf courses, that could adversely affect the water system and overall park environmental quality.

TRIPLE A CLUB

- Accentuate the area's valleys and uplands with upland and bottom land species trees and shrubs which display dramatic seasonal color while reducing erosion and water "downcutting" in valleys.
- Improve the edge plantings by replacing the existing barberry hedge with more appropriate, multi-level plantings of low shrubs, flowering ornamental midstory trees and canopy trees which accentuate the Clayton Road streetscape.
- Utilize plantings which discourage random pedestrian access to the golf course.
- Increase the use of evergreen plantings to accentuate uplands and hillsides and to provide visual interest to winter recreaters.
- Manage grounds to minimize potential pollutants from entering the Park's water system.
- Maintain accurate records and monitor chemicals used on the course that could adversely affect the water system and overall park environmental quality.
- Consider utilizing naturalized plantings where appropriate to reduce maintenance costs and soil loss and to filter potential pollutants before water runoff from the course enters the water system.

LINDELL EDGE: DEBALIVIERE TO UNION

- Redesign plantings around the Daughters of the Confederacy monument to frame views and provide visual linkages with surrounding landscapes, roads and paths.
- Create an overlook plateau around the Daughters of the Confederacy monument which sits in the center of a dramatic linear landscape paralleling Lindell Boulevard from the History Museum to Cabanne House.
- Utilize extensive mid-size ornamental trees which display a more horizontal character.

LINDELL EDGE: SKINKER TO DEBALIVIERE

- Maintain the existing alée of trees along Lindell, replacing missing trees where necessary.

KINGSHIGHWAY EDGE

- Restore and upright the existing alée of trees along Kingshighway, adding an additional row of flowering ornamentals to the sidewalk edge and medians to improve the aesthetics and perceived safety of the entire Kingshighway length along the eastern park edge.

- Create landscaped termini to street parking areas at major intersections and pedestrian crossings to achieve improved aesthetics, unique entrance character.
- Improve landscaping and the overall spatial character of the triangle plaza at Lindell and Kingshighway as a major pedestrian entry experience.
- Provide dramatic flowering ornamental plantings which accentuate the sweeping, curvilinear paths which link the new Children's Place pedestrian plaza with Steinberg Rink.
- Provide flowering ornamental and seasonal perennial/annual flowering displays in the plaza itself.

IV. ACTIVE SPACE SYSTEM

A. Overview

B. Summary of Existing Conditions

C. Design Principle

D. Design Recommendations

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2. Athletic Fields and Facilities
3. Golf Courses
4. Path System

E. Site Specific Recommendations

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DESIGN

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Primary Fall Active Recreation Areas
Primary Winter Active Recreation Areas
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Golf Related Land Use Implications
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Golf Scheme - Option B
Composite Path System

A. Overview

A significant amount of Forest Park's land is dedicated to active recreation uses. The largest single uses include the Municipal and Triple A golf courses, ballfields at Central and Aviation Fields, and rugby fields at Langenberg Field. The amount of the park dedicated to these uses appears to be appropriate given the demand by park users. At the same time, however, better use could be made of these spaces by reconfiguring and reprogramming certain areas to increase the number of multi-use active spaces and support facilities.

Attention also needs to be given to resolving the numerous conflicts that exist between active space and other park uses. This is most noticeable in the Art Hill/Grand Basin area, where five existing golf holes conflict with the desire to recreate a formal, passive use space throughout this area. Several redesigns of the Municipal Golf Course have been proposed to eliminate this conflict. A final decision will be made through ongoing discussions between the Forest Park Advisory Board and interested groups.

B. Summary of Existing Conditions

The park's recreational programming is devoted primarily to spring, summer, and fall activities. There currently exists little, if any, programming or support facilities for winter active recreation with the exception of Steinberg Skating Rink.

The park's athletic facilities are not necessarily designed and programmed for use by the greatest number of park visitors. Few of the facilities are lighted for evening use, even though the majority of ballfield demand is for weekday evening hours. There are also few areas of unprogrammed active recreation space in the park where a user can gain access to a field for the day without a permit on a first come, first served basis. The majority of the park's ballfields are permitted for daytime weekend use, but have been observed over a two-year period to go unused by those permit holders most of the time.

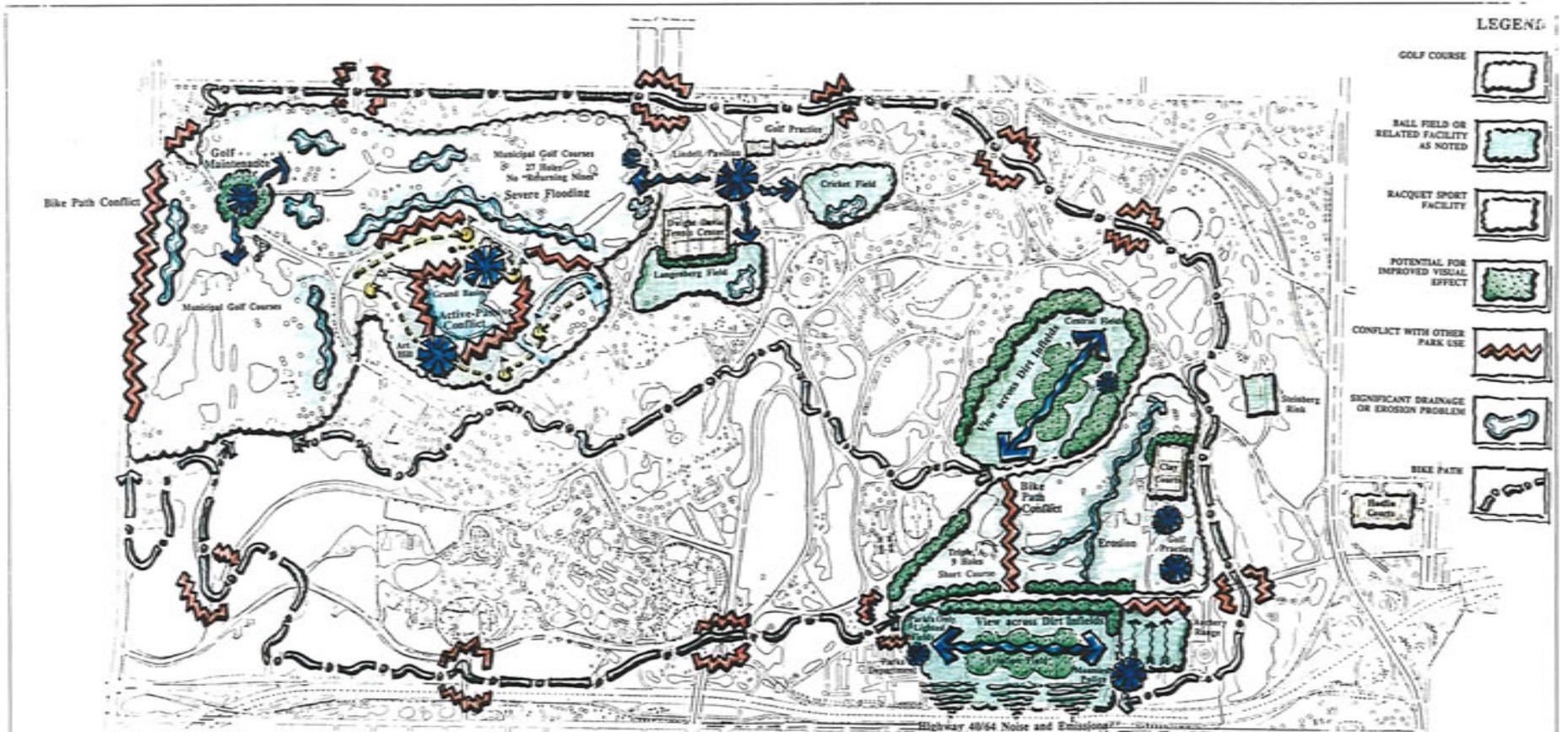
Current ballfield designs provide little benefit in terms of operational flexibility, environmental quality, participant and viewer comfort/convenience, and aesthetic character.

