(Insert Organization Name Here)

Urban Forestry Management Plan

(Insert organization's logo)

Date



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Introduction

The (insert organization name) has developed this urban forest management plan to provide clear direction and achievable goals for the preservation, protection and enhancement of the urban forest throughout the community. This plan provides the foundation for community ordinances and regulations to guide decision-makers and support high quality management, planting and preservation of the urban forest by public and private landowners and land managers.

The urban forest is all of the trees on public and private property throughout (insert organization name). These trees are located along rights-of-way, parks, around buildings, along pathways, in out lots, in natural areas, backyards, commercial and industrial areas throughout the entire community. This urban forest provides an interconnected network of services and benefits to the entire community. These services and benefits include improved air and water quality, reduction in stormwater run-off, increased property values, energy reduction, improved psychological and physical health, and habitat for wildlife.

**Urban Forest Management Plan Committee**

This plan was developed with the help of key stakeholders within the (insert organization name) and include: (Following are suggestions. Include the name of the person and who they represent.)

Chairpersons:



Internal Stakeholders:

* Trustee or Alderman
* Tree Board or Commission member
* Administrative staff
* Planning Dept. representative
* Forestry
* Public Works - utilities, water, roads representative

External Stakeholders:

* Public Property Stakeholders:
* Park District representative
* Forest Preserve District representative
* School District representative
* Stormwater representative
* Transportation
* Utilities
* Private Property Stakeholders:
* Private Property Stakeholders:
* Homeowner association representative
* Commercial property owner
* Industrial property owner
* Individual homeowner
* Multifamily owner
* Church
* Other Stakeholders:
* Garden Club
* Rotary
* Chamber of Commerce
* Volunteers
* Others

These individuals were selected because of their diverse interests and perspectives. Their engagement in the planning process will serve to further support the implementation of this urban forestry management plan. Their collective input has formed the content for this plan in recognition of the need to preserve, protect and enhance our urban forest, the value of the forest to them individually and to the community collectively.

This plan provides support and detail for the (insert organization name) ordinances and recognizes that ultimately the ordinances are the final authority. These ordinances provide consistency in the preservation, protection and care of our urban forest.

This plan recognizes that the urban forest is critical infrastructure within the (insert organization name). This infrastructure works in conjunction with other infrastructure such as utilities, roads, stormwater systems, etc., however, trees and other green infrastructure help to improve our environment and reduce impacts from built or “gray” infrastructure. The function and health of our green infrastructure directly relates to our overall quality of life.

The primary goal of this urban forest management plan is to provide for a robust, healthy, long lived urban forest. This is only possible when we recognize that trees are a long-lived species. It takes tens of years for a tree to reach maturity, when it can provide the most benefits and services. When a mature tree is removed, replaced with a small tree or not replaced at all, an entire generation, or multiple generations, of service is lost. Larger trees provide larger benefits so it is critical to support a mature, healthy, urban forest so we can maintain our quality of life - for this generation and for the generations to come.

Value of the Urban Forest

In the United States, more than 80 percent of the population lives in urban areas. The urban forest provides many benefits and services. Trees are one of the building blocks that define community character and provide quality of life. When trees are properly planted and cared for, they can promote human health, save energy, improve air and water quality, reduce flooding, mitigate the effects of climate change and reduce costs to taxpayers. The benefits provided by trees far outweigh the cost of planting and caring for them. A study in New York City found that trees provide $5.60 in benefits for every dollar spent on tree planting and care.[[1]](#footnote-1) The study, Urban Trees and Forests of the Chicago region found that the urban forest in the Chicago region provides $5.2 billion in compensatory benefits.[[2]](#footnote-2)

The value of trees grows exponentially as trees grow and mature. Due to tough urban growing conditions, the life expectancy of many trees may not be the same as those planted in parks, in natural areas, or on private property. In addition, data across the region shows that mature tree canopy is declining.2 In order to support our urban trees, so they can provide the most benefits and services, communities need to provide good growing conditions, proper care, property species selection, and protection as trees mature.

**Environmental Benefits**

Trees have a positive impact on air pollution mitigation, flood reduction, heat island mitigation, carbon storage, and provide wildlife habitat. Trees are part of our community infrastructure.

* Trees improve air quality by trapping and removing particulate pollutants, like dust, ash, pollen and smoke, which can damage human lungs.[[3]](#footnote-3)
  + Neighborhoods with greater tree canopy have a reduced rate of childhood asthma[[4]](#footnote-4).
  + An increase of 343 trees per kilometer was associated with a 29% lower early childhood prevalence of asthma in New York City.[[5]](#footnote-5)
  + Trees take in carbon dioxide and produce oxygen[[6]](#footnote-6). A single mature tree can absorb carbon dioxide at a rate of 48 pounds per year and release enough oxygen back into the atmosphere to support 2 human beings.[[7]](#footnote-7)
  + U.S. Forest Service research suggests that urban trees may be 10 times as effective as forest trees for lowering carbon dioxide. Urban pollutants such as ozone, chlorine, fluorine, peroxyacetylnitrate and sulphur dioxide are also all absorbed by trees.[[8]](#footnote-8)
* Trees store carbon reducing greenhouse gases. A single tree stores on average 13 pounds of carbon annually and U.S. forests currently provide the equivalent of $22 billion in carbon storage.[[9]](#footnote-9) Trees in the Chicago region store 16.9 million tons of carbon at a value of $183 million every year.2
* Trees reduce stormwater runoff and provide a natural, cost-effective alternative to expensive stormwater treatment facilities.
  + Trees reduce soil erosion and reduce the amount of sediment in streams. Trees help cities meet clean water regulations by preventing polluted rainwater from washing into clean sources. Knowledgeable design of urban development can solve the problem of runoff quality at the source and also reduce cities’ costs for stormwater management.[[10]](#footnote-10)
  + Tree cover can reduce stormwater storage costs.[[11]](#footnote-11)
* Trees help to keep pollutants out of our waterways, thereby decreasing the need for costly treatment facilities.
  + Certain tree species break down pollutants commonly found in urban soils, groundwater, and runoff, such as metals, pesticides and solvents.[[12]](#footnote-12)
* Trees reduce asphalt temperatures, reduce heat island effect, and reduce ultraviolet radiation levels.[[13]](#footnote-13)
  + Evapotranspiration, alone or in combination with shading, can help reduce peak summer temperatures by 2–9°F (1–5°C).[[14]](#footnote-14)
  + Large numbers of trees and expansive green spaces across a city can reduce local air temperatures by up to 9°F[[15]](#footnote-15)
* Trees provide habitat for many types of wildlife. Migratory birds depend on these resources for shelter and food.
  + Studies have shown that even modest increases in the native plant cover on suburban properties raise the number and species of breeding birds, including birds of conservation concern.[[16]](#footnote-16)
* Decaying leaves from trees, supports good soil health and provides excellent mulch.[[17]](#footnote-17)

