Introduction

Ursinus' Tree Care Plan is a partial step in fulfillment of the Tree Campus USA standards set forth by the Arbor Day Foundation. It is a further step in the College's efforts to preserve and enhance its historic appearance and landscape, while maintaining and enhancing the campus' character. The plan's recommendations increase opportunities for students and staff to interact with the landscape while using "greening" strategies to move the campus toward carbon neutrality. This plan builds on the Ursinus College Tree Master Plan that was written for the College by KMS to assess the health of our campus trees. The plan is intended to be a guide for improvements in the landscape over the next five to ten years. It is intended to be flexible and easily adapted to meet the changing needs of the College and is designed to ensure a safe, attractive, and sustainable campus tree-scape. Specifically, this plan addresses several key areas:

- Maintenance: Promotes tree health and safety by utilizing the International Society of Arboriculture (ISA) best management practices when maintaining campus trees
    - Provides guidance on the care of mature trees in the central core of the campus,
    - Recommends cost effective maintenance procedures to improve tree health and longevity,
    - Provides recommendations for methods to reduce maintenance tasks in response to the College's carbon neutrality goals.
- Construction: Protects campus trees by managing the impact during construction and development projects
- Replacement: Develops a replacement plan for trees as they die or become hazardous, including
    - Provides a phased plan for replacements/enhancements to address fiscal concerns,
    - Makes species-specific recommendations for the replacement of trees previously removed or trees in the final stages of their lives,
    - Provides for maintaining the historic feel of the campus landscape,
- Species Recommendations: Provides recommendations about species of plants for new planting and replacement activities

(Revised and Updated 2017)

    - Recommends species-specific trees as part of efforts to supplement and/or complete the desired campus canopy, focusing on native species and active planting,
    - Recommends species-specific ornamental trees in high visibility locations
- Awareness: Advocates for the value of campus trees to the community

Campus Tree Advisory Committee

To plan for, protect, maintain, and make decisions about trees on the Ursinus College campus, Facilities Services and the Office of Sustainability have created the Campus Tree Care Committee.

1. The committee is comprised of volunteer members that represent all campus stakeholder groups as well as members from the surrounding community. The Sustainability Program Coordinator and the Supervisor of Grounds lead committee meetings.
2. The committee's primary function is to ensure that the college follows the Campus Tree Care Plan by advising and assisting the Grounds Crew. The committee holds meetings several times a year at which it provides input into campus landscape improvements, contributes in policy discussions and works to gather and disseminate information that will benefit the tree care program and will educate the campus community. The committee is also responsible for moving the college towards a Tree Campus USA designation through the Arbor Day Foundation.
3. The committee members serve for a period of one calendar year and can renew at their own discretion. Committee members are expected to actively participate and contribute in policy/guideline issues as well as research/information gathering that would aid in the implementation of the campus tree care plan and the administration of the Tree Campus USA program.

Campus Tree Care Plan

Purpose

The Ursinus College (UC) Tree Care Plan is intended to provide policies and procedures for the maintenance, preservation, removal, phased replanting and enhancement of the campus' tree canopy. Ursinus' campus is about 30 miles west of center city Philadelphia and 10 miles northwest of Valley Forge National Historical Park. Ursinus is a small, private liberal arts college with a population of approximately 1,650 students.

Responsible authority/department

Ursinus College's Tree Care Committee will also be responsible for education about and enforcement of the UC Campus Tree Care Plan. The Tree Care Committee will act in an advisory and oversight capacity to Facilities regarding the maintenance, care and removal of healthy trees and the planting of new trees on campus. Facilities grounds staff will be responsible for decisions regarding the removal of dead or heavily damaged trees.

Dave Bennett	dbennett@ursinus.edu
Steve Gehringer	sgehringer@ursinus.edu
Patrick Hurley	phurley@ursinus.edu
Kate Keppen	kkeppen@ursinus.edu
Neil Tyson	ntyson@ursinus.edu

Questions about the UC Tree Care Plan can be addressed to any of the members listed above.

Campus Tree Care and Arboriculture Practices

Planting and Landscaping

Tree Planting Standards

- Plant Selection: Trees to be used on campus must be preselected at the farm or nursery for good quality and tagged.
- Only trees of 2”-2 ó” minimum caliper and maximum of 4”-4 ó” caliper will be planted. *Holes* must be at least twice as wide as the diameter of the root ball of a tree.
- *Trunk Flare* should be visible after the tree has been planted and mulched.
- *Height:* Before placing the tree in the hole, check to see if the hole is deep enough. The top of the root ball should be 2-3 inches above grade.
    - Avoid damaging the tree when setting it in the hole by always lifting by the root ball.
- *Straighten* the tree in the hole, being sure to view the tree from several directions to confirm the tree is straight.
- *Fill:* Fill about one third of the hole, then gently pack the soil around the root ball. If using a balled and burlap root ball, cut the twine, remove the top third of the wire basket and pull back the burlap to expose the top of the root ball. Fill in the remainder of the hole and gently pack to remove air pockets that may cause roots to dry out.
    - If the soil is poor or full of debris, it should be removed and replaced with fertile topsoil.
    - If the soil is compacted, it should be broken up, loosened and amended with composted organic material.
        - Composted organic material will improve the drainage and aeration of the clay soil.
        - This material should be incorporated at 25-50 percent of total soil volume in the rooting area.
- *Water:* thoroughly water in the root ball and add more soil if settling of backfill occurs
    - Newly planted trees must receive adequate water weekly during the entire first growing season right up until dormancy in the fall, by irrigation or placement of ooze bag or hand watering.
- *Mulch:* Cover the tree ring with 2-4 inches of mulch making sure the trunk is not covered. There should be a mulch free area of 1-2 inches from the trunk flare.

Trees Planted within Patio or Parking Spaces

- The minimum size for an in-pavement planter cutout is 4 feet by 4 feet in sidewalks, patios, and parking lots.
- *Root Control Fabric* will be used when planting within a hardscape in order to control the growth of roots and prevent expensive damage of pavement and

other landscaping details without permanent damage to the tree's root system.

