Tree Care Plan

2018

THE UNIVERSITY OF ILLINOIS AT CHICAGO

UIC

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Tree Advisory Committee

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In memoriam of John Caruso, dedicated UIC Grounds supervisor. His communication, morale and presence are sorely missed. He was a mentor to his coworkers and was a big piece to the puzzle and an advocate for our trees.

Introduction

Introduction

The University of Illinois at Chicago has been committed to become a Biodiverse Campus, one of the four main UIC Climate Commitments. Under that same commitment, UIC is dedicated to the health and expansion of its campus forest. UIC now operates the Climate Action Implementation Plan. UIC recognizes that every tree on campus is valuable for offering environmental, health, and economic benefits at the individual, community, and social level. Solution 4.3.2 will require the university to follow this Tree Care Plan and implement a full inventory that is essential in effectively allocating the Tree Care Plan expenditures. In 2011, UIC became an officially designated Tree Campus USA and a plan was drafted in order to properly care for all campus trees and meet Arbor Day Foundation standards. As years pass, this plan is updated with new knowledge and experience in practice.

Tree Campus USA Requirements

1) **Establish a Tree Advisory Committee**

2) **Develop a Tree Care Plan**

3) **Verification of dedicated annual expenditures on the Campus Tree Plan**

4) **Involvement in an Arbor Day Observance**

5) **Institution of a Service Learning Project aimed at engaging the student body**

Each year, UIC completes the Tree Campus USA recognition requirements, and has increased plans for promoting trees and ensuring their health and prosperity in future years.

Plan Purpose

The purpose of this plan was originally derived from the Tree Campus USA requirements, but has evolved as a means of educating the UIC campus on the necessity of campus forest maintenance, and establishing guidelines for future care and protection.

Specific objectives include:

1. Develop a policy for tree maintenance, including pruning, planting, removals and preservation.
2. Establish protocol to protect high-value trees during construction and renovation.
3. Maximize the benefits of carbon sequestration, stormwater interception, and air pollutant removal provided by campus trees.
4. Increase the use of the campus forest as an educational and outreach tool for the campus and surrounding community.
5. Establish further connection between the UIC Climate Commitments and the necessity of the Campus Forest.

Campus Forest Summary

Campus Forest Summary
The Roots of UIC

Campus Background

The University of Illinois at Chicago was established in its West Loop location in 1982, upon consolidation of its two existing University of Illinois campuses - the historical Medical Center and Chicago Circle Campus. Since then it has grown to over 240 acres to become one of the largest and most diverse public research institutes in the country. In fall of 2017, UIC hit a record-breaking enrollment of just over 30,000 students at the undergraduate and graduate levels.

Natural Assets

Current tree metrics have been cataloged by the most recent tree inventory, completed by private contractors, Bartlett Tree Experts, in 2017 that included a majority of trees on UIC's property, excluding those managed by UI Health, Incubator Laboratory Facility, and trees at the 2242 W Harrison location. Bartlett Inventory Solutions (BIS)[1] combines the latest technology in Global Positioning Systems (GPS) and Geographical Information Systems (GIS), in order to map and manage data on all Trees within UIC property. Our inaugural forest inventory was completed in spring of 2017.

The UIC Tree Inventory can be viewed publicly on the Arbor Scope website at arborscope.com/inventories/1954