**Economic Benefits**

Trees pay us back in many ways. Individual homeowners, commercial property owners, and municipalities all benefit from a large healthy tree canopy.

* Trees reduce the amount of energy needed to heat or cool our buildings. Along with saving money, this service cuts emissions from the fossil-fuel burning power plants that generate electricity.[[18]](#footnote-18)
* Shade from trees can prolong the life of asphalt surfaces and minimizes the heat load of asphalt. This can lessen the costs of gray infrastructure.[[19]](#footnote-19)
* Trees increase home values. The presence of larger trees in yards and as street trees can add from 3% to 15% to home values throughout neighborhoods.[[20]](#footnote-20)
  + A study found 7% higher rental rates for commercial offices having high quality landscapes.[[21]](#footnote-21)
* Trees are good for the economy and increase foot traffic to local businesses.
  + Shoppers indicate that they will travel greater distance and a longer time to visit a district having high quality trees, and spend more time there once they arrive.[[22]](#footnote-22)
  + In central business districts with a high-quality tree canopy, shoppers may spend 9% to 12% more for goods and services.[[23]](#footnote-23)
  + In the walkable and bikeable community, trees function in many ways but most importantly they help to create a sense of enclosure and improve safety.[[24]](#footnote-24)
* One study evaluated the value and role of urban forest trees (woody ornamental trees) in the United States; the total output of tree production and care services was valued at $14.55 billion, which translated into $21.02 billion in total output impacts, 259,224 jobs, and $14.12 billion in value added.[[25]](#footnote-25)
* When properly harvested, trees supply wood products that can generate revenue. Urban wood utilization is beginning to be a recognized component of LEED building certification.[[26]](#footnote-26)
  + Logs from removed trees can be sold for many commercial and artisan wood products.

**Health and Social Benefits**

Developing and maintaining a thriving urban forest is a smart investment for any community. Trees create a sense of community, they are a living legacy, improve our mental and physical health.

* Equal access to trees and green spaces for all residents provides a strong foundation for overcoming environmental, health and economic challenges that plague neglected neighborhoods.
  + In communities with trees, people report stronger feelings of unity and cohesion with their neighbors; trees increase social equity[[27]](#footnote-27).
  + In one study elderly people that had nearby parks, tree-lined streets, and space for taking walks showed higher longevity over a 5-year study period.[[28]](#footnote-28)
* Trees promote healing. Hospital patients with a room viewing trees and nature heal faster and report needing less pain medication.[[29]](#footnote-29)
* Exposure to trees decreases mental fatigue, lowers blood pressure, and reduces heart rates.
  + Trees reduce stress.[[30]](#footnote-30) Stress reduction is enhanced when people recreate in natural environments that are familiar to them.[[31]](#footnote-31)
  + Green environment impacts worker productivity: in one study workers without nature views from their desks claimed 23% more sick days than workers with views of nature.[[32]](#footnote-32)
  + Schoolchildren with Attention Deficit Hyperactive Disorder show fewer symptoms if they have access to natural settings.[[33]](#footnote-33)
* Trees help keep people healthy. Trees support the fight against obesity by providing attractive, shaded, comfortable spaces that encourage people to get outside and get active. [[34]](#footnote-34)
* There is a proven connection between the way a neighborhood looks and feels and public safety. Trees help people feel safe in their community.[[35]](#footnote-35)
  + Public housing residents with nearby trees and natural landscapes reported 25% fewer acts of domestic aggression and violence.[[36]](#footnote-36)
  + Trees on public property have been shown to reduce crime; possibly by attracting people to spend time outdoors.[[37]](#footnote-37)
  + One study found that people who use public open spaces are three times more likely to achieve recommended levels of physical activity than those who do not use the spaces, which means we need to invest in tree-filled public spaces that attract the people in our communities.[[38]](#footnote-38)
  + Studies found that the creation or improvement of a park or open space was shown to lead to a 25.6% increase in nearby residents exercising three or more days a week.[[39]](#footnote-39)
  + A well-developed tree canopy can reduce traffic speeds by 5 to 15 mph, which improves safety for all road users.[[40]](#footnote-40)
* Fruits and nuts from trees contain healthful antioxidants and healthy fats that decrease bad cholesterol. Community gardens are opportunity for residents to gather, learn, work together and enjoy fresh food.
  + Outdoor stewardship volunteering is positively related to physical activity and self-reported health and depressive symptoms, especially among mid-life volunteers.[[41]](#footnote-41)
* Trees are a part of our history and provide solace, a spiritual connection, and a sense of place. Evidence of trees can be found throughout human history, even a sacred connection to trees.
  + The attachment and meaning of a green place can encourage individuals to actively protect and engage in pro-environmental behavior.[[42]](#footnote-42)
  + Greener neighborhoods, especially those with green common areas, encourage social bonding between neighbors and improve the social setting.[[43]](#footnote-43)

**Future Climate Benefits**

Healthy, well-maintained trees and green infrastructure can both mitigate the causes of climate change and help improve communities’ resilience to natural disasters.