- Backstops and dirt infields break up visual and environmental continuity.
- Fields are not oriented to utilize existing sloped edges and shade trees for viewing areas.
- Backstops down the center of fields limit flexible programming.



*This map is not intended to illustrate the precise location and boundaries of features but rather to highlight the general characteristics of the system.

ANALYSIS DIAGRAM
Existing Active Space System



*This map is not intended to illustrate the precise location and boundaries of features but rather to highlight the general characteristics of the system.
 *Analysis by Douglas Frank 1995

GENERAL OBSERVATIONS

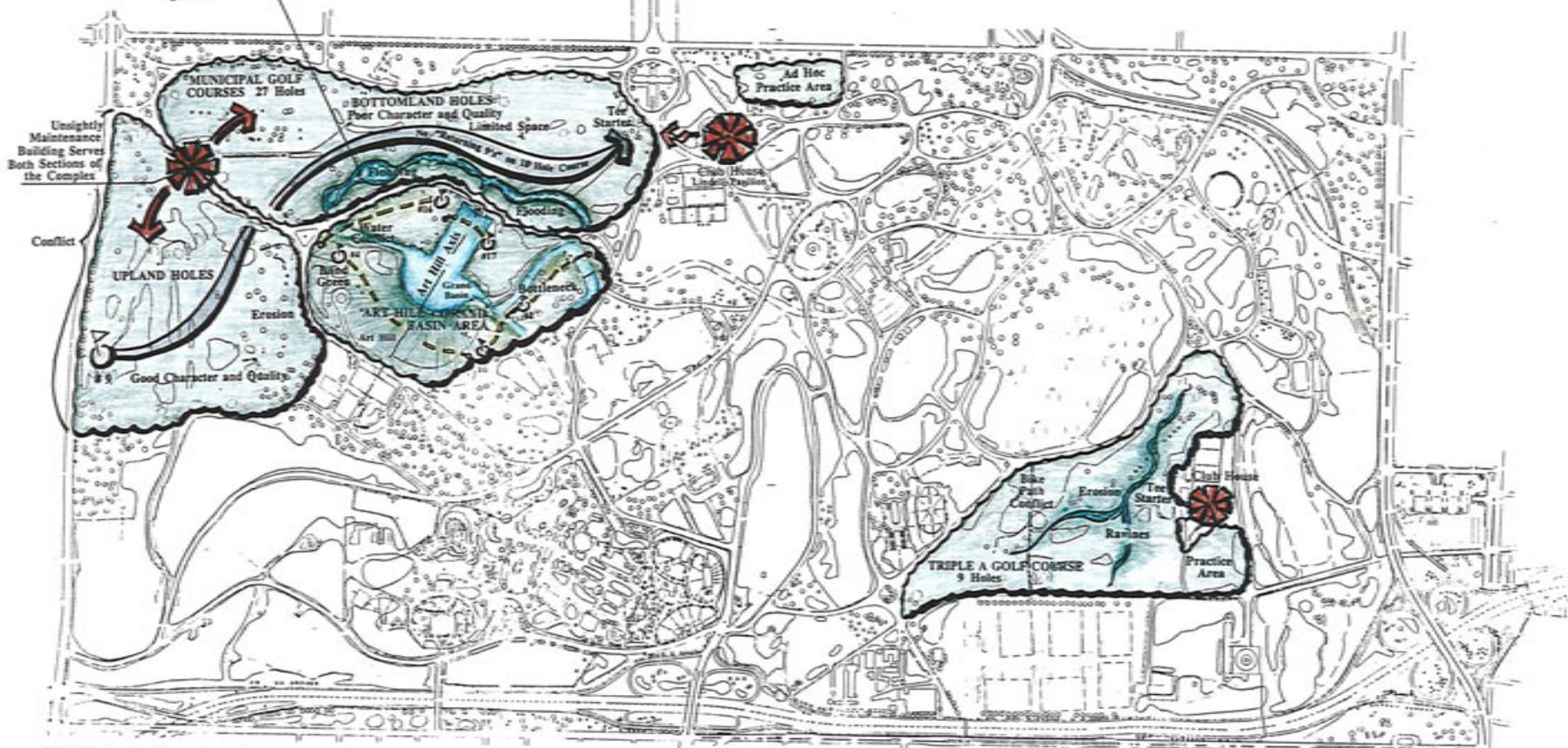
- There are numerous conflicts between active space and other park uses.
- Severe ponding and erosion occurs on many active spaces.
- Utility covers, fire hydrants and sewer inlets are detrimental to safety in many areas.
- There is an opportunity to increase the number of multi-use active spaces and support facilities.
- Several facilities lack adequate access.
- There is an opportunity to improve the visual effect, safety and programming efficiency in some active spaces.
- Some active spaces and support facilities are near, but not adequately served by the bike path.
- Some forms of active recreation adversely impact the park's natural systems and require creative approaches to minimize these impacts.

1995 ACTIVE SPACE MAP

Forest Park contains 36 holes of golf in total, which occupy approximately 295 acres. The existing courses are short and tight by today's standards, with little space for separation between holes. Fees are inexpensive when compared to other area courses. Lindell Pavilion is open to all, but is not centrally located to best serve the courses. There are opportunities to improve both the Municipal and Triple A golf courses from the perspective of golf quality, physical condition, and interaction with other land uses. Errant golf shots cause conflicts with bike path users, automobiles, pedestrians and adjacent land uses inside and outside of the park.

Ideally, each nine hole segment of a golf course returns to the club house, allowing nine hole or 18 hole rounds to be conveniently accommodated on any segment. There are no "returning nines" on the 18 hole course, meaning that a golfer wishing only to play nine holes on this course does not end play near the club house but rather at the furthest location from it. This is an inflexible use of the existing course.