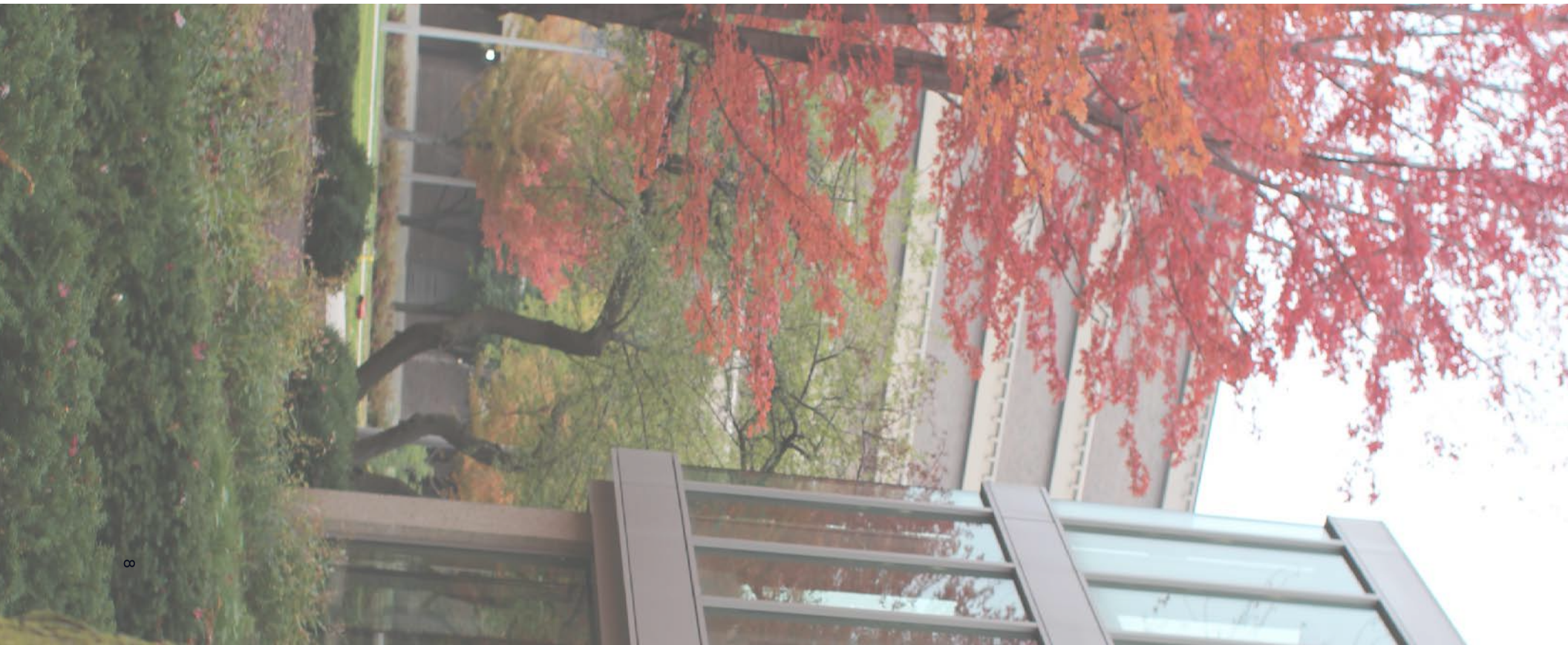
The entirety of the UIC campus, including the east, west, and south sides, currently encompasses a total approximation of 240 acres, with 39% green space and over 37 acres of tree cover. The Campus Forests and its benefits for overall health and sustainability have become an increasing priority at UIC, as we are home to over 3,500 trees, of roughly 100 different species.

The Ecosystem Analysis of the UIC Consolidated Tree Inventory[2] uses the i-Tree Eco model developed by the U.S. Forest Service, Northern Research Station, and compiled by Bartlett Tree Experts to illustrate the following about the current UIC campus forest.

- Number of trees: 3,894
- Tree cover: 37.46 acres
- Most common species of trees: locust spp, apple spp, Freeman maple
- Percentage of trees less than 6" (15.2 cm) diameter: 36.7 %
- Pollution removal: 1895 pounds/year ($31.9 thousand/year)
- Carbon storage: 836.1 tons ($108 thousand)
- Carbon sequestration: 18.08 tons/year ($2.35 thousand/year)
- Oxygen production: 48.21 tons/year
- Avoided runoff: 51.68 thousand cubic feet/year ($3.45 thousand/year)

Our current inventory provides valuable information on the number of diverse species, total canopy coverage, and the health and age of all trees. This information can be used in order to develop practical and beneficial management practices. Students and the general public can also use this inventory for academic learning and personal purposes; the inventory will be available online in a read-only format. Analysis of the tree inventory is available upon request and will be updated each time there is a major change in the UIC tree inventory.

Tree Care Strategies



Tree Care Strategies
Maintenance and Health

Divisions of Management

Administration
UIC Grounds is under supervision of the Superintendent of Grounds which is a division of Facilities Management, which is under the direction of the Vice Chancellor for Administrative Services.