* Tree roots anchor soil in place preventing erosion.[[44]](#footnote-44)
* Proper selection, spacing and trimming of trees, along with well-planned utilities, will reduce the likelihood of tree failure during major storms. A line of mature trees can provide protection from fragile or isolated trees that fall.[[45]](#footnote-45)
* Trees provide critical resources that help us meet personal and community challenges in a cost-effective way. Trees are more than aesthetically pleasing, they are a community asset. They provide a variety of important benefits to communities of all sizes and should be at the forefront of the planning process.[[46]](#footnote-46)

**Communicating urban forest benefits**

Though the benefits of trees and the urban forest are well documented, these facts are meaningless unless they can be presented in a way that resonates with your audience. For every aspect of urban planning, economic development, and community development, trees can and should be a part of the discussion. While some board members need to see the raw numbers, others want to see the human impact. Including urban forestry in all levels of conversation ensures that the message is delivered and received in ways that are relatable to everyone. Examples of different messaging strategies are:

* Conducting an i-Tree assessment[[47]](#footnote-47) and presenting the report findings at a board meeting;
* Holding an Arbor Day celebration with a local grade school;
* Creating layered maps showing community tree canopy along with other valued indicators;
* Creating a historic tree preservation/awareness program;
* Develop a memorial tree walk or arboretum in a park;
* Developing a volunteer board to increase awareness and volunteerism in community;
* Showcasing urban forest benefits and impact on community webpages;
* Engaging youth in urban forestry awareness by creating a local disease and pest scouting group;
* Create pamphlets to share community urban forest data and program news with residents – use water bills, library, public works, train stations etc. to distribute;
* Start a community-wide program such as ending volcano mulching, proper watering during summer drought or what trees to plant after ash tree losses;
* Hold a fund raising and awareness event in town centered around a tree theme and use the funds to buy trees for community reforestation.

Environmental education and stewardship have been shown to have profoundly positive social and psychological effects on urban residents.[[48]](#footnote-48) Involving and educating community members at all levels will ensure buy-in, support and participation with urban forestry initiatives. There are many opportunities to share news and importance of urban forestry – start small, enlist lots of support and keep trying new things to keep the topic fresh in everyone’s eyes.

Urban Forest Goals 2017 - 2027

(In this section you will collect the goals and objectives you have identified throughout this Urban Forest Management Plan planning process and lay them out. You will sort out long-term goals from short-term goals. Long-term goals are 10 year goals which will be accomplished by 2027. Start with the long-term goals. Use the short-term goals to explain the how the long-term goals will be achieved. Some examples have been provided.)

**2050 GOALS:**

The Chicago Region Trees Initiative has set a regional canopy goal of \_\_\_\_% for 2050. This goal has been developed incorporating, a buckthorn reduction goal of \_\_\_\_%, and oak ecosystem recovery goals by 2050.

The (insert organization name) has identified goals for 2050 of:

1. Community canopy goal of \_\_\_\_%
2. Buckthorn reduction goal of \_\_\_\_\_%
3. Oak Ecosystem Recovery goals of
   1. . . .
   2. . . .
   3. . . .

**2027 GOALS:**

The (insert organization name) has identified the following long-term goals for preservation, protection and enhancement of the urban forest in our community by 2027. (Examples follow)

|  |  |  |  |
| --- | --- | --- | --- |
| **Goal** | **Timeline** | **Resource Needs** | **Budget Needs** |
| The (insert organization name) will be able to support the 2050 goal by planting \_\_\_\_\_\_\_\_\_ trees over the next 35 years and \_\_\_\_\_\_\_\_\_ trees by 2027. These trees will be of very diverse species with not more than 5% of any one species, 10% of any one genus, or 15% of any one family. | Annual commitment of \_\_\_\_ trees per year. | -Trees  -Corporate public partnership?  -Staff?  -Community nursery? | $ |
| We will reduce buckthorn by \_\_\_\_% by 2027 and \_\_\_\_% by 2050. | \_\_\_\_\_acres removed every year | -Volunteer training program  -Resident education  -Staff training  -Buckthorn mapping  -Community buckthorn removal days | $ |
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Other examples:

1. We support the Oak Ecosystem Recovery Goals by accomplishing the following:
   1. . . .
   2. . . .
   3. . . .
2. Complete a full community public property tree inventory and keep it updated.
3. Complete a stratified community private property tree inventory.
4. Establish a public property 7 year pruning cycle.
5. Hire a municipal forester.
6. Train and maintain two certified arborists on staff.
7. Approve a Silver Level Tree Preservation Ordinance.
8. . .
9. . . .
10. . . .