Severe flooding and resulting erosion occurs, most severely on the bottomland holes where the River Des Peres was buried and a former lagoon was filled but not regraded.



GENERAL OBSERVATIONS

MUNICIPAL COURSES

- The existing courses are short and tight by today's standards with little space for separation between holes. Fees are inexpensive when compared to other area courses. Lindell Pavilion is open to all public but not centrally located to best serve the courses.
- The courses are divided into the "Bottomland Holes" and "Upland Holes". The upland holes are generally well designed with an interesting character and require mostly rehabilitation and modernization of facilities. The bottomland holes are tight and lack character and diversity.

- All holes require upgrade of greens to meet USGA standards. All holes require redesigned, multiple tees to provide diversity of golf experience and to provide for different level and age of players.
- The Art Hill - Grand Basin area contains 5 golf holes which all have problems from both a golf and general park use perspective. Hole #17 which crosses Grand Basin is a golfer's favorite due to its water character and dramatic Art Hill axis location. These qualities also make it a favorite for other park users resulting in conflict.
- If 27 holes are to be accommodated after relocation of the 5 Art Hill - Grand Basin holes, some additional land is needed to accommodate these holes. This does not imply an increase in the total area devoted to golf, rather a change in boundaries.
- Ideally, each 9 hole segment of a golf course returns to the club house, allowing 9 hole or 18 hole rounds to be conveniently accommodated on any segment. There are no "returning 9's" on the 18 hole course, meaning that a golfer wishing only to play 9 holes on this course does not end play near the club house but rather at the furthest location from it. This is an inflexible use of the existing course.

TRIPLE A

- Short course which caters to older users. Rolling topography, ravines and valleys are dramatic but young, sparse vegetation does not properly accentuate character.
- Annual fee for members as well as daily fee for guests. Fee is for 18 hole play, not 9 holes. Fees are inexpensive when compared to other area courses. Practice green and chipping area available.
- Clubhouse with showers, lockers, pro shop and restaurant available to members only.

GENERAL

- In total, Forest Park contains 36 holes of golf which occupy 2295 acres.
- Errant golf shots cause conflicts with bike path users, automobiles, pedestrians and adjacent land uses inside and outside of the park, particularly along Skinker Road.

1995 GOLF QUALITY MAP



FOREST PARK MASTER PLAN

ST. LOUIS,

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SCALE 1" = 400'



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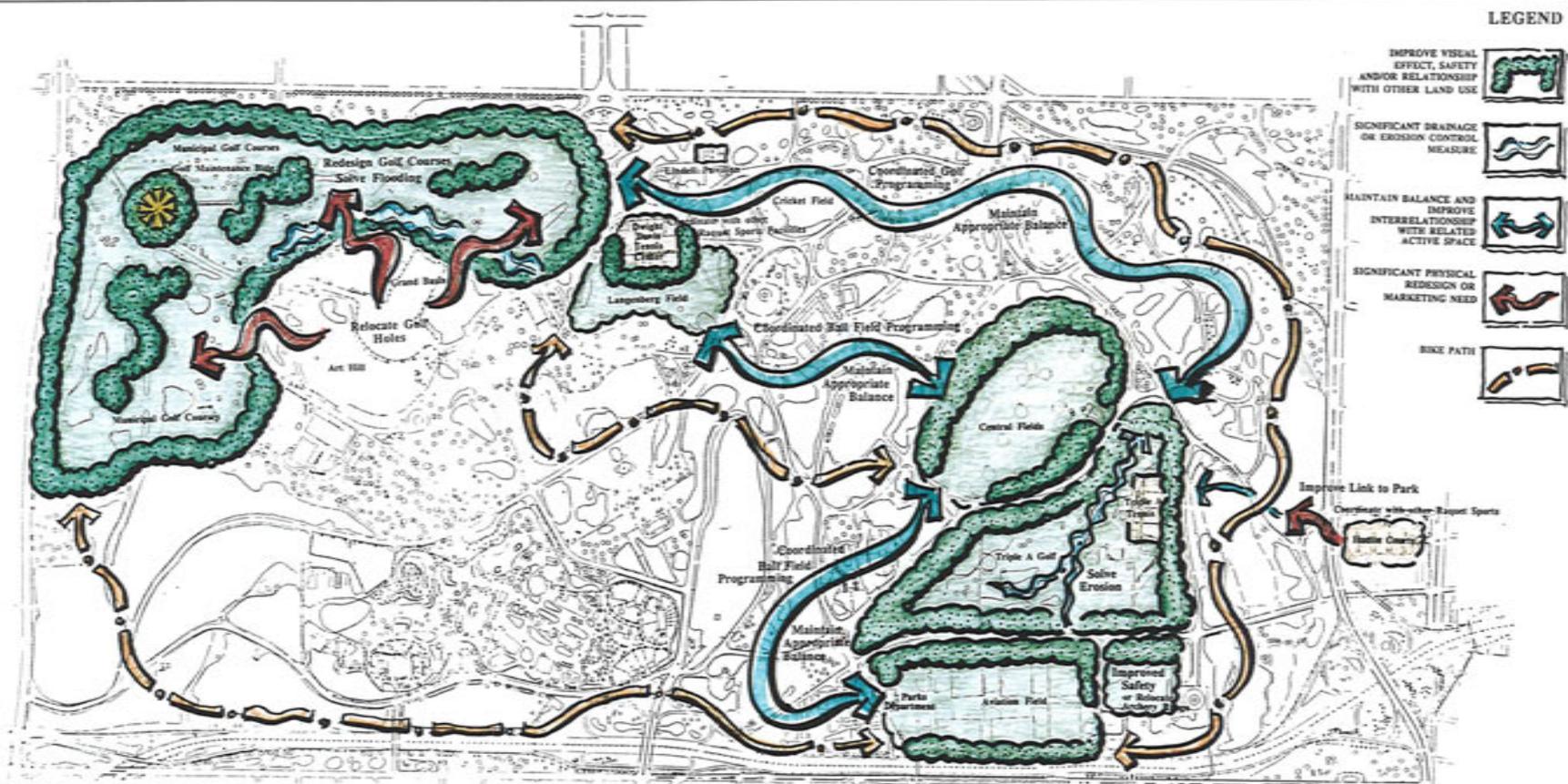
C. Design Principle

Create active space systems.