Faculty
The Faculty members shall be involved in the Tree Advisory Committee as well as the Chancellor's Committee on Sustainability and Energy, Grounds subcommittee. Faculty shall provide advice on tree care-related activities when their subject matter expertise is needed in soil science, urban ecology, etc in the departments of Biological Sciences, Earth and Environmental Sciences, Civil and Materials Engineering, Urban Planning, etc.

Employees of the Facilities Management department will be responsible for day to day maintenance of the campus trees, and are to relay important information regarding tree health and pedestrian safety to the superintendent of grounds and professional arborists.

Students
Students should maintain respect for their campus forest by avoiding vandalizing and disrupting the growth of trees; elaboration of these policies can be found in the prohibited practices section. Students are also encouraged and welcome to join the Tree Advisory Committee as well as the Chancellor's Committee on Sustainability and Energy, Grounds subcommittee. Students are also encouraged to participate in tree-related volunteer and educational events.

City
As it happens that not all of the trees located within the footprint of the campus are under UIC maintenance are under direct ownership of the University, the city departments as well as the Illinois Department of Transportation are in part responsible for the health of specimens and safety of public spaces and walkways.

Tree Advisory Committee
This plan has encouraged and authorized the establishment of a Tree Advisory Committee composed of professionals, faculty, staff, and students. This committee directly fulfills requirement one of the Tree Campus USA Requirements.

Policy Enforcement

The policies included in this plan are to be upheld by all applicable campus departments and visiting contractors. Facilities Management shall hold the responsibility of enforcing policies and implementing tree management practices through contract and inspection.

Management Policies

Full management and policy recommendations should be referenced against the recommendations of Bartlett Tree Care[3]. Management policies should adhere to both Professional Tree Care recommendations and American National Standards Institute A-300 standards[4]. At the campus-wide level of arbor management, the suggestions and protocols of the Morton Arboretum[5] are also heeded, as well as the Urban Tree Foundation[6].

Inventory

(See "Natural Assets" for most recently completed Inventory)
A full tree inventory shall be completed by all applicable departments and organizations within UIC including Vice Chancellor for Administrative Services (Facilities Management (Grounds) and Parking Services), Vice Chancellor for Student Affairs (Campus Auxiliary Services including Campus Housing, Campus Recreation, Student Centers, UIC Forum, UIC Pavilion), Vice Chancellor for Health Affairs (University of Illinois Hospital & Health Sciences System (UI Health), and Athletics. This inventory will be completed by professional arborists, such as Bartlett Tree Experts, and will provide updated care recommendations. With each update of the campus forest inventory, an iTree report[7] will be generated and will serve as a basis for action, such as removals, management, and new plantings. (See Campus Obligations in Communication Section for more information.)

The inventory shall be updated at the discretion of the Tree Advisory and the Superintendent of Grounds to account for dramatic changes in number and/or health of specimens.(Typically once every three to four years).

Pruning

Pruning should be proactive rather than remedial, in order to ensure proper growth and health of specimens, rather than to address age-related decline that could impede campus safety.

Young Trees
Pruning should be preemptive and preventative in order to promote ideal structural development for young trees; proper early pruning strategies ensure branch proportionality with a strong central leading stem and adequate spacing between branches.

Semi Mature Trees
Pruning of growing trees should be influenced first by safety and necessity and then by aesthetic appeal.
Tree canopy may need to be raised or thinned in order to allow for proper growth of neighboring plants and infrastructure clearance.

Mature Trees
Dead and at risk branches must be removed from mature trees in order to maintain plant health and safety. While thinning of branches can be beneficial to reducing wind resistance and storm water damage, an experienced Arborist should complete evaluation before such actions are taken.

Cabling and Bracing

Cabling and bracing procedures are necessary and supplemental supports, intended to reduce risk of structural failure associated with weak branches and stems.

Cables
Cables are high strength steel bolt connections attached in the upper crowns of trees, which allow for limited movement and additional resistance to storm damage.

Brace Rods

Braces are thread rods that are installed through unions of weak branches and multiple stems and provide more rigid support than cables alone. They inhibit torsional (twisting) strain that can result from strong storm forces.