**SHORT-TERM GOALS**

**2017**

These goals are the milestones by which the long-term goals will be reached. These goals will come from the timeline, resource and budget needs above. These goals are for a one-year period. Separate tables will be made for subsequent years leading to 2027 – resulting in completion of the 10 year goals.

|  |  |  |  |
| --- | --- | --- | --- |
| **Goal** | **Timeline** | **Resource Needs** | **Budget Needs** |
| Plant 1,000 trees annually | May- June and September -November | Contracted planting, mulching and watering - includes 3 year watering contract | $35,000 |
| Develop volunteer program | February - work The Morton Arboretum (free training) on Tree Champions volunteer training program - identify residents to take the training  April - plant 3 trees with new volunteers | 15 volunteers to become trained  Provide volunteers with T-shirts and resources to distribute to residents | $200 |
| Develop resident watering program | February - identify planting locations for new trees;  April - Tree Champions to teach neighbors how to water new trees  May - December - provide resident information, education, and check on trees |  |  |
| Train two PW staff as certified arborists | January - December | Streets Supervisor and Parks Supervisor (take ISA certification course and exam) | $900 |
| Update Village Code with new Tree Preservation Template (Bronze Level) | January - present to Tree Commission  February - incorporate recommended changes  March - present to Mayor and Board  April - incorporate recommended changes  May - approval | Time from Director of Public Works | None |
|  |  |  |  |

(Insert a table for each of the next 9 years.)

**RESOURCES:**

Urban Forest Canopy Cover and Composition

**OBJECTIVES:**

The (insert organization name) has set a canopy goal of \_\_\_\_%. This canopy goal supports the county goal of \_\_\_\_% and the regional goal of \_\_\_\_%. This goal shall be achieved by 2050. In the interim, 2017 -- the period of this management plan, the (insert organization name) shall achieve a canopy goal of \_\_\_\_\_%.

**BACKGROUND:**

The size of the canopy directly relates to the size of the benefits that trees provide. The Chicago Region Trees Initiative, with the U.S. Forest Service, and the University of Vermont, conducted an urban tree canopy assessment for the seven county region (Cook, Kane, Kendall, Dupage, Will, Lake and McHenry). This analysis utilized LiDAR imagery and computer modeling to identify seven land cover layers across the region. These layers include trees, vegetation, bare soil, water, buildings, roads/railroads, other paved surfaces. This information provides a bird’s eye view of where the existing urban forest is located and potential planting locations for prioritized planting. When combined with datasets such as on-the-ground tree inventories, U.S. Census data and other important criteria, it allows us to manage the urban forest in a way that capitalizes on its services.

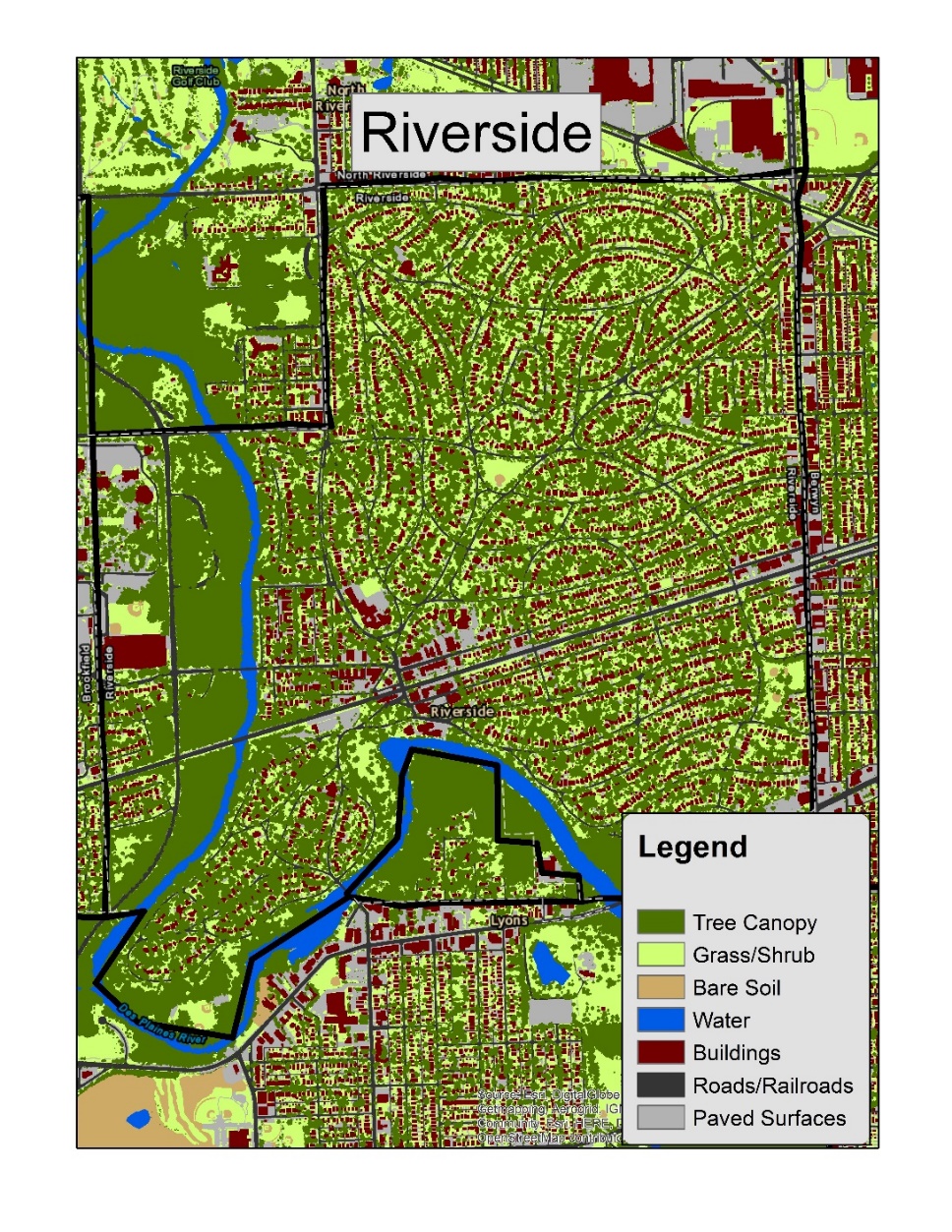
The Morton Arboretum can provide your information for insert here. hereou.Insercommunity canopy% here.