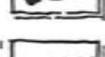
D. Design Recommendations

1. General Approach

- Design or retrofit all active recreation facilities to meet contemporary standards of design.
- Design athletic fields to meet typical daily and seasonal programming needs.
- Create multiple use, unstructured/non-permit active spaces to allow casual active recreation, such as informal ball games and Frisbee, as well as traditional permitted active recreation, such as soccer and lacrosse, during peak periods on designated permit fields.
- Create a landscape that is aesthetically pleasing during inactive periods as well as functional during uses for game participants and spectators.
- Manage active spaces with common programming as systems which maintain the current balance of activities while serving park users and respecting the park's natural systems.
- Redesign and program overused spaces to reduce physical damage from overuse.
- Redesign some active spaces to achieve the best land use mix and interrelationship.
- Improve the visual effect of all active use spaces so as to relate better to the surrounding park character.
- Increase edge plantings to minimize the visual impact of backstops and dirt infields while framing grand scale, expansive, open, green space.
- Develop solutions to drainage and erosion problems that are compatible with the water and passive open space system principles.
- Do not allow new golf holes to be located south of the existing Municipal Course boundary adjacent to Valley Drive.



LEGEND

- IMPROVE VISUAL EFFECT, SAFETY AND/OR RELATIONSHIP WITH OTHER LAND USE 
- SIGNIFICANT DRAINAGE OR EROSION CONTROL MEASURE 
- MAINTAIN BALANCE AND IMPROVE INTERRELATIONSHIP WITH RELATED ACTIVE SPACE 
- SIGNIFICANT PHYSICAL REDESIGN OR MARKETING NEED 
- BIKE PATH 

*This map is not intended to illustrate the precise location and boundaries of features but rather to highlight the general characteristics of the system.

DESCRIPTION

- Forest Park's active spaces which have common programming (i.e. Aviation and Central Fields) should be designed and managed as systems which maintain the current balance of activities while locating and designing them to best serve park users and respect the park's natural systems.
- The park's active space systems should maintain existing, appropriate multiple use spaces and support facilities while encouraging new uses where appropriate. Oversubscribed spaces should be redesigned and programmed to reduce physical damage from over use.
- Some active spaces should be redesigned to achieve the best land use mix and interrelationship. The visual effect of all active use spaces should be improved to better relate to surrounding park character.
- The bike path should be designed to best serve and interact without conflict with other park uses including pedestrian paths and roads.
- Solutions which correct major drainage and erosion problems should be compatible with water and passive open space system principles.

DESIGN PRINCIPLE
Create Active Space Systems



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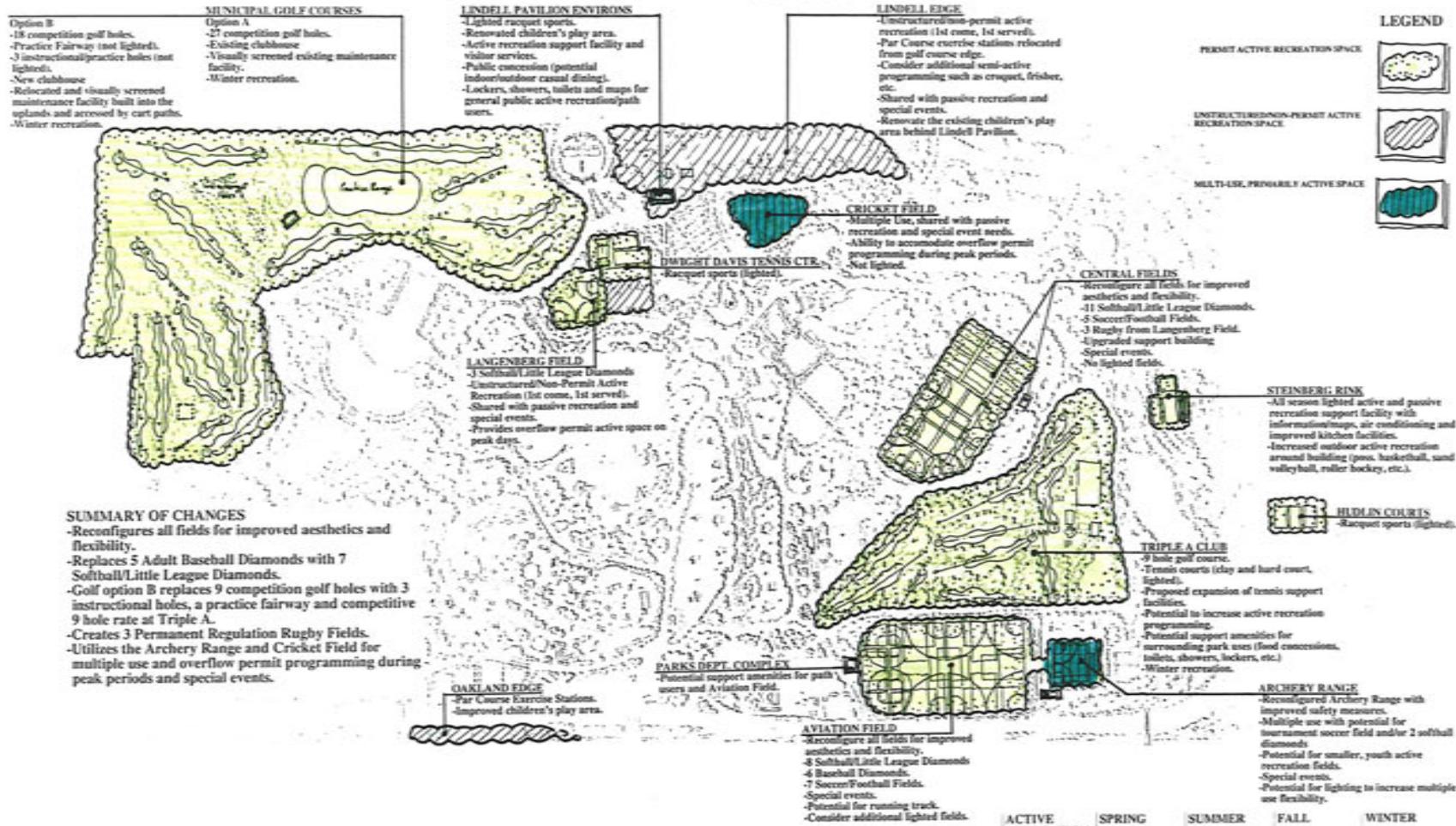
SCALE 1" = 400'



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Proposed Active Space System

ACTIVE RECREATION DEMAND	SPRING	SUMMER	FALL	WINTER
Golf	Primary	Primary	Primary	Minimal
Softball	Primary	Primary	Minimal	None
Baseball	Primary	Primary	Primary Men's	None
Soccer	Women's	Women's	Primary	Primary
Football	None	None	Primary	Primary
Rugby	Primary	Primary	Primary	Minimal