Storm Protection

Storm protection is afforded by a multitude of preventative practices, such as cabling and bracing, pruning, and effective pest management[8].

Lightning Protection

Lightning protection systems are available for trees of particular monetary or ecological benefits; specimens located near occupied buildings are usually targeted for implementation of these systems. Cost of such systems requires professional cost-benefit analysis.

Pest Management

UIC must utilize Bartlett's Integrated Pest Management (IPM) program ("MoniTor") This plan dramatically reduces the amount of pesticides used by as much as 90% and optimizes suppression while minimizing the use of pesticides through preventive maintenance and early detection of problems. The MoniTor program consists of scheduled visits to inspect the plants around the property for insects, mites, diseases or cultural problems. Nonchemical interference is given first priority, such as mulching and the release of beneficial insects. If stronger control is needed, the use of horticultural oil, insecticidal soap and several of the synthetic pyrethrums are employed. Chemical control is always the last alternative. UIC must then adhere to the written report of recommendations for follow through including a description of problems, treatments applied, observations of plant conditions.

Watering and Mulching

Mulching should be performed upon initial tree planting per specific planting protocol. Trees up to approximately 6" DBH (Diameter at Breast Height) could be mulched every two years at the drip line with waste wood chips. Mulch rings shall be a minimum of 4'-0" diameter for individual trees. See Appendix 1 for full planting techniques.

Construction Guidelines

A tree preservation plan must be drafted in preparation for construction during which trees might be negatively impacted. The value and diversity of the inventory is a top priority, and all construction should accommodate established trees as much as possible. Refer to Removal Policies and Health Assessments sections for more information on tree preservation.

Preservation and Protection

All proposed construction must first refer to this care plan with counsel from UIC Grounds, in order to assess the number and value of potential tree loss in the area via the Arborscope inventory[9]. Conference shall be held between UIC Grounds and all pertinent landscape architects throughout the building process. Upon reference of the inventory map and current plans, potentially affected trees should be placed in one of three categories:

Not Salvageable
Trees that must be removed to accommodate construction, either due to location or health and ability to withstand disturbances due to construction activity and equipment.

Low Priority
Trees that are below 8" DBH, twenty-foot canopy width, or twenty-five foot height. Also included in this category are trees with low values in energy savings, carbon sequestration, and aesthetics, or environmental benefit (pollutant removal).

High Priority
Trees should be protected that are above 8" DBH, twenty foot canopy width or twenty-five foot height. Construction efforts should strive to preserve trees that provide a high value of environmental benefit, or are historically significant to campus.

Inspections

A qualified facilities management employee must perform inspections before, during, and after construction. Documentation of tree status and health should be kept in order to ensure that proper procedures had been followed and so that liability can be determined in the case of further damage.

Inspections are necessary in determining preliminary acceptance of all installations. Final acceptance will be granted once the project has been completed and all trees have been properly planted, upon which the contracted period of extended warranty maintenance shall commence.

Upon completion of the extended warranty period for new fixtures, responsibility of maintenance shall be assumed by UIC Grounds and Facilities.

Preservation Zones

A tree protection zone (TPZ) must be established for all trees selected for preservation during construction. These zones are meant to protect the root systems, and woody tissues from construction related damage. Fencing of the TPZ shall extend 1 foot from the trunk for each inch in trunk diameter measured at a height of 4.5 feet. Signage shall be placed on the outside of the TPZ which clearly states the purpose of the zone, with instructions to keep construction activities outside of fencing. See the City of Chicago's Tree Protection Detailed Specifications for diagrams and more information[10].

Tree Damage Assessment

Contractors will be held accountable for all damage sustained to nearby campus trees as a result of construction processes (those not flagged for removal and replacement). Tree value shall be assessed by the superintendent of Grounds along with the Tree Advisory Committee, through reference of the current Arborscope inventory[11]; value shall be determined based on age, height, and current ecological benefits.