(Insert organization name) has \_\_\_\_% canopy.

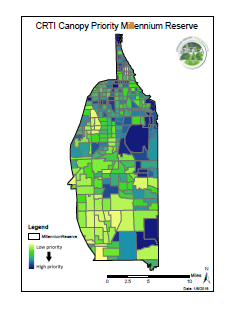


What is the potential plantable space? Plantable space is any space that could be converted to canopy. This requires that the (insert organization name) has a clear understanding of our needs and objectives. For instance, it is not likely a well utilized baseball diamond would be converted to canopy. However, it may identify land adjoining this diamond where tree planting would provide important benefits such as shade, air and water quality improvements that would support this land use. Closer review of possible plantable space is required to determine exact planting locations.

Following is the LiDAR imagery of canopy cover for (insert organization name and canopy map here).



Following is a map of potential planting locations for the (insert organization name and priority map here). This information has guided development of the (insert organization name) urban forestry management plan.



Urban Forest Priority Planting Locations

**OBJECTIVES:**

Using the (insert organization name) canopy analysis, priority planting locations have been identified. Following are locations where tree planting is needed in priority order:

(Provide addresses and explanations why these sites are prioritized as they are. Timeline is for initiation of planting in this location. You may wish to provide a range for larger projects, e.g. May 2017 – November 2027 or beyond.)

|  |  |  |
| --- | --- | --- |
| **Locations in Priority Order** | **Why** | **Timeline** |
|  |  |  |
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Examples:

Public Lands

Rights-of-Way

Buildings

Open Space

Paths and Trails

Waterways or features

Recreation sites

Roads/Rail

Parks

Natural Areas

Agriculture buffers

Others

Private Lands

Residential

Commercial

Industrial

Universities

Corporate Campuses

Utility Easements

Home Owner Associations

Churches

Others

**BACKGROUND:**

Insert here the reasons you why you have selected these locations and why they are placed in this priority order. Include why it is important to the community and how these trees will provide the most benefits.

|  |  |
| --- | --- |
| **Location** | **Reason** |
| Johnson Park | Many removals due to EAB. Replanting will benefit park users, reduce flooding and increase wildlife viewing. |
| Commuter parking lot 2 | Reduce heat island effect, and increase shopping in adjacent area. |
| Butterfly Prairie | No planting will be performed to maintain prairie ecosystem. |
|  |  |

Urban Forest Tree Inventories

**OBJECTIVES:**

1. Complete a community wide inventory. (This inventory can be of every individual tree or a stratified sample.) This work shall be completed by qualified individuals, staff -- if qualified, trained volunteers, or contracted labor.
   1. Public property trees (This includes all trees on public land including parkways, facilities, parks, corridors, schools, naturalized areas, etc.)
   2. Private property trees (This includes residential, commercial, industrial, corporate, churches, etc.)
2. The inventory shall include information on the species, age, condition, location, surrounding land use and ground cover.
3. The inventory shall be recorded in a permanent system, e.g. an excel spreadsheet, GIS database, etc.
4. The inventory shall be recorded in such a way that it is easily updated and shall be updated regularly so that it is accurate and up to date at all times.
5. A cycle for update of the inventory shall be selected.

**BACKGROUND:**

In addition to canopy analysis, an urban forest inventory of public and private property is a critical tool for managing the urban forest. A full tree inventory is the best means of determining the exact forest composition but a stratified sample will provide adequate information for determining species and age composition. A tree inventory will provide information on species, age, condition, location, ground cover and other notes.

Seventy-percent of the urban forest is located on private lands. These trees provide the bulk of the services that the community relies on, e.g. air and water quality improvements, stormwater run-off reduction, heat island mitigation, energy reduction, sense of place, physical and emotional health and wildlife habitat. These trees should be included in the inventory and typically a stratified sample is used. This inventory will assist (insert organization name) in providing direction, education and outreach to private landowners.

Some communities elect to update their inventory on a cycle where only portions of the community are inventoried at any one time. These inventories are usually tied to pruning cycles so that the professionals who are pruning can inventory at the same time. The public and private property tree inventories would then be completely updated every 5 – 7 years with 1/5th or 1/7th completed annually. If completed as part of the public tree pruning contract, poor tree conditions or problems can be easily rectified at time of inventory. The private property inventory can be broken down into 5 or 7 parts and private property in proximity to the public property pruning can be inventoried at the same time. Again, the private property inventory is typically only a stratified sample.

Tree inventories should be recorded in a permanent record such as an excel spreadsheet, inventory software or geographic information system (GIS). It is ideal to have trees entered into a GIS system so that they can be viewed or layered over other important infrastructure, e.g. water lines, utilities and stormwater systems. This allows for cross department coordination, identifies planting conflicts and reduces potential adverse impacts to trees.

Tree inventories are living documents and are only as good as the data they contain. If the data is not accurately recorded or updated regularly it has limited value. It is critical that the system for recording tree activity e.g. removals, pruning, planting locations be up-to-date and in a format that staff is comfortable with and knows how to use. Recording data and updating the inventory is an excellent job for a volunteer.

**SPECIES SUMMARY:**

A summary of the public and private inventories is as follows:

(Insert table of species diversity here. Following are some examples.)