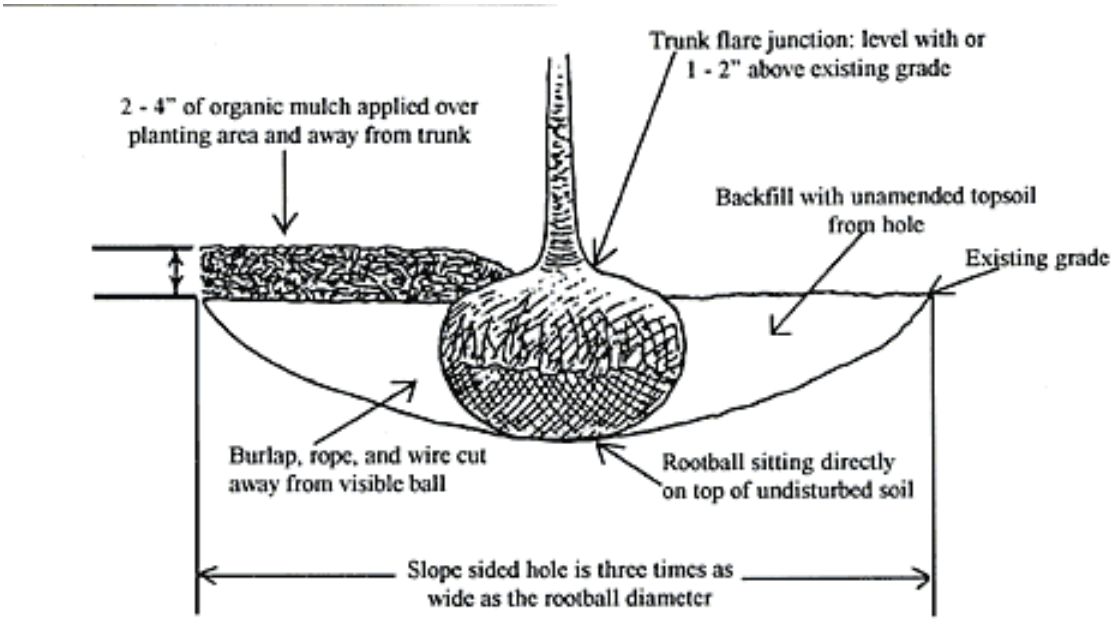

Diagram illustrating proper planting procedure for a tree or shrub.

Special Trees

Memorial Trees: Individuals and organizations seeking to dedicate a tree, plant, or bench in memory or honor of a member of the College community must seek approval from the Campus Tree Care Committee and Facilities Services. Wording for all plaques and tree tags must be approved prior to installation.

- A minimum donation of $2,500 is requested to plant a memorial tree. The donation covers the purchase and installation of the tree and provides funds for future maintenance. Trees plaques will be placed in the mulching bed.
- For a listing of current Memorial Trees, and their locations on campus, see Appendix C, "Memorial Trees."

Maintenance

Ursinus will use the Borough of Collegeville's tree-related ordinances[1] as the base standard for our maintenance practices. Above and beyond those ordinances, we have the following:

Pruning Schedule: The maintenance pruning schedule shall be dictated by tree species, age, function, and placement. We will aim for the following schedule, however, staffing levels will determine our ability to adhere to this schedule.

- Trees less than 7 years old should receive structural pruning on an annual or biennial basis
- Trees 7-20 years old should receive structural pruning every two to five years.
- Trees 20 years old and older receive maintenance pruning every five to seven years to clean dead, diseased, dying, and defective branches from the crown.
- Trees adjacent to roadways, walkways, signs, and street lights are annually inspected for safety and clearance issues and maintenance pruned as necessary.

Pruning Practices:

To encourage the development of a strong, healthy tree, the following guidelines shall be followed when pruning.

- Pruning shall not be conducted without a clear objective. The order of significance of objectives is as follows:
    1. Safety
    2. Health of tree
    3. Aesthetics
    4. Nighttime light dispersion for pedestrian safety.
- When removing branches, the pruning cut shall not damage the branch park ridge and branch collar.
- Internode (heading) cuts should not be used except in storm response and crown restoration procedures.
- Branch reduction or thinning should be used to achieve pruning objectives rather than making large branch removal cuts.
- Large branches that are dead, diseased, dying or defective should be removed with the aid of ropes and rigging equipment to minimize the risk of tree injury from falling debris.
- *Thinning*: performed to reduce the density of branches, which increases light penetration, improves visibility, and decreases wind load.
    - Assess how a tree will be pruned from the top down.
    - Favor branches with strong, U-shaped angles of attachment. Remove branches with weak, V-shaped angles of attachment and/or included bark.

[1] Part 12 (Streets and Sidewalks). This is searchable at www.keystatepub.com/search/. You will have to type "Tree" in the search box and select Collegeville Borough from the municipality pull down menu.

  - Remove any branches that rub or cross another branch.
  - Make sure that lateral branches are no more than one-half to three-quarters of the diameter of the main stem to discourage the development of co-dominant stems.
  - Do not remove more than one-quarter of the living crown of a tree at one time. If it is necessary to remove more, do it over successive years.
- *Raising*: performed to provide vertical clearance from thoroughfares, signs, street lights, and structures.
  - Maintain live branches on at least two-thirds of a tree's total height.
  - Remove basal sprouts and vigorous epicormic sprouts.
- *Reduction*: performed to decrease the overall height of a tree or to decrease the length of an individual branch.
  - Use only when absolutely necessary.
  - Make the pruning cut at a lateral branch that is at least one-third the diameter of the stem to be removed.
  - If it is necessary to remove more than half of the foliage from a branch, remove the entire branch.

Mulching:

- Every two years for trees up to approximately 6" in diameter. Periodically, drip lines of larger trees and tree grouping are mulched extensively with waste woodchips.
  - Six foot diameter mulch areas shall be maintained around all trees. Mulch shall be maintained at a depth of one to three inches.
  - No more than 2-3" of mulch should cover the roots at any point in time.
  - Mulching is, in part, done to provide a guide for mowers and equipment so that young trees and their roots are protected from vehicles and equipment.

Irrigation:

- New shrub and tree planting is hand watered from a spigot or a mobile water tank. Although time consuming, hand watering or spot watering is very water wise as only the plants that need water receive water rather that the entire surrounding landscape. Newly planted trees shall receive one inch supplemental water per week in the absence of 1 or more inches rainfall, for the first two years through the automatic sprinkler system or through hand-watering.

Fertilization:

There is no regular tree fertilization beyond treatment received as a result of lawn fertilization. Specimen or high-value trees may receive prescription fertilization when severe nutrient deficiencies are diagnosed.

Pest Management:

Most pest management is handled through the College's integrated pest management plan, though trees may be treated for pest problems as needed. Should a pest infestation be suspected, please contact Facilities Services.