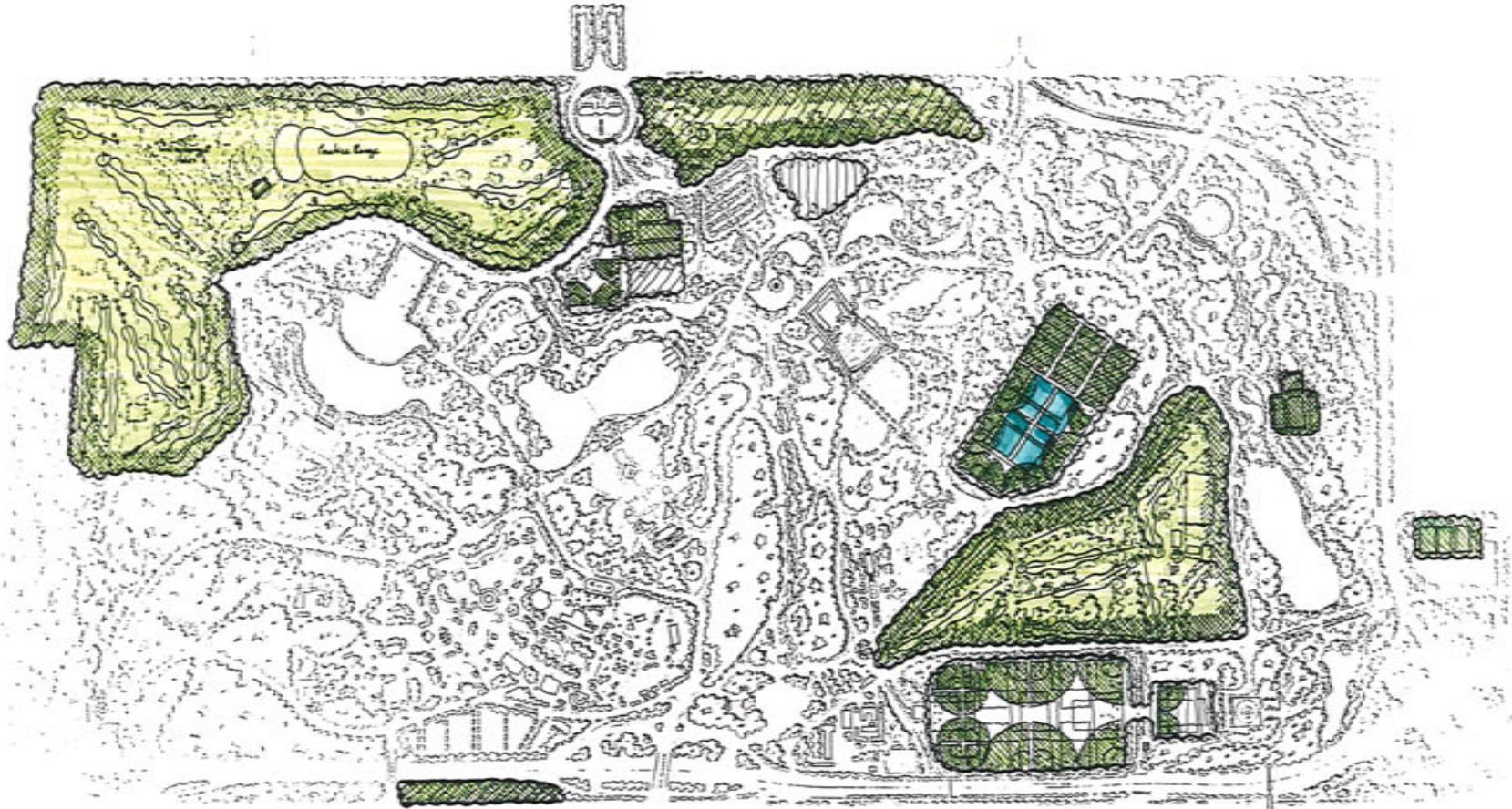
2. Athletic Fields and Facilities

Forest Park's athletic fields and facilities include:

- Aviation Field
- Archery Range
- Lindell Edge Par Course
- Triple A Club
- Dwight Davis Tennis Center
- Cricket Field
- Central Fields
- Langenberg Field
- Lindell Pavilion
- Steinberg Rink
- Hudlin Courts
- Oakland Edge Par Course

Specific recommendations include:

- Permit section needs to encourage weekend and daytime use of ballfields, either by marketing strategies, such as lower rates for daytime use, or by attracting new users, such as youth leagues, which prefer these hours.
- Provide public amenities to the areas around ball field clusters to make them more family oriented and more attractive to park users.
 - Add all-season toilets.
 - Add attended lockers, showers, and changing areas.
 - Develop children's play areas.
 - Provide picnic grounds and/or pavilions, especially surrounding Central Fields.
- Redesign athletic facilities for greater operational flexibility, environmental quality, participant and viewer comfort/convenience, and aesthetic character.
- Post permit information at all athletic fields to clarify assignments and allow for casual non-permit use of open fields.
- Position backstops and dirt infields against the tree-lined edges, leaving a green swath down the center which is more flexible for field games and special events.
- Leave center green swaths on athletic fields unprogrammed in off seasons to enhance environmental benefits.
- Provide spectator and participant viewing areas around the perimeter ballfields beneath trees and on sloped areas at Aviation Field to bring them nearer to the action.
- Provide adequate safety zones of separation between athletic fields which meet current design standards.
- Accommodate and encourage winter active recreation by providing adequate support facilities and amenities.
- Consider lighting of parts of the Archery Range and Aviation Fields for increased nighttime use.



*Primary Spring/Summer Active Space
Recreation Areas*

ACTIVE RECREATION DEMAND	SPRING	SUMMER
Golf	Primary	Primary
Softball/ Baseball	Primary	Primary
Soccer	Primary	Primary
Football	None	None
Rugby	Primary	Primary



Primary Fall Active Recreation Areas

ACTIVE RECREATION DEMAND	FALL
Golf	Primary
Softball	Minimal
Baseball	Primary Men's
Soccer	Primary
Football	Primary
Rugby	Primary