**Public Property Trees (complete inventory)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Species (top five)** | **Average Size** | **Average Condition** | **Percentage of Total Forest** |
| Acer saccharinuum | 30” dbh | Poor | 20% |
| Acer rubrum | 14” dbh | Good | 18% |
| Fraxinus Americana | 24” dbh | Dead | 16% |
| Gleditsia triacanthos | 22” dbh | Good | 10% |
| All others | 8” dbh | Good | 36% |

**Private Property Trees (stratified sample)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Species (top five)** | **Average Size** | **Average Condition** | **Percentage of Total Forest** |
| Acer rubrum | 20” dbh | Good | 26% |
| Acer platanoides | 28” dbh | Fair | 22% |
| Rhamnus cathartica | 3” dbh | Good | 21% |
| Pyrus calleryana | 10” dbh | Good | 16% |
| Fraxinus Americana | 28” dbh | Dead | 8% |
| All others | 14” dbh | Good | 7% |

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

(Place in this section recommendations and needs which address the objectives above, e.g. complete a full public inventory, complete a stratified private inventory, etc. Include dates when this work will be completed, how these issues will be resolved and costs and staffing needs required.)

|  |  |  |  |
| --- | --- | --- | --- |
| **Needs to Be Addressed** | **How Needs Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
| 1. Complete an inventory or public property trees – including species, age, condition, location, surrounding land use, ground cover and other notes. (Identify if this is for each tree or a stratified sample.) |  |  |  |
| 1. Complete an inventory of private property trees -- including species, age, condition, location, surrounding land use, ground cover and other notes. (Identify if this is for each tree or a stratified sample.) |  |  |  |
| 1. Identify a permanent method for recording and storing the inventory. |  |  |  |
| 1. Identify a cycle for when the inventory will be updated. |  |  |  |
| 1. Identify a method for updating the inventory as work orders are completed, trees planted and maintenance is accomplished. |  |  |  |
| 1. Identify any training of staff or volunteers that is required to complete or update an inventory. |  |  |  |
| 1. Other |  |  |  |

**RESOURCES:**

Apps and software available for tree inventories.

Urban Forest Tree Species Selection

**OBJECTIVES:**

1. All trees to be purchased shall be in compliance with The American Standard for Nursery Stock, and shall come from an Illinois Department of Agriculture Certified Nursery. This requirement shall be posted in all bidding documents.
2. Trees to be planted in naturalized areas shall be from seed sourced locally, within 150 miles of the location where the trees are to be planted.
3. Species diversity is very important. Not more than 5% of any one species, 10% of any one genus and 15% of any one family should be planted across the community, along a parkway or a neighborhood. (Note naturalized areas are exempt from this requirement. However, species and age diversity are still very important to the health of natural areas.)
4. Care shall be taken to be sure that native species are adequately represented in the species matrix to support native diversity, wildlife and ecosystems.
5. Species which have been identified as invasive, according to the Illinois Invasive Species List shall not be planted. Care shall be taken to avoid planting species which are known to be invasive but may not yet be included in the Illinois list.
6. Age diversity is very important. The (insert organization name here) shall review the age composition of the species matrix and work to achieve representation of species at different age levels.
7. Education and outreach shall be provided to private landowners on selection of quality stock, the importance of species and diversity, and the importance of native species at least twice per year.
8. Consideration shall be given to select species which are future adapted.

**BACKGROUND:**

Not all contractors know how to correctly plant and care for trees. It is very important that standards and specifications be clearly identified so that the health and viability of the trees to be planted are ensured. References and qualifications should be checked to ensure that the contractor is qualified to provide the services needed. In addition, not all nurseries provide healthy, properly cared for stock. It is very important to select a qualified, certified, nursery that has grown and cared for the trees correctly so that (insert organization name) the trees purchased are healthy and will grow to maturity.

Trees should be selected and tagged at the nursery by the (insert organization name) so that the (insert organization name) can inspect and select good quality stock. In addition, when the trees are delivered, they should be inspected to be sure they arrive in good health.

An understanding of and mapping of natural area locations should be undertaken to preserve and protect the native qualities of those sites. In these instances, a different species matrix is required to support the native qualities of those sites. Species to be planted in these locations should be secured from nurseries that grow locally sourced seed (within 150 miles). If (insert organization name) staff do not have qualifications to manage or make decisions about these areas, it is recommended that an environmental consultant be hired to provide direction on species selection and management. Again, it is critical to select a contractor who has experience and qualifications to do this work. All contractors are not equal.

Broad species diversity is very important to reduce impacts from disease and pest infestations similar to recent experience with ash and emerald ash borer. Review of the (insert organization name) inventory will exhibit species which should be avoided and a need to expand species selection to reduce future problems. In addition, outreach should be provided to local nurseries to advise them of the species needed so they can grow these species to accommodate future planting lists. It is recommended that contract growing be considered to ensure that species desired can be provided when needed and to provide incentive for better pricing.

Native species should be included in the species list (insert organization name) and encouraged to private property owners. These species support native ecosystems, including wildlife. These trees are adapted to our region and thrive in our environment.

The State of Illinois has lists of species which have been identified to be exotic noxious weeds or invasive species. These species should not be planted. In addition to this list there are species which have been identified to be invasive and are in discussion for future inclusion in this list. These species should be avoided until a definitive decision is made.

In some areas, trees will be of equal age based on when the site was developed. It is important to look for opportunities to incorporate a diversity of age classes into these locations. Where possible look for planting locations to provide age and species diversity in these areas. A map of the age structure of the community forest is recommended so that adequate planning and action is in place to limit the loss of large sections of the urban forest at the same time.