- *Integrated Pest Management (IPM):* a pest management strategy in which a combination of means including design choices, cultural practices and chemical controls are used to manage pests in the landscape. The university employs an integrated pest management system in all landscaping. A healthy sustainable landscape is dependent upon choosing the right plant for the site. The Facilities Services grounds staff strives to use improved cultivars, disease resistant varieties and proven species whenever possible.
- *Maintenance Practices:* Several maintenance practices are implemented in a successful IPM program. Soil is amended to promote healthy vigorous plants. Mulches are used to suppress weeds, insulate the soil and regulate moisture. Turf is mowed at regular intervals at the proper height. Proper pruning is practiced on all trees and shrubs in accordance with the specifications outlined in the Campus Tree Care Plan. A wide variety of species are planted not only for visual interest but for genetic diversity. Older, more disease prone varieties are gradually removed and replaced with disease and insect resistant varieties.
- *Chemicals:* As a last resort chemical means are used to control pests. Chemical controls are generally used only as a curative measure, however there are some circumstances where less chemicals used in a preventative application are more effective than a greater quantity of chemicals when curatively applied. The university is committed to using the least toxic chemicals available to control particular pests. Organic pesticides are used whenever possible.

Removal

- Trees may only be removed after consultation with the Campus Tree Advisory Committee unless the tree is dead or is severely damaged or compromised as to be a safety hazard.
- Live trees are generally removed only when required to protect the public safety, when they interfere with construction, or detract from the quality of the landscape.
- Diseased trees are generally treated where the possibility of recovery is reasonable. Should the disease be irrecoverable, the tree will be removed for the publics' safety.
- Snags, or dead trees, will be left in place (standing or lying on the ground) in areas where they do not impact safety of pedestrians or private property. The areas of campus where this may be allowed include the wooded areas on the edges of campus. Snags provide valuable wildlife habitat.
- A tree that is removed shall be replaced with the same (or similar) species or cultivar in the same location if:
    - The stump can be removed to the extent necessary to replant.
    - There are no utility or location conflicts.
    - The species is not on the list of Prohibited trees
    - The species is not susceptible to disease

- *Notification:* The campus community will be notified of the removal of significant trees via a broadcast e-mail that includes that reasons for removal and a photo of the tree. The Committee defines a "significant tree" as one that meets one of the following:
    - The tree is considered a specimen tree
    - The tree is considered important for historical heritage
    - The tree is a dedication/memorial tree
    - The tree is rare for southeastern PA
    - The tree is 18 inches or more in diameter

Emergency Situations

Storm response and recovery are generally accomplished in-house. Additional labor may be contracted. In a crisis, the first priority is to remove tree debris that blocks community and campus roads, disrupts operations, or poses hazards to the campus community. Then access to critical buildings (administration, buildings with critical labs, library, student center, etc.) shall be cleared in that order. In the advance of severe weather conditions, all necessary equipment shall be checked for readiness and safety by staff.

Once these needs are addressed, a recovery plan is implemented:

- Unsalvageable trees are systematically removed
- Salvageable trees are pruned to restore their health and structure.
- Lost trees are strategically replaced using the Tree Endowment Fund to restore the structure and function of the campus forest in a reasonable time frame.

Protection and Preservation Procedures and Policies

Education

Trees on the Ursinus campus are an educational asset. We have several courses that include education about trees, wider urban forest dynamics, and human interactions with these systems. We feel that educating our campus about trees is part of a successful tree care plan. There are several ways in which this education takes place:

- Inclusion of information within academic courses about the importance and social and ecological benefits that are provided by trees.
- Service learning projects that center around trees, tree planting, and ongoing tree care practices.

- Information on our website about campus trees, the social and ecological benefits trees provide to the community, and information about tree planting and care.
- Information about iconic trees on campus, including our Penn Treaty Tree.
- Special information about how/whether to harvest fruits and nuts from trees on campus.

Prohibited Practices

The following practices are prohibited on all College-owned land with respect to trees and landscaping. Trees may not be used for any purpose that would be detrimental to the trees. The activities restricted under this policy include but are not limited to:

- Posting of signs, artwork or banners
- Locking bicycles to trees
- Leashing dogs to trees
- Nailing or tying any objects to trees
- The hanging of hammocks, or the employment of slacklines
- Carving initials on trees
- Any type of willful vandalism to trees or landscaping
- Planting of any tree on campus without the knowledge and consent of the Facilities' grounds supervisor
- Harvesting fruits/nuts from trees without permission from an appropriate Facilities staff member

Construction

Protection of trees that remain within a construction site is a high priority and the college requires contractors to use every reasonable measure to protect the root system and canopy of these trees. The Facilities Services department is available to contractors for consultation on the best measures to protect individual trees and root systems.

Planning before Construction:

Notification: In the early stages of construction planning, the Facilities' grounds supervisor will be notified in order to assess the trees and other green spaces within the proposed work site.

Recommendations for tree protection, removal, or transplanting will be made by the grounds supervisor based on his/her assessment of the impacted site; recommendations will be presented to the project manager and all appropriate personnel before bid packages are prepared.

Bid Package: All Contracted Design Services shall receive a copy of applicable sections of the Tree Care Plan/ Tree Protection Guidelines for the given project as part of the bid package. All design and bid specifications will incorporate these guidelines for awareness.

All bid packages shall include a staging plan that delineates protection for trees within the staging areas of both indoor and outdoor projects. This written Tree Protection Plan for the construction project shall be provided to the grounds supervisor and the director of the Facilities Services Department for review and approval no less than 2 weeks before construction begins. Trees may not be removed or damaged before approval is received.

Protective Measures During Construction:

Tree protection zones

Tree Protection Zones shall be established and maintained for all trees to be preserved in a construction site. A qualified member of the UC grounds department will determine which trees require protection and the area of protection and mark said area. Barriers for each tree will be placed to protect the trunk and root systems. Protection zones will be no smaller than the tree's drip line. Absolutely no work will be done in these protection zones.

- The following must not occur within the tree protection zone:
  - Stockpiling of soils.
  - Operating or storing construction equipment.
  - Burning in close proximity to the protected areas.
  - Grading the cause's runoff or flooding problems.
  - Parking vehicles and storing supplies.
  - Storing and spilling of toxic materials.
  - Storing and spraying of herbicides in close proximity to the protected areas.
- During periods of moisture stress, trees within the construction zone may be watered whenever soil moisture content is below 50% of filled capacity. The watering will result in additional cost to the owner as outline in the contract documents.
- Root area of trees where soil has been compacted due to construction activity shall be vertically mulched (aerated) at the direction of the qualified professional. This shall be 10.0' beyond the drip line. A 2" to 3" air spade shall be used to drill holes to a minimum depth of 12". Type of backfill will be determined by the qualified professional. The compressor air method for the aeration of compacted tree root zones is acceptable.