Replacement Policies

Where loss is applicable during construction processes, there must be an agreement drafted with the superintendent of Grounds in order to compensate for the current value. This could be achieved through the installation of trees of equal value, either in number or size, via a caliper for caliper measurement - meaning

that the size of all lost trees must be accounted for and replaced independently of quantity loss. Contractors and landscape architects shall be required to mark all trees lost on architectural designs associated with new construction projects; a satisfactory number of trees must be planned and accounted for in the proposed budget, to be approved by the superintendent of Grounds. All tree replacements shall follow the planting policies and sourcing guidelines written in this plan.

All trees sourced by the contractor must be properly cared for before construction plantings begin; planting should commence immediately after delivery, and proper precautions should be taken to preserve their health during prior to entering the ground.

New Tree Placement

Newly planted trees should be installed before establishing surrounding lawns; all applicable damage must be remedied per approval of the grounds department. Trees planted or replaced during construction projects shall also move to offset related carbon emissions through the planting of new trees within a reasonable distance from the structure. New plantings shall follow normal planting seasons, and building schedules will be adjusted to accommodate these timelines.

Contractor Dependent Management

Contractors are responsible for management of newly planted specimens during the building period, and upon completion of the project for a length of time that is agreed upon through contract with the grounds department; management responsibilities will be in effect until final inspection of the completed project, and approval of UIC Grounds.

Management includes but is not limited to watering, pruning, mulching, and other necessary practices that are needed to ensure tree safety and proper growth during and after construction.

Planting Policies

Proper planting is essential in maintaining health and longevity of the entire campus forest. Trees must be selected in accordance with the recommended planting lists (under Site Conditions), and must be installed in the proper locations. New planting is beneficial in the case of excessive specimen loss in other areas on campus, as well as for community education purposes. No new tree may be planted that appears in the Prohibited Planting list in Appendix 1.

Order of Importance

Tree plantings shall follow an order of importance; When choosing new trees to plant at UIC, the following must be considered, in the order of the following Tree Planting Priority List:

1. Site Conditions

New plantings should take into consideration current infrastructure and soil conditions, in order to ensure adequate space and successful growth. Current mapping shall be inspected to avoid underground utilities and other obstacles. Trees are to be planted in a location where the roots will have enough space to grow and function properly. Areas where the tree can intercept large amount of rainwater should be a priority. The UIC Grounds Design Standards12, the Morton Arboretum's Tree Selector tool13, and the City of Chicago Urban Tree Planting List14 shall be referenced before commencing planting.

2. Genus & Species Diversity

It is a goal of the UIC Climate Commitments to increase genus and species diversity of the campus forest. Current levels (indicated in the inventory and i-Tree ecosystem analysis reports) should be referenced and new plantings should be chosen based on current percentages; future estimations of age and potential species devastation should be taken into account. Generally, there should be no tree added that increases the campus forest genus of more than 10%, or 5% for any given species. The UIC consolidated Ecosystem Analysis shall be consulted for species diversity in the UIC i-Tree Ecosystem analysis report, based on the current species percentages on campus and the priority list included in Planting Policies, also noting potential risks of pests, described in appendix VI of the report. [15]

3. Native trees

It is important that native species be chosen as often as possible, in order to ensure survival in the particular UIC environment.

4. Environmental Impact

Environmental impact should be optimized however possible when planting new trees. Such considerations would include (1) $C0_2$ Sequestration potential (by referencing the i-tree Ecosystem Analysis), (2) Pollinator habitat potential (by referencing the National Wildlife Foundation's Native Plant Finder[16] as well as the Campus Pollinator Habitat Plan[17]) and (3) Stormwater reduction potential (by referencing Urban Transformations 2.0: Green Stormwater Infrastructure Implementation Plan for UIC[18]).

5. Aesthetics

After all else has been considered, campus aesthetics shall be taken into account; the UIC Grounds Standards shall be referenced in order to ensure compliance with current standards.

Prohibited Species

Many of the species are not recommended for planting due to pests, invasive species and/or our region's lake front hardiness zone is not ideal. A list of prohibited species can be found in appendix 1. This list of prohibited species shall be updated upon update of the campus inventory, with the direction of the Tree Advisory Committee.

Sources

New plantings should be sourced from nurseries that provide locally grown trees, in order to ensure longevity in UIC's particular campus environment. Preference for newly established trees are those that have been started and grown in the region of Northeastern, Illinois, to ensure proper hardiness and native character.