When considering what species to plant, understanding of the location where the tree is to be planted and the existing composition are critical. Wet locations require species which are adapted to wet conditions. Dry locations require species which are adapted to dry conditions. Some species are not salt tolerant and should not be planted where salt is a problem. Some species may be invasive or overplanted and should not be planted. Existing trees may be of the same age and additional trees should be added over time to expand age diversity. Tall growing trees should not be planted under power lines instead trees that are less than 25 feet at mature height should be selected. Trees have root zones twice their canopy width so small planting areas are not a good choice for large trees and should be planted with smaller statured trees

Approximately 70% of the trees in the urban forest are located on private property. Much of the education private property owners receive about trees is from the local big box store, their landscaper or friends. It is very important that these property owners receive correct information on the selection, planting and care of trees from (insert organization name).

Following is a list of the species composition and percentage of each species or genus for (insert organization name). Species which fall above 5%, genus which fall above 10%, or family which fall above 15% shall be avoided until the matrix is more diverse:

(Insert the top ten species from the inventory and their percentage here.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Species** | | **Genera** | | **Family** | |
| Name | % | Name | % | Name | % |
|  |  |  |  |  |  |
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Following is a list of locations where specific actions are required. These may include, but not be limited to, streets where all the species are the same, ages are the same, storm damage has created a problem or where development may have impacted an area. These recommendations are identified in the short and long-term actions

|  |  |  |
| --- | --- | --- |
| **Address (GPS Location?)** | **Species** | **Action Needed** |
| Williams Street  1465 – 1475 | Norway Maple | Replace with diverse species. |
| Western Avenue  201 – 250 | Mixed | All species are the same age. |
| Industrial Blvd. | Callery Pear | Invasive species, all the same age, work with landowner to replace. |
| University Drive | White Pine | Wrong species in wrong location. Salt damage. Work with Sustainability Office to expand diversity and replace as trees die. |

The following species should not be included in the tree planting plan for (insert organization name) because of poor long-term performance, high number of trees in that species, or because of invasive tendencies.

|  |  |
| --- | --- |
| **Species** | **Reason** |
| Callery Pear | Invasive tendencies |
| Norway Maple | Poor structure and over planted |
| Honey Locust | Over planted |
| Red Maple | Over planted |

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

(Place in this section recommendations which address the objectives above, e.g., changes needed to bid specifications, species to avoid planting over the next several years, replacement or removal of invasive species, areas which need age diversity, how you will engage and provide outreach to residents. Include dates when this work will be accomplished.)

|  |  |  |  |
| --- | --- | --- | --- |
| **Needs to be addressed** | **How to be resolved** | **Date for completion** | **Staffing and Financial Needs** |
| 1. Revise bidding documents to include specifications and standards. |  |  |  |
| 1. Identify natural areas, planting needs and nurseries which can provide native stock. |  |  |  |
| 1. Identify species which are over planted and potential replacement species that have similar qualities and performance that can be used instead. |  |  |  |
| 1. Identify the % of native species in the species matrix and make recommendations on improvements to that %. |  |  |  |
| 1. Revise planting lists to eliminate invasive species. |  |  |  |
| 1. Identify areas where there a concentrations of the same age classes and identify a planting strategy to resolve this situation. |  |  |  |
| 1. Identify at least two education and outreach opportunities to engage residents in how to select good contractors and nurseries, how to select good tree stock, selection and planting of trees for species and age diversity, elimination of invasive species and inclusion of native species. |  |  |  |
| 1. Other? |  |  |  |

**RESOURCES:**

Tree Selection and Planting Guide, Tree Selector, The Morton Arboretum, <http://www.mortonarb.org/trees-plants/tree-and-plant-advice/tree-selector>

Chicago Region Species List – future climate, Louis Iverson, PhD, U.S. Forest Service

Urban Forest Planting Specifications

**OBJECTIVES:**

1. The (insert organization name) shall purchase a set of the American National Safety Institute (ANSI) standards related to urban forestry (consider the International Society of Arboriculture Best Management Practices Standards) including planting, nursery production, pruning, soils, etc.
2. Tree planting shall comply with the American National Safety Institute (ANSI) A300, Part 6: Tree shrub and Other Woody Plant Maintenance – Standard Practices (Transplanting) specifications.
3. Trees shall not be planted too deep. The root flare shall be at or slightly above grade.
4. Rope, burlap and wire baskets shall be removed from the top third of the ball at planting or, in the case of warrantee restrictions, these materials shall be removed at the end of the warrantee. Care shall be taken to ensure that these trees are not planted too deep and that the root flare is at or slightly above grade.
5. Trees may be planted at a size of 1.25 inches caliper up to 3 inches’ caliper.
6. Roots should be checked to ensure that there are no circling or damaged roots. Circling roots shall be straightened and redirected into the planting space, if possible. Damaged roots shall be cleanly cut.
7. Mulch shall be maintained at a 3 -4 inch depth and shall not touch the bark of the tree. The mulch ring should extend to the drip line of the tree.
8. Be sure the tree is properly placed – the mature size of the tree is not too big for the site, there is adequate room for roots and branches, the soil conditions are appropriate, and species and age diversity are being achieved. James Urban in Up by Roots, *Healthy Soils and Trees in the Built Environment*, recommends a 20 ft. or larger in diameter space be provided for a large canopy tree. However, this is not always practical in an urban setting.
9. Urban soils are often highly compacted or contain rubble and debris from the development process. In many instances, soil improvements will be required. Planting in these locations should be evaluated on a case by case basis. Healthy soils are the key to healthy trees. A good resource for soil information is *Urban Soil Primer* by the U.S. Department of Agriculture and the National Resource Conservation Service.
10. Trees that achieve a mature height of 25 feet or more shall not be planted under power lines.
11. The above specifications shall be identified in any bidding documents prepared by (insert organization name).
12. Proper planting and diversification education and outreach shall be provided to private property owners.
13. A list of preferred species shall be developed and attached to this Urban Forest Management Plan. Preferred species would be species that increase species diversity, species that have good growth habit and performance in the urban setting and native species that support native ecological biological diversity.
14. A list of non-preferred species shall be developed and attached to this Urban Forest Management Plan. Non-preferred species may include non-native exotic invasive species, species with invasive tendencies, or species that have been over planted.