- Any trees whose trunks, limbs or roots that are damaged during construction shall be treated within 24 hours. The party responsible for such damage will incur all costs associated with these treatments. Treatments shall be completed in accordance with the National Arborist Association standards.
- Boring through the Critical Root Zone (CRZ) is the ISU preferred method for underground utilities where trenching would cause significant damage to a large percentage of surface roots.
-

No root raking shall be allowed within any tree protection zone at anytime during clearing, grading or construction of a project.

Fencing

Within a site, tree protection fencing will be installed around the drip line of each tree before any construction, excavation, demolition, land clearing, grading, or other land disturbance begins.

- The contractor or subcontractor or personnel responsible for the project will construct and maintain fencing, for each protected tree or group of trees on the site, encircling the drip lines of all identified trees to prevent unnecessary damage. Project managers will ensure that work sites do not spread onto nearby areas outside the designated work zone.
- *Fencing*: Chain link fencing, wood fencing, plastic construction fence, of at least four feet height and supported at a maximum of ten-foot intervals by posts will be used. Wooden stakes and rebar posts are not considered an approved method sufficient enough to keep the fence upright and in place. See Appendix D, “Fencing” for illustrations of proper fencing techniques.
    - *Signage:* Signage attached to tree protection fence – “Building with Trees” signs are available from the National Arbor Foundation. Signs shall be placed on the fence at the direction of the Facilities department.
- *Removal* of all tree protection fencing, silt fencing and signage will be done by the general contractor when permitted by the owner and/or qualified professional.
    - Restoration of all areas disturbed by the fencing and/or signage shall be the general contractor’s responsibility.
    - All signage shall be turned over to the Ursinus College Facilities Services department
- *Unforeseen tree work* shall be approved by the UC project manager and the Grounds manager before being undertaken.
    - This would include any work occurring as a result of change orders
    - Also includes unforeseen work that could have been planned for but wasn’t anticipated during the planning stage.

Stump removal

Trees cleared from the site and the perimeters of the site will have their stumps removed by grinding them out to protect and preserve nearby saved trees.

Vehicle access

Set entrance and exit points on site will be determined prior to breaking ground on the project. Vehicles accessing the site will use only the designated entrances and exits so as to prevent damage to on-site trees.

- Unless impractical, designate only one access route on and off the construction site. Landscaping Services approval must be obtained for additional access road locations.
- The access drive should be restricted to an area that will later serve as a route for utility wires, water lines or roads/sidewalks.
    - Entrances must be constructed according to code as specified in the Borough/County approved erosion and sediment control plan.
- Parking: All contractors must be instructed where they are permitted to drive and park their vehicles. Contractors will **not** be authorized to park on landscape or sidewalks without express approval from Facilities Services. Parking for site personnel and visitors is available in the College's designated parking lots.

Construction Interference from Remaining Trees:

When trees to remain on site after construction interfere with construction attempts, the following guidelines apply:

- *Trenching*: When trenching or digging near trees, every effort will be made to avoid damage to the tree's root system.
    - If utilities cannot be routed a safe distance from a tree as defined by the drip line, boring may be used to minimize damage and future risk.
    - Roots damaged by trenching or digging should be pruned by a professional arborist before the area is backfilled. Root pruning is a process in which clean cuts are made to allow for the fastest callusing of necessary wounds and healthy re-growth of lost root systems.
    - *Silt Fences*: Silt fencing will be anchored above tree roots by folding one foot of the fencing to the uphill side of the tree and then covering this fold with six inches to one foot of

Improper trenching can result in severe root damage –such as the damage to this oak tree.

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gravel to hold it in place. Placing silt fence as such should avoid unnecessary trenching of tree roots.

- *Above Ground Pruning*: In the event limbs are causing a clearance issue for equipment or otherwise, the Grounds Department should be notified as soon as possible. All pruning of above ground branches will be performed by or under the supervision of the grounds supervisor.
- *Root Pruning*: As with above ground pruning; trees benefit from clean cuts on their roots as well. Notify the Facilities Services Department when encountering roots during construction. The grounds supervisor may want to prune these cleanly before backfilling occurs.

Remediation and Recovery:

The College will take steps to aid in the recovery of trees traumatized by construction in the surrounding area.

- Remove contaminated soil and aerate compacted soil.
- Keep the same grade as before construction – more than two additional inches of soil or sod can ultimately kill an otherwise healthy tree.
- Monitor trees for as long as needed, checking for insects or disease that can strike a weakened tree.
- Water trees during dry periods to help them recover from construction stress. Fertilize annually with a slow-release non-burning complete fertilizer.

Tree Damage Assessment — Enforcement, Penalties, And Appeals

All trees that are damaged are to be brought to the attention of the grounds supervisor who will advise and help coordinate the appropriate action. Assessment of campus trees is performed by Facilities grounds supervisor and an outside consultant company, as required. Action could include, removal of the tree, pruning, or fertilization. The cost for removal, replacement or remedial work is to be charged to the person, company or department that has caused the damage.

The damaged tree will be documented, including photographs, and recorded in the Tree Inventory Data Base. The responsible party will be notified and provided with an assessment of the damage and cost to repair or replace the tree. Facilities Management staff will be responsible for enforcing the regulations. Appeals are to be directed to the Director of Facilities Services.

Any tree damage created by a contractor or outside source will be evaluated and the cost of damage, replacement or maintenance will be evaluated by the grounds manager with an option for UC to engage an independent arborist if the contractor disputes the value as excessive. The party responsible for the damage will then be billed by the College for damage incurred. If the damage was a result of a construction project, the cost will be billed to the contractor.

Goals and Targets

Ursinus has made the following goals for our Tree Care:

Goal 1: Tree Inventory/Digital Arboretum

A partial tree inventory of the Ursinus Campus was created in the spring of 2012. This database, available online, includes the locations and basic details of all major trees on campus. Our goals with regard to the digital arboretum are:

- Confirm the accuracy of this tree map with our Facilities Services grounds staff.
- Expand upon this project and increase the utility of the project, particularly as pertains to future construction projects, campus planning projects, tree management, academic exercises and public education.
- Expand the digital arboretum to include an interactive gallery of heritage and memory trees on campus.

Goal 2: Public Awareness

The second goal of the Campus Tree Care Plan is to promote public awareness of the College's diverse, valuable campus forest by increasing transparency in facilities and promoting the recognition of Arbor Day to coincide with the College's annual Earth Day festivities.

Goal 3: Tree Master Plan

Finish the tree plantings recommended in the College's Tree Master Plan. Then update that plan with the next three phases. The College's Tree Master Plan recognizes that the College's trees are a significant component of the campus' character that are worth preserving and replacing in a planned manner to preserve that character.