All sourced trees shall be subject to the ANS1 760.1: American Standard for Nursery Stock, published by the American Horticulture Industry Association[19].

Health Assessments

Soil Quality

Soil quality should be analyzed when choosing species for new plantings; professional arborists, such as Bartlett Tree Experts, should be contacted, as well as Facilities Management (Grounds. Soil quality may also be measured in cases of poor tree health in efforts of recovering failing/dying trees.

Risk Evaluation

In cases of potential tree risk that could impede community safety, a qualified employee should evaluate specimens in order to judge the level of potential hazard and determine necessity of removal. Whether due to infestation or potential for falling branches, preservation should be attempted, unless removal is deemed necessary.

Catastrophic Event Response

All trees are susceptible to severe storms, infestation, and potential drought, which could lead to a structural compromise of the trunk and branches. When such an event occurs, tree-related issues should be reported to the Facilities Management and Grounds by faculty, staff or students to FMWeb at www.fm.uic.edu. This is to ensure prompt restoration of safety. When campus or parkway trees affect public roadways and other amenities not on UIC property, City of Chicago employees should be notified to respond to the issue. Tree issues should be addressed and resolved in the following order of importance.

Safety
Trees that have been damaged to the point of structural insecurity are deemed as a potential hazard to pedestrians, and should receive emergency pruning of large branches, or if necessary, removed.

Access
Once community safety has been adequately addressed, fallen branches and debris should be cleared from public walkways and thoroughfares. Priority will be given to emergency access routes and areas of heavy traffic.

Tree Health
While not posing an immediate threat to the public, catastrophic events could also impede tree health, which could result in future issues if left untreated. High value trees will be addressed first, as time and expenditure allow.

Organic Material Reuse

Local Food Supply

Trees can be planted with the hopes of subsequent fruit production once mature growth has been reached; these products could be used to directly supply and benefit the student and faculty populations. Appropriate trees, both bearing fruit and native, can be found in the recommended planting list. This would satisfy the requirements of Aspirational Goal 4A of the UIC Climate Commitments: Promote Consumption of Local Food on Campus.

Debris/Fallen Trees

Materials gathered from fallen or removed trees, due to either structural or safety necessity can be repurposed to benefit the campus community. These wood products can be processed into signage or homes for pollinators[20].

Prohibited Practices

Planting without approval

No tree shall be planted without prior approval from UIC Facilities Management; this prevents the installation of prohibited species or species that will not fare well in a particular location. This also allows up to date maintenance of the Arborscope inventory.

Maintenance without approval

No maintenance, including pruning and removal, shall be conducted without approval; this ensures that the health of all trees is upheld and that all procedures are performed to acceptable standards.

Vandalism

Vandalism of trees of any kind is prohibited; this includes attachments of signs, bikes, or other objects that may be harmful to the tree and could impede healthy growth. Departmental approval must be obtained for signs.

Tree removal without replacement

All healthy trees that do no pose a safety hazard or impedes access shall not be removed without replacing the tree's caliper. Rational requirements must be provided for all proposed tree removal. Removal could be deemed necessary in cases of poor tree health or potential danger to the campus community. See Construction section for more information on removal of healthy trees during building activities.

Communication

Communication

Community Concerns

This plan should be provided to project managers, especially in the Office of Capital Planning and Project Management as well as contractors in order to ensure the adequate care and preservation of the campus forest, particularly during new construction and building renovations. This plan shall be housed under the Office of Sustainability and made public via the website sustainability.uic.edu. This Plan should be bridged to other ongoing campus planning goals, and should be included and recognized in future Campus Master Plans and Design Standards.

Upon adoption of the newly updated plan, UIC news outlets will be notified so that faculty and students are aware of policies and procedures. This care plan shall also be incorporated in the UIC Master Plan, so that procedures noted within are held as universal standards for all of UIC.

This Plan and all associated recommendations shall be communicated to involved organizations such as IDOT (Illinois Department of Transportation), and the City of Chicago, so that the recommendations and procedures included in the plan can be taken into account for the benefit of trees on shared properties.