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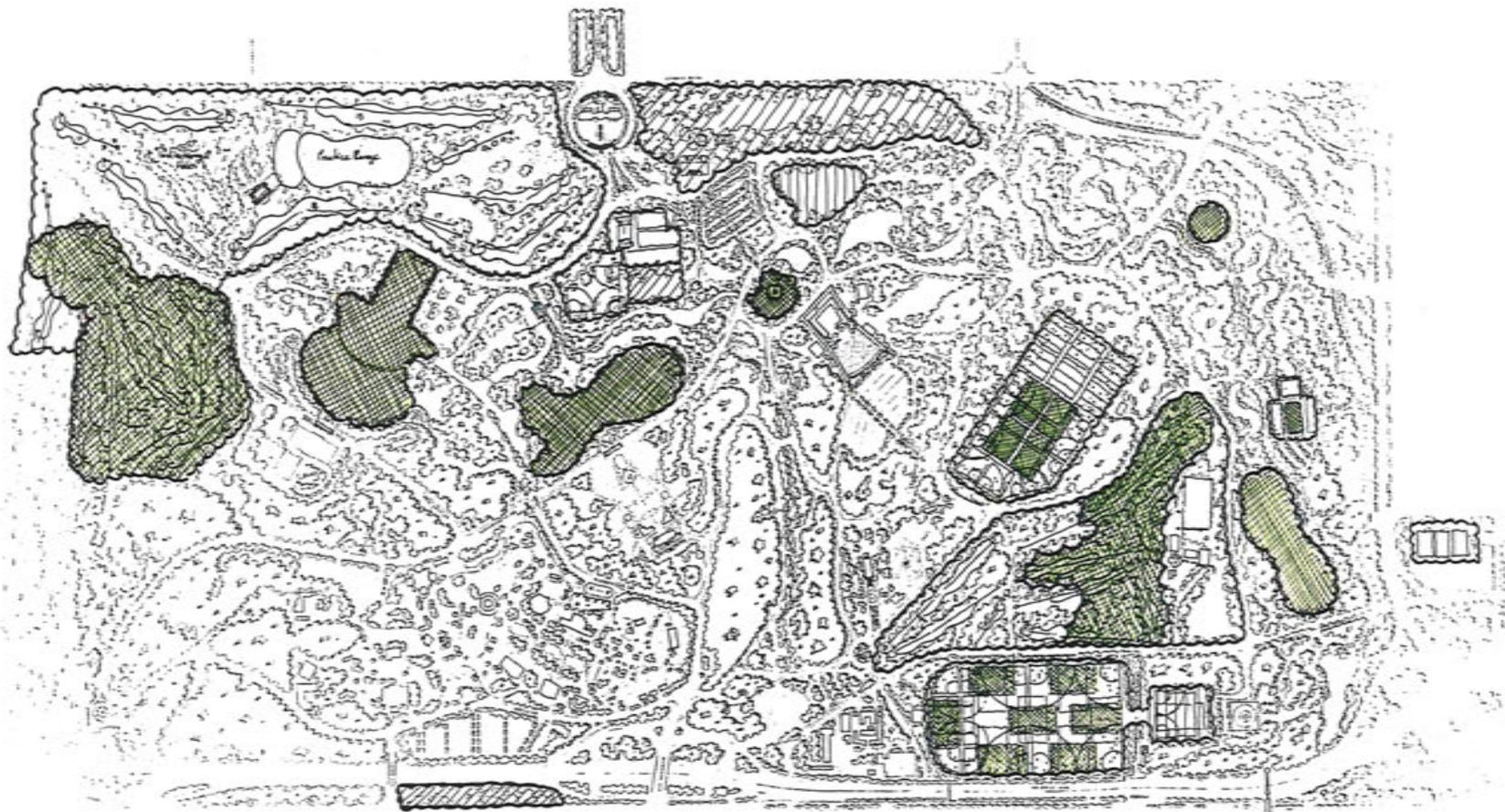
SCALE 1" = 600'



November 18, 1945

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Primary Winter Active Recreation Areas

ACTIVE RECREATION DEMAND	WINTER
Golf	Minimal
Softball	None
Baseball	None
Soccer	None
Football	Primary
Rugby	Minimal



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SCALE 1" = 400'



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3. Golf Courses

a. Municipal Courses

The Municipal Courses are divided into the “Bottom Land Holes” and “Upland Holes.” The upland holes are generally well designed with an interesting character and require mostly rehabilitation and modernization of facilities. The bottom land holes are tight and lack character and diversity.

Two proposals have been offered for the redesign of the Municipal Courses. Both proposals require the relocation of five golf holes away from the Art Hill/Grand Basin to create open space for passive recreation. The two proposed options are:

Option A

- Provide 27 competition golf holes
 - One 18 hole course
 - One 9 hole course.
- Continue to utilize Lindell Pavilion as the clubhouse.
- Relocate and/or visually screen the golf maintenance facility.