Communication strategy

The Campus Tree Care Plan and Policies will be available electronically on the web site of the Facilities Services Department and the Office of Sustainability web site.

This plan will also be included in the UC Design Guidelines so that they will be available to UC project managers, designers and construction firms for including in project specifications.

The Campus Tree Plan will be communicated to the college community through three different avenues:

1. Publicity: Participation in Tree Campus USA will be shared through a campus wide press release explaining campus participation, the benefits, and requirements. The Campus Tree Plan will be posted on the Office of Sustainability webpage and the Facilities Services webpage, and a link to the PDF will be provided in the press release. The Office of Sustainability already has a webpage devoted to education about and care of trees on campus. Information about Ursinus' participation will be disseminated through social media channels. Office of Sustainability staff members will pursue the possibilities of articles in campus newspapers and online campus magazines.
2. Curricular and Co-Curricular Engagement: As part of curricular and co-curricular educational efforts, Ursinus offers various opportunities depending on the semester. One of Ursinus' Environmental Studies faculty teaches a "Forests and Peoples" course on a rotating schedule, and will incorporate the Campus Tree Plan into his course. Additionally, through the Office of Sustainability and UCARE (Ursinus Center for Advocacy, Responsibility, and Engagement) the campus community has periodic opportunities to participate in reforestation efforts on and off campus.
3. Collegeville Community: The Office of Sustainability will have a staff member represent the College on the Collegeville Tree Tenders organization. Through this connection, Ursinus will disseminate information about happenings on campus and will be able to share with and learn from outside organizations. A relationship with the Collegeville Borough Council, perhaps through the Collegeville Economic Development Corporation, will be pursued.
4. Outside Contractors: We will convey our tree care requirements to outside contractors who work on or near our trees.

To further disseminate information regarding the maintenance of Ursinus' trees, the following communication strategies will be used:

- Contractors doing work on campus that directly or indirectly affects trees and/or the landscape will be given a copy of the Tree Care Plan and will be expected to follow its guidelines.
- Information regarding Ursinus' participation in the Tree Campus USA program and the Tree Care Plan will be published in the Sustainability Newsletter and on social media.
- Press releases regarding the Tree Campus USA program will be made available to the media via the UC Communications Office.
- Regular communications will be sent out to the UC community regarding updates and events related to both the Tree Campus USA program and Ursinus' Tree Care Plan via website announcements, newsletter, and social media.

Appendix A: Definitions Of Terminology Related To Campus Trees.

Branch collar – The attached structure that connects the branch to its parent branch or to the trunk.

Caliper - The diameter or thickness of the main stem of a young tree or sapling as measured at six (6") inches above ground level. This measurement is used for nursery-grown trees having a diameter of four inches or less.

Canopy trees - A tree that will grow to a mature height of at least 40 feet with a spread of at least 30 feet.

Clearing - The removal of trees or other vegetation of two inches DBH or greater.

Critical Root Zone - The minimum area surrounding a tree that is considered essential to support the viability of the tree and is equal to a radius of one foot per inch of trunk diameter (DBH).

Development - The act, process or state of erecting buildings or structures, or making improvements to a parcel or tract of land.

Diameter, breast height (DBH) - The diameter or width of the main stem of a tree as measured 4.5 feet above the natural grade at its base. Whenever a branch, limb, defect or abnormal swelling of the trunk occurs at this height, the DBH shall be measured at the nearest point above or below 4.5 feet at which a normal diameter occurs.

Drip Line - Ground surface area defined by the outer limits of the trees canopy

Ecological Benefit – Services or requirements, such as habitat, that a tree provides to native wildlife.

Green space - Any area retained as permeable unpaved ground and dedicated on the site plan to supporting vegetation.

Impervious surface - A solid base underlying a container that is nonporous, unable to absorb hazardous material, free or cracks or gaps and is sufficient to contain leaks, spills and accumulated precipitation until collected material is detected and removed.

Internode

Integrated Pest Management (IPM) - a pest management strategy in which a combination of means including design choices, cultural practices and chemical controls are used to manage pests in the landscape.

Landscape plan - A map and supporting documentation which describes for a particular site where vegetation, is to be retained or provided in compliance with the

requirements of this policy. The landscape plan shall include any required buffer elements.

Native tree - Any tree species which occurs naturally and is indigenous within the region.

Root (or Trunk) Flare – The outwardly growing part of the trunk where the roots join the trunk of the tree.

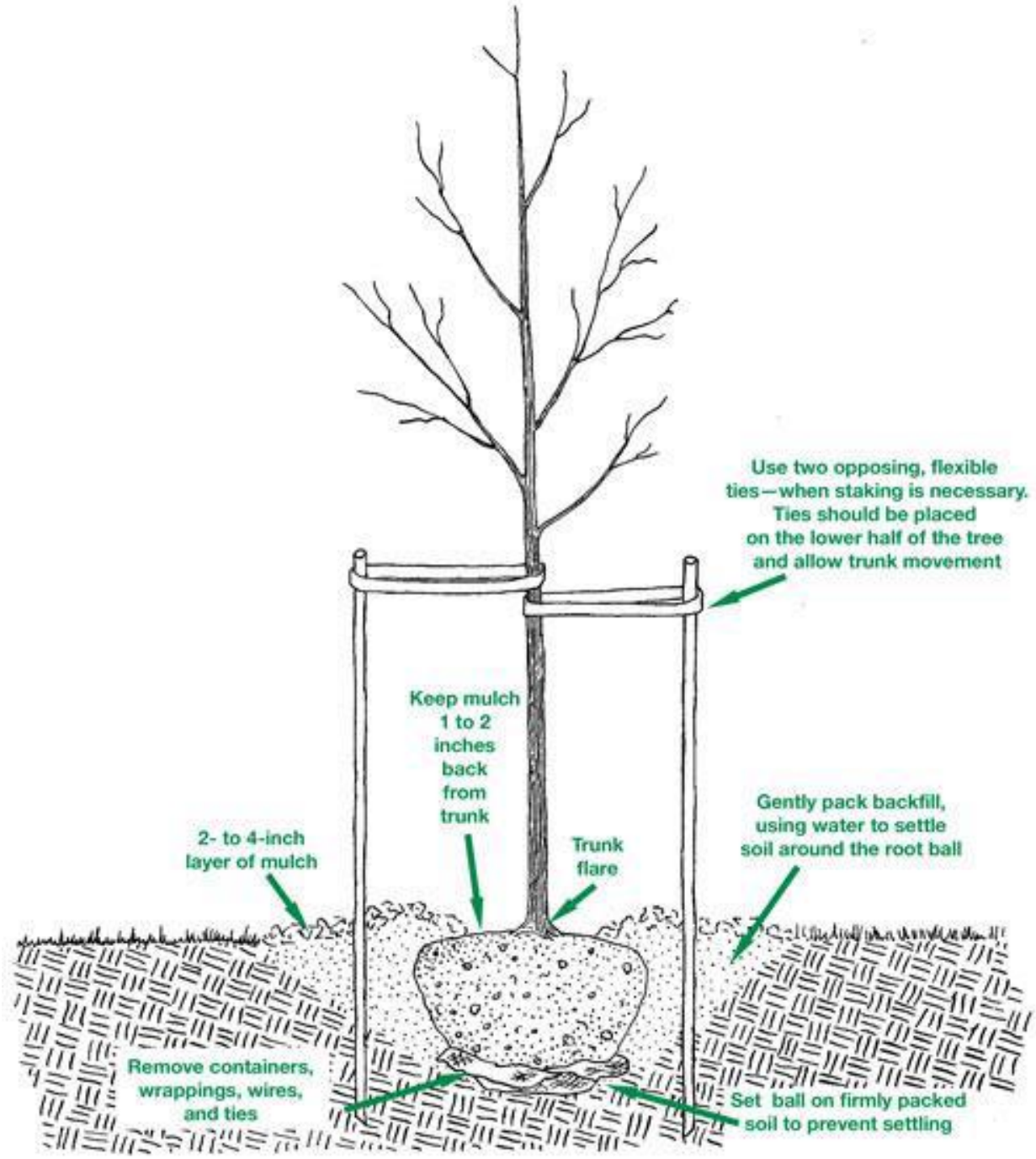
Social Benefit – Services, amenities, or contributions of a tree to the psychological and health, economic, cultural status of individuals in the community or the community at large, including contributions to reduced stress, improved air quality, increases in property value, and quality of life, among others.