On-campus signage should be increased as it allows the UIC population to better understand the importance and necessity of the campus forest. It shall be the work of the tree care interns to seek out and apply for appropriate funding in order to secure the installment of educational exhibit signage; the signs should include information on present species and inventory data, as well as the number of benefits that trees provide to the campus.

Campus Obligations

Each applicable UIC department shall be made aware of the necessity of the documentation and upkeep of the trees within their jurisdiction; this will include the completion of a total inventory, as well as departmental budget adjustments to accommodate the care suggestions made by professional arborists.

See inventory section of Management Policies for more information on applicable campus departments.

Year in Review

As part of the Tree Campus USA requirements, UIC and the Office of Sustainability maintain and develop several programs and events throughout the year in order to promote campus wide education. Information regarding annual Service Learning Events and Arbor Day observances can be found on the Office of Sustainability Tree Campus USA website[21].

Goals

Goals

Future Work

This Tree Care Plan should be bridged to current Green Stormwater Infrastructure Implementation Plan and the Campus Pollinator Habitat Plan to ensure cooperation across campus departments for future planning. This should be done in order to establish trees as an invaluable asset to the environmental health of our campus.

UIC Climate Commitments

Tree care policies and suggestions should be observed in order to further the goals outlined in the UIC Climate Commitments[22], which were designed in order to offset the campus wide carbon footprint and ultimately benefit the environment and campus community. The goal percentages outlined in the Climate Commitments have shaped the tree management guidelines, and have allowed UIC to establish priorities concerning species and location when planting new trees on campus.

Biodiverse Campus

It is important that the campus remains resilient to devastating infestation and storms, which makes it necessary to possess a variety of different species and age classes. This allows the forest to retain its integrity in event of major catastrophic loss, without completely jeopardizing the benefits to the campus. A biodiverse tree inventory also allows for habitats for a wide range of urban animal life, including pollinators.

Carbon Neutral Campus

Trees capture carbon dioxide and convert it to oxygen through photosynthesis, which both reduces the campus carbon footprint, and provides cleaner air for everyone. As trees store much of this carbon dioxide in their leafs, the larger the total tree canopy on campus, the greater the overall benefit. When planting new trees, it is important to select trees that will grow to a large canopy size.

Net Zero Water Campus

Both the root systems of trees and their canopies are able to intercept and divert damaging stormwater and prevent flooding. Mature trees are more beneficial in this regard and it is imperative to preserve large specimens during the event of construction or storm loss.

Stormwater Management

Trees are vital in increasing efforts to reduce stormwater damage and increase diversion. In conjunction with the City of Chicago plans, street trees intercept and absorb rain, reducing and slowing the amount of runoff that makes its way into the sewer system. A mature tree can intercept about 1,000 gallons of rainfall per year in their crowns and can intercept more than twice that amount in their pit, particularly when designed with an inlet to accept stormwater runoff[23].

UIC should design all street and sidewalk trees with an inlet to accept stormwater runoff. UIC should take every step to preserve mature trees near streets and sidewalks since mature trees exponentially more benefits to reducing stormwater runoff than new trees.

Appendices

Appendix 1 - Planting Techniques

Planting techniques used on the University of Illinois at Chicago are derived from a variety of reliable and professional sources; planting decisions are made based on tree type and soil conditions and the ultimate goal of planting is the trees growth and survival.

After tree species has been decided upon through consultation of the established priorities list (Tree Planting Priorities List: Planting Protocols) the following entities are referenced for planting protocol;

National Wildlife Foundation	https://www.nwf.org
Urban Tree Foundation	http://www.urbantree.org
Bartlett Tree Experts	https://www.bartlett.com
Morton Arboretum	http://www.mortonarb.org

Prohibited Planting List

Do not plant any of the following species on the University of Illinois at Chicago campus:

Ailanthus
American mountain-ash
Amur Maple
Ash (Any)
Black locust
Black oak
Black walnut
Black willow
Eastern cottonwood
European alder
European Black Alder
European buckthorn
European mountain-ash
Glossy buckthorn
Northern pin oak
Pin cherry
Rock elm
Russian-olive
Siberian elm
Slippery elm
Wafer ash
White mulberry
Winterberry

Appendix 2 - Definitions and Terminology

ANSI – a private, non-profit organization that oversees the development of voluntary, consensus standards in the United States.