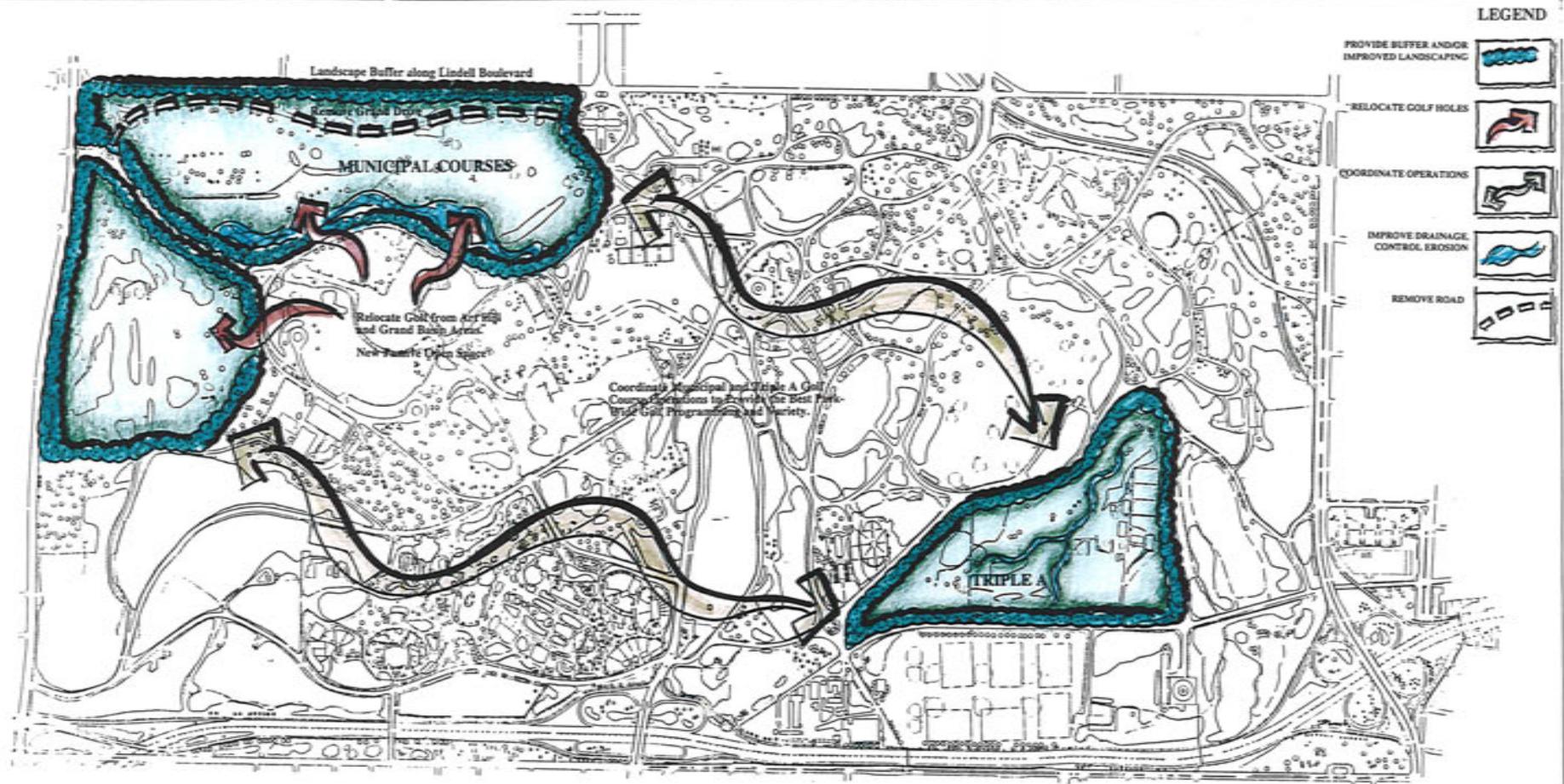
Option B

- Provide 18 competition golf holes with returning nines to the clubhouse.
- Provide a practice fairway/driving range (not lighted).
- Provide 3 instructional/practice holes (not lighted).
- Provide a new centrally located clubhouse.
- Relocate and visually screen the golf maintenance facility into the uplands and accessed by cart paths.

If 27 holes are to be accommodated after relocation of the Art Hill/Grand Basin holes, some additional land is needed to accommodate these holes. This does not imply an increase in the total area devoted to golf, but rather a change in boundaries.

Specific recommendations for the Municipal Courses include:

- Upgrade greens on all holes to meet contemporary standards.
- Meet contemporary standards which typically include greater spacing between holes, multiple tees for different levels of expertise, and educational/instructional facilities.
- Provide water bodies and wetlands to improve drainage and golf course quality.
- Increase hole spacing and perimeter buffers to improve safety for golfers and surrounding park users.
- Improve operational flexibility and efficiency.
- Improve environmental quality and aesthetics.
- Reduce conflicts with surrounding land uses.
- Retain the majority of the existing upland holes which have a desirable golf quality and character.



DESCRIPTION

- The Municipal and Triple A golf courses must operate as a cooperative park-wide golf system which provides the maximum variety of golf experiences to all park users and avoids duplicate operations when possible.
- The Municipal Golf Course redesign relocates golf from the Art Hill and Grand Basin area, corrects major drainage problems, buffers golf from adjacent land uses and improves golf experience for its patrons. The existing boundaries must be altered to achieve this program.
- The Municipal Golf Courses can be configured as a 27 hole operation with the existing club house or as a 18 hole operation with a practice range, three practice/instructional holes and a new club house. All redesign options remove Grand Drive between the Forsyth entrance and the DeBaliviere entrance.
- Proper design of the Municipal Golf Courses' water system will provide the link from Cascades to the rest of the water system and will improve golf course quality and aesthetics.
- Removing golf from the Art Hill and Grand Basin areas opens the areas for passive recreation.

Park-Wide Golf System



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ST. LOUIS,

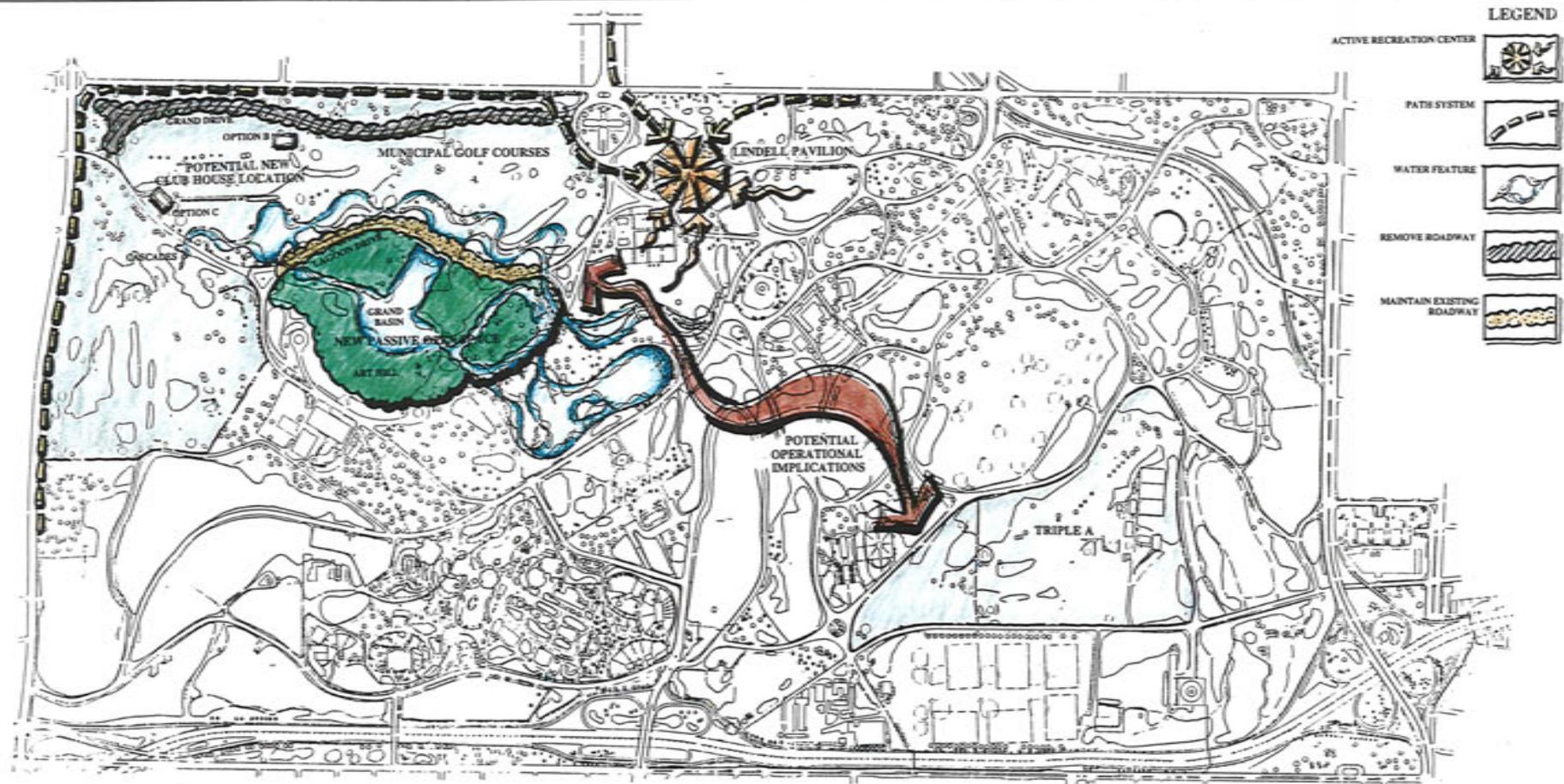
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SCALE: 1" = 60'