Tree establishment plan - A map and supporting documentation which describes, for a particular site where existing trees are to be planted in compliance with the requirements of these regulations, the types of trees and their corresponding trees for reforestations.

Tree protection plan - A map and supporting documentation which describes for a particular site where existing trees are to be retained in compliance with the requirements of the regulations, the types of trees and their corresponding tree for reforestations.

Tree protection zone - The area surrounding a preserved or planted tree that is essential to the tree's health and survival, and is protected within the guidelines of these regulations.

Appendix B: Tree Planting Guidelines:



This diagram is from the University of Louisville's Tree Care Plan.[2]

[2] *http://louisville.edu/sustainability/operations/grounds.html*

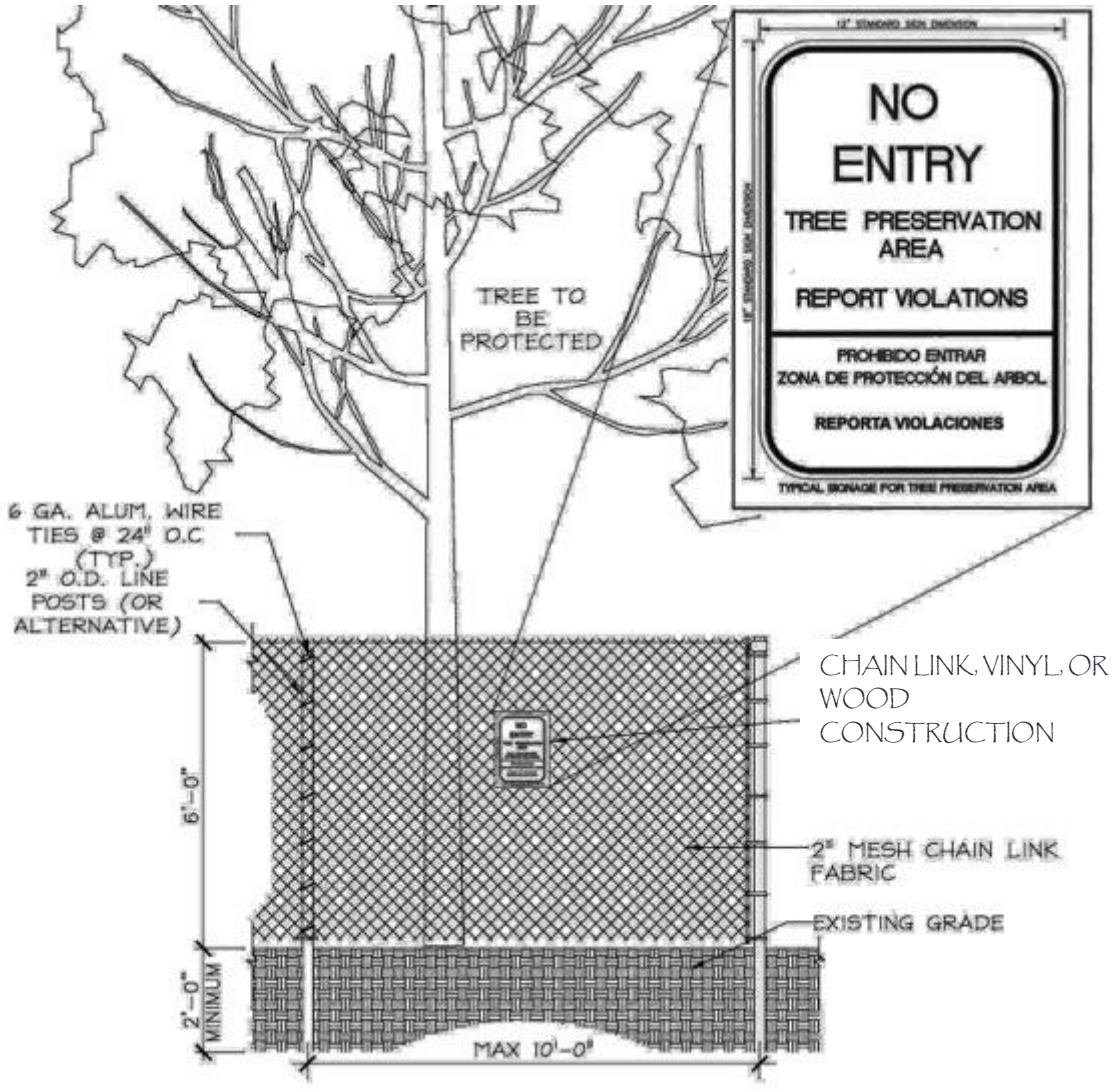
Appendix C: Memorial Trees

Scientific Name	Common Name	LOCATION	In Memoriam
			Mr. Kodama
			Kolleen Williams
Cedrus atlantica	Cedar, Atlas	South side of Pfahler (across from Olevian)	Richard Bozorth
Prunus serrulata 'Kanzan' (Kwanzan)	Cherry, Kwanzan	In Kaleidoscope circle near Strassburger Commons	John Strassburger
Prunus serrulata 'Kanzan' (Kwanzan)	Cherry, Kwanzan	In Kaleidoscope circle near Strassburger Commons	Joyce Henry
Prunus serrulata 'Kanzan' (Kwanzan)	Cherry, Kwanzan	In Kaleidoscope circle near Strassburger Commons	Rachel "Chel" Blunt
Castanea mollissima	Chestnut, Chinese	Flower bed by Pfahler	Faye Shaw
Malus	Crabapple, Flowering	First tree from Edgar Gate	June Boeninghaus
Malus	Crabapple, Flowering	Near Pfahler or Curtis	Justin B. Dominic
Malus	Crabapple, Weeping Flowering "Indian Princess"	Front lawn of Pfahler towards BWC	Jane Barth
Cornus florida	Dogwood	Behind Wismer	Joe Hastings
Cornus florida Cherokee Princess	Dogwood, "Cherokee Princess"	Bed @ end of ramp - Olin	Hamlet Volger (dog)
Cornus kousa	Dogwood, Kousa	Left front corner of Myrin (1 Died & Removed)	James Rue
Cornus kousa	Dogwood, Kousa	Front campus between Myrin & Pfahler	Elizabeth Hankel
Cornus kousa	Dogwood, Kousa	Front of Bomberger Near Zach	Lydia Heefner
Franklinia alatamaha	Franklin tree	NE Corner of Pres. Property	Gertrude Mackie
Chionanthus	Fringetree	Wismer	Art Fahl
Acer platanoides	Maple, Norway “Crimson King”	Side of DLH by tennis courts - stone wall	Marion "Sis" Bosler
Acer rubrum	Maple, Red	Front lawn of Pfahler towards BWC	Evan Snyder

Acer rubrum	Maple, Scarlet Red	Front of DLH	Everett "Ace" Bailey
Acer saccharum	Maple, Sugar	Path towards Pfahler through gateway	Kent State Students
Acer saccharum “Green Mountain	Maple, Sugar “Green Mountain”	Front of DLH - clot top	Richard Whatley
Quercus coccinea	Oak, Scarlet	Front of DLH - 1st tree to right of main entrance	Tracey Hitchner Matthew
Quercus alba	Oak, White	Between Fetterolf & Hobson	H. Lloyd Jones
Quercus alba	Oak, White	Left of Myrin	Young Republicans
Prunus cerasifera 'Thundercloud'	Plum, "Thundercloud"	Between brick walk & fountain by Pfahler	Joseph A. deLaurentis
Cercis canadensis	Redbud, Eastern	Between Bomberger and Myrin	Teresa "Teri" Urban
Metasequoia glyptostroboides	Redwood, Dawn	Between Myrin & Olin - Myrin side	Ronald M. Volkmer
Sophora japonica	Scholar tree, Chinese	Between Thomas & Reimert	Conrad E. Kruse
Picea glauca 'Conica'	Spruce, Alberta	Near Pfahler - Island Tip	Paul C. Kazakauskas
Picea glauca 'Conica'	Spruce, Alberta	Near Pfahler or Curtis	Brian D. Jones
Picea glauca 'Conica'	Spruce, Alberta	Pfahler and Island Tip	Demas Fraternity
Picea abies	Spruce, Norway	Grove on front lawn - by Bomberger	Nelson Williams
Plumeria rubra	Temple Tree	Behind 702 Main	Jocelyn Sheeder
Cladrastis Kentukea	Yellowwood, American	Between Reimert & Thomas - by fire plug	Richard Fletcher
Zelkova serrata	Zelkova	End of walk out of Myrin	Horace E. Godshall
Zelkova serrata	Zelkova	Near Ritter & Patterson Field - walkway by Wismer	Rusty Kleba (dog)