Campus forest – Geographic area containing all trees on the campus of the University of Illinois at Chicago plus those neighboring trees whose benefits directly extend onto the campus.

Carbon sequestration – the process of storing carbon, so as to prevent its release into the atmosphere.

Critical root zone - The area of undisturbed natural soil around a tree defined by a concentric circle with a diameter in feet equal to twice the number of inches of trunk diameter.

Crown- The totality of an individual plant's aboveground parts, including the branches, leaves, and reproductive structures extending from the trunk or main stems.

Leader – The topmost portion of the tree stem that is able to grow more than the lateral branches below.

Mature- a tree that has reached its maximum size

Native – a plant that occurred in an area before human settlement, and has become adjusted over time to the conditions present in the area

Overmature- a tree that has reached a stage of development where it is declining in vigor and health and reaching the end of its natural lifespan

Root ball - The collection of soil and roots of a tree that has been packaged to aid in transportation of the tree

Semi-mature – an established tree in the landscape that has not yet reached mature size and is still actively growing.

Tree canopy - layer of leaves, branches, and stems of trees that cover the ground when viewed from above.
Tree topping - the indiscriminate cutting of tree branches to stubs or lateral branches that are not large enough to assume the terminal role. Other names for topping including "heading," "tipping," "hatracking," and "rounding over."

Watershed – a geographic area in which all surface water converges to a single point, where the waters join another waterbody.

Young – A tree that has been in the ground for an insufficient amount of time to allow it to become established.

Appendix 3 - References

All webpages visited February 2018

1 Bartlett Tree Experts: Commercial Services
https://www.bartlett.com

2 Office of Sustainability Tree Campus USA webpage.
http://sustainability.uic.edu/green-campus/grounds/tree-campus-usa

3 Bartlett Tree Care: Pruning
https://www.bartlett.com/pruning.cfm

4 Tree Care Industry Association: ANSI A300
http://www.tcia.org/TCIA/BUSINESS/A300_Standards/A300_Standards.aspx

5 Morton Arboretum: Tree and Plant Advice
http://www.mortonarb.org/trees-plants/tree-and-plant-advice

6 Urban Tree Foundation
http://www.urbantree.org

7 Ecosystem Analysis of the UIC Consolidated Tree Inventory
http://sustainability.uic.edu/wp-content/uploads/sites/21/2018/02/Ecosystem-Analysis-of-the-UIC-Consolidated-Tree-Inventory.pdf

8 Bartlett Tree Experts: Lightning Protection
https://www.bartlett.com/lightning-protection.cfm

9 Arborscope: UIC Consolidated Inventory
http://arborscope.com/inventories/1954

10 City of Chicago Bureau of Forestry: Tree Protection Detailed Specifications
https://www.cityofchicago.org/city/en/depts/streets/provdrs/forestry.html

11 Arborscope: UIC Consolidated Inventory
http://arborscope.com/inventories/1954

12 University of Illinois at Chicago: Office of the Campus Architect: Campus Grounds Design Standards
https://architect.uic.edu/design-standards

13 Morton Arboretum: Tree Selector
http://www.mortonarb.org/trees-plants/tree-and-plant-advice/tree-selector

14 City of Chicago: Bureau of Forestry: Urban Tree Planting List
https://www.cityofchicago.org/city/en/depts/streets/provdrs/forestry/svcs/public_offered_parkwaytrees.html

15 Ecosystem Analysis of the UIC Consolidated Tree Inventory
http://sustainability.uic.edu/wp-content/uploads/sites/21/2018/02/Ecosystem-Analysis-of-the-UIC-Consolidated-Tree-Inventory.pdf

16 National Wildlife Foundation: Native Plant Finder
https://www.nwf.org/NativePlantFinder/Plants/Trees-and-Shrubs

17 University of Illinois at Chicago: Office of Sustainability: Bee Campus USA
http://sustainability.uic.edu/green-campus/grounds/bee-campus-usa

18 University of Illinois at Chicago: Office of Sustainability: Green Stormwater Infrastructure
http://sustainability.uic.edu/green-campus/grounds/green-stormwater-infrastructure

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