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DESCRIPTION

- In all golf course proposals, the five golf holes around Art Hill and Grand Basin are relocated to free the area for passive recreation. This is the key to a cohesive, park-wide passive open space system. Art Hill and Grand Basin can then be linked to Post-Dispatch Lake to form the heart of the system.
- Relocating the club house away from Lindell Pavilion offers the added potential to create an active recreation center at Lindell Pavilion which can serve surrounding active uses, as well as passive recreation, in the northern section of Forest Park.
- Removing Grand Drive and the University Circle entrance eliminates a number of dangerous and confusing bike path-roadway crossings and creates a more user friendly bike path along the perimeter of the park.
- Keeping Lagoon Drive maintains a popular roadway for viewing and accessing the new passive space at Grand Basin and Art Hill by automobile and creates a safety buffer between the area's passive recreation and errant golf shots.
- The golf course's new water system not only improves the quality of the golf course but also creates a connection from the Cascades to the rest of the water system which increases water movement and quality. This quantity of water, in the past viewed as "private lakes" for golfers only, is greatly offset by the open access to Grand Basin.
- Changes to the Municipal courses may require operational changes at Triple A to provide the best park-wide golf experience to the park's patrons.

CONCEPT DIAGRAM
Golf-Related Land Use Implications



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SCALE: 1"=100'



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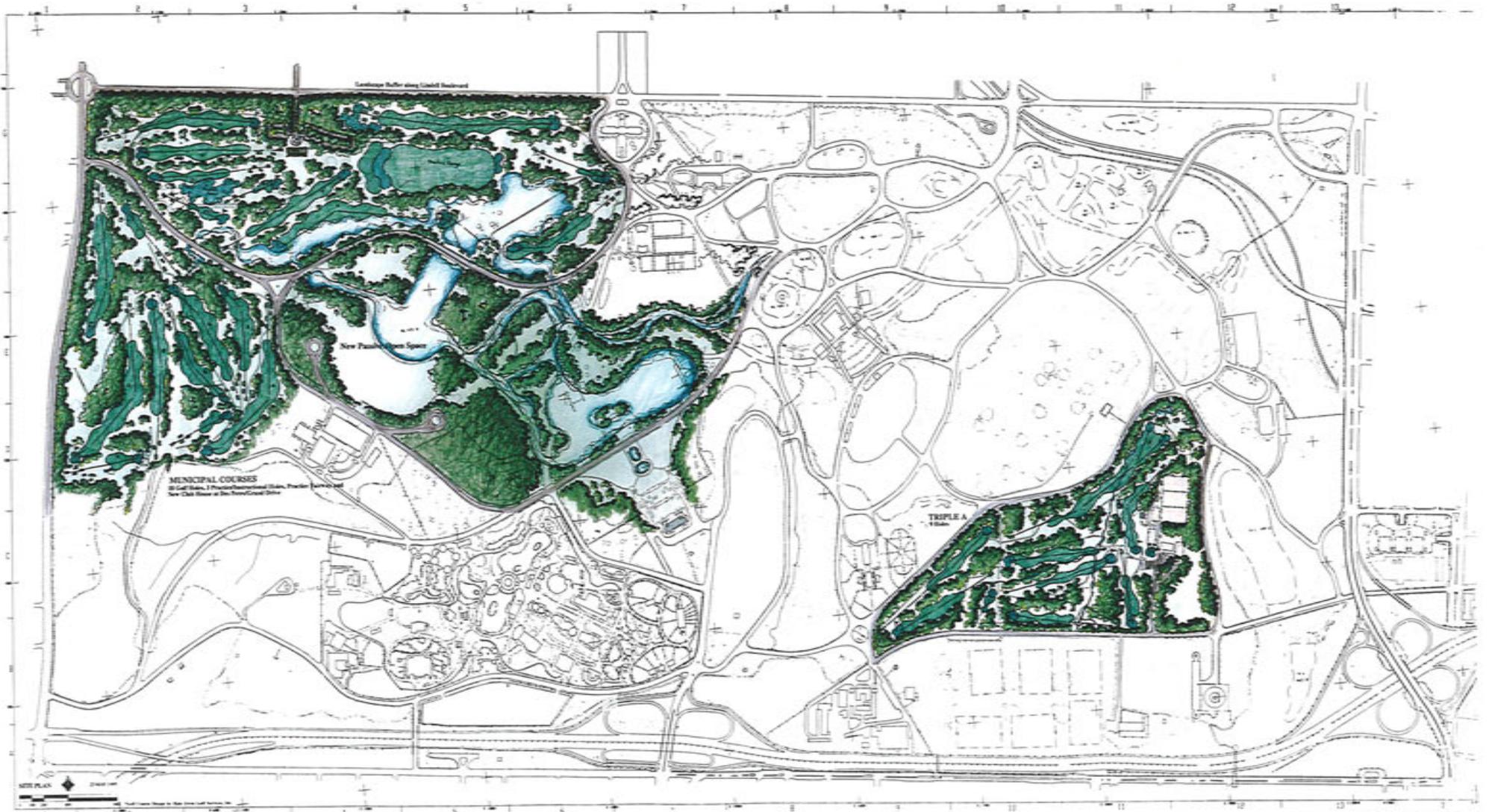
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CONCEPT DESIGN PLAN
Park-Wide Golf System - Option A

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CONCEPT DESIGN PLAN
Park-Wide Golf System - Option B

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FO-EST
 P I R K
 MA-TER
 P L A N

- Redesign the bottomlands to create unique new holes and landscape character which aesthetically relate to surrounding topography and water features.
- Utilize planned water features to provide a safety buffer between golf holes and surround passive recreation and paths along Lagoon Drive.
- Improve aesthetics or relocate the existing maintenance building to a visually unobtrusive hillside location, built into the slope and accessed by cart paths.

b. Triple A

Triple A is a short 9-hole course which caters to older users. Its rolling topography, ravines, and valleys are dramatic, but its young, sparse vegetation does not properly accentuate character. 18 holes are accommodated by using alternate tees and greens. The club charges an annual fee for members as well as a daily fee for guests. The fee is for 18 hole play, not nine holes. 18 hole fees are inexpensive when compared to other area courses. The clubhouse has showers, lockers, a pro-shop, and a restaurant, which are only available to members.

Depending on the outcome of the efforts to redesign the Municipal Courses, the Triple A course is viewed as a suitable alternative for seniors and other 9-hole golfers who require a short and inexpensive course to play.

Specific recommendations for Triple A include:

- Provide a 9-hole golf rate.
- Provide a seniors rate for golf.
- Increase marketing of golf, tennis and park support facilities to the general public and park users.
- Provide significant quantities of bike parking to serve path users.

4. Path System

See Section no. 6 “Access, Circulation and Parking”