Appendix D: Fencing

Fencing Guidelines Diagram

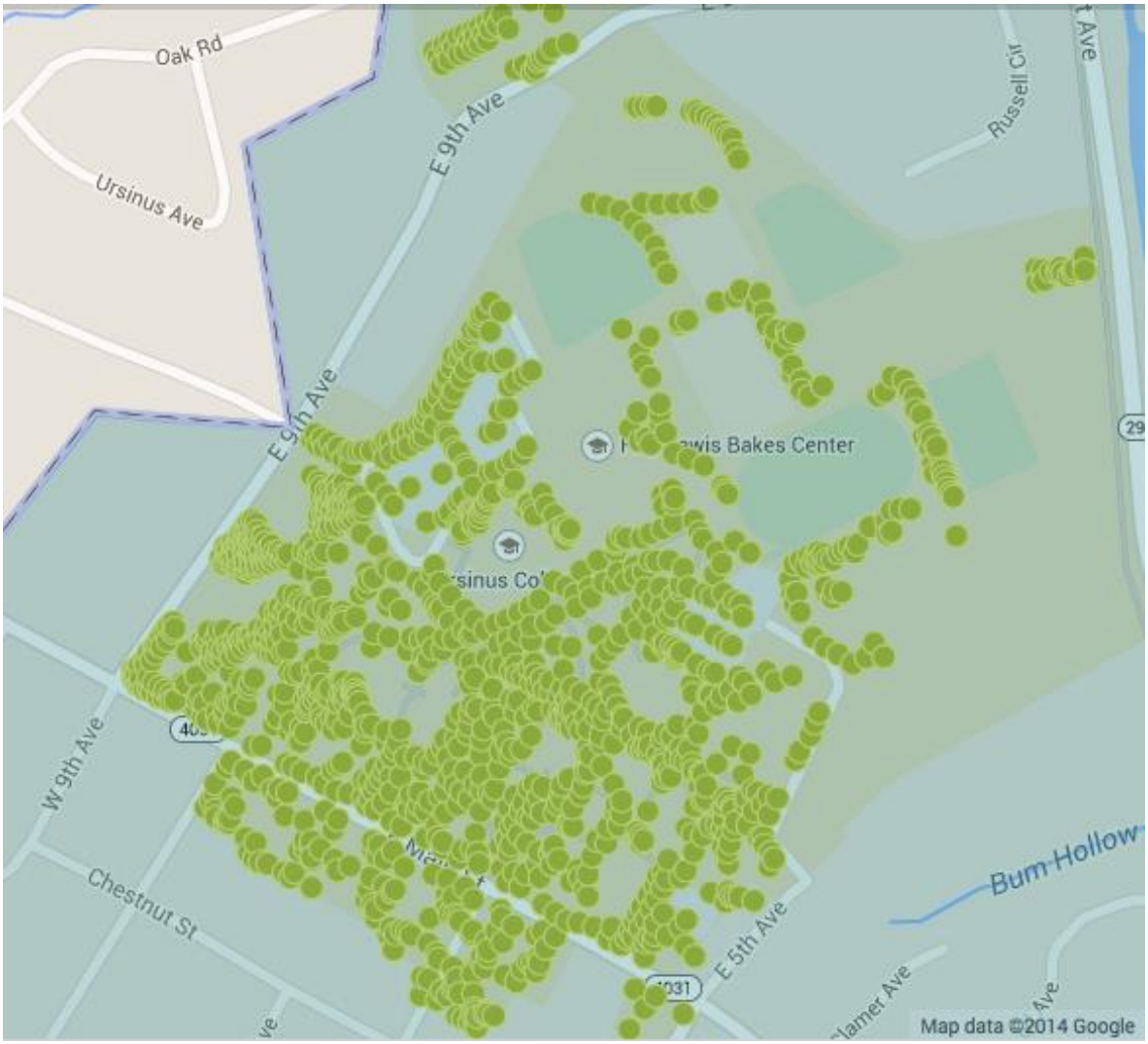


A proper Tree Protection Area features approved fencing and clearly labeled tree protection signage. Fencing must be at least 4 feet in height.

(Revised and Updated 2017)

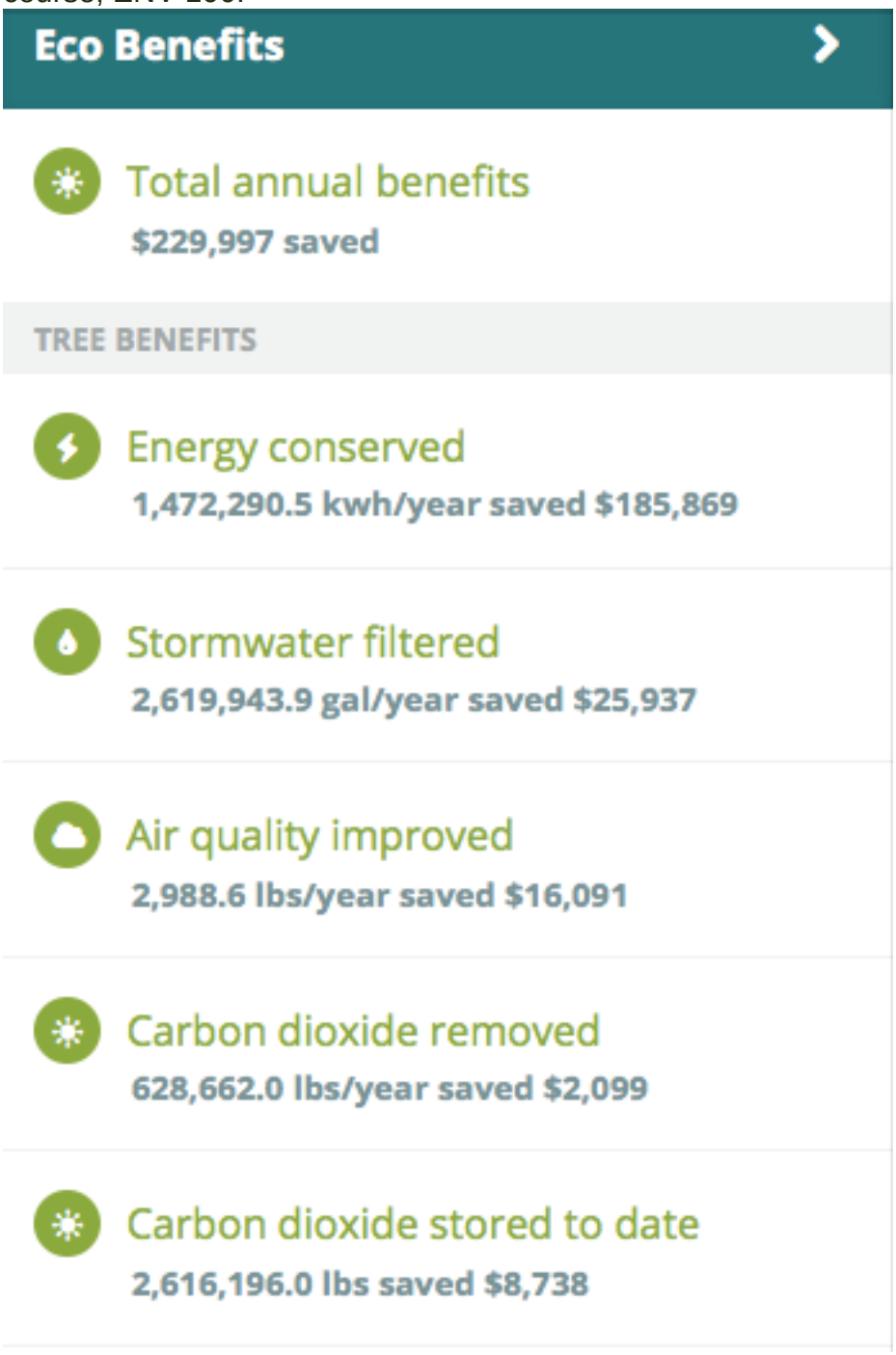
Appendix E: Ursinus Campus Tree Map

Below is a map of our campus trees from a tree survey done by Environmental Studies students as part of a course. The map was created by Amos Almy ('13) as part of an independent study project and used information from the College's tree master plan. The information from the tree master plan was supplemented by additional fieldwork by Almy as well as two other students, Megan Hanscom ('16) and Hannah Marshall ('16), to include trees newly planted since the completion of their survey.



Source: Philly Tree Map: https://www.opentreemap.org/phillytreemap/map/?z=16/40.1944/-75.4568&q={%22mapFeature.geom%22%3A{%22IN_BOUNDARY%22%3A%2231225%22}}

Below is a list of calculated benefits from our campus trees, according to the Philly Tree Map website, drawing on the data illustrated on page 36 and tree size measurements completed by Amos Almy (’13) and students in our introductory environmental studies course, ENV 100.



Source: Philly Tree Map: https://www.opentreemap.org/phillytreemap/map/?z=16/40.1944/-75.4568&q={%22mapFeature.geom%22%3A{%22IN_BOUNDARY%22%3A%2231225%22}}

Appendix F: Ecosystem Services/Benefits of Trees

The following graphic is a GoogleEarth cultural values map created by Amos Almy (’13) which includes data on cultural/provisioning ecosystem services.