**BACKGROUND:**

Trees that are properly planted have a greater likelihood of success. Planning is the first important step in planting which will reduce issues with utilities, infrastructure and other issues that will affect tree health. It is important that whoever is completing the tree planting have a clear knowledge of proper planting practices and adhere to designated standards. Be sure that a certified arborist is supervising the work and clear planting direction is provided.

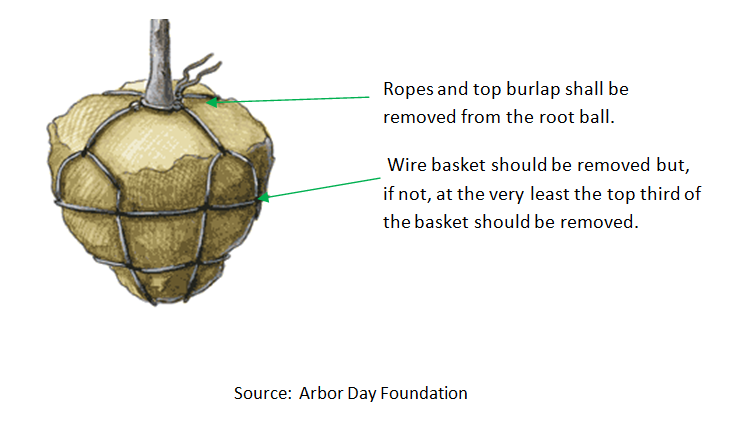
When trees are delivered to the site where they are to be planted. It is important to check for any defects or problems with the trees. The tree may have outgrown its container resulting in circling roots, the bark may have been damaged in transit or the tree may have been dug and not watered so that the tree is exhibiting stress, the tree may be loose in it root ball, or there may be a pest or pathogen problem. All of these issues would raise concerns and potentially result in refusal of the tree to be planted. It is the responsibility of the supervisor to inspect the trees and accept or reject each tree for the location where it is to be planted.

Trees purchased from the nursery are measured in calipers. This measurement is taken approximately 4 inches above the ground. A general rule is that trees may be planted at a size range of 1.25 to 3-inch caliper. In areas where vandalism may be likely larger caliper trees may be more desirable. The larger the tree the more stress experienced when the tree is dug for transplant and the longer the tree will take to reestablish itself in its new location and the more likelihood of failure. If larger trees are selected a longer warrantee should be provided.

Most trees planted in the urban forest will be balled and burlapped, containerized or bag grown. Bare root trees are not as common but are just as good. When a balled and burlapped tree is harvested at the nursery the following minimum size of the root ball should be provided (Source: International Society of Arboriculture, Best Management Practices, Tree Planting).

|  |  |
| --- | --- |
| Caliper | Minimum root spread (inches) |
| 1 | 18 |
| 1 - 1.5 | 22 |
| 2 | 28 |
| 2 - 2.5 | 32 |
| 3 | 38 |

Trees need to be planted with the root flare at or slightly above grade. If trees are planted too deep they may not live to maturity or experience stress resulting in additional problems. All ropes, burlap and wire should be removed from the top third of the root ball prior to filling in with dirt and mulch application. In many instances, materials now used to ball and burlap a tree are degradable or low profile wire baskets are used. However, in some instances these materials do not degrade or are not low profile resulting in a tree that is girdled as it outgrows the ropes and wire. These materials should be removed from the root ball. Some nurseries will not warrantee the tree if these materials are removed at time of planting. If this is the case, include in your contract that the nursery will follow up at the end of the warrantee, when they are inspecting the trees for performance, and remove any rope and burlap at that time. In no instance, should a standard, tall profile wire basket be left on the tree at planting and for low profile baskets it is preferable that they be removed as well.



If the rope and burlap are left on the tree at planting it is difficult, if not impossible, to check for the root flare. When trees are grown in the nursery it is not uncommon for the root flare to become obstructed by layers of soil or mulch. Trees need to be planted with the root flare at grade or slightly above grade in order to grow and thrive.

Roots should be checked at planting to ensure that there are no circling or damaged roots. For small containerized trees, if it is not clear, rinse off the top of the root ball so that some of the roots are visible. Any circling roots should be straightened so that the root system grows out into the space it is planted in. Circling roots can sometimes cause girdling of the tree because they strangle the tree as it grows larger. Damaged roots should be cleanly cut so they are less susceptible to pathogens or pests.

Again, 70% of the urban forest is on private lands. The success and survival of trees planted in these areas is important for overall benefits and resources for the community. Many of these landowners and managers do not know proper planting practices. Simple concise information and education on property planting practices will help these trees survive and will ensure their community investment in the urban forest is not wasted. Provide information on tree selection and planting to private property landowners annually in February or March so they can use this information when they purchase and plant trees. Resources are available from a wide variety of sources. The Morton Arboretum Tree Selection and Planting Guide is an excellent resource and the on line Tree Selector Tool will assist those who do not know what trees to plant to select the correct tree for the correct location.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

(Place in this section recommendations which address the objectives outlined above. Include dates when this work will be accomplished and the resources needed to make that happen.)

|  |  |  |  |
| --- | --- | --- | --- |
| **Needs to Be Addressed** | **How These Needs Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
| 1. Incorporate into all planting specifications the requirement to meet ANSI standards. |  |  |  |
| 1. Incorporate into all planting specifications the requirement that all trees shall be planted with the root flare at grade. |  |  |  |
| 1. Require that all rope, burlap and wire baskets be removed at planting or include in the bid that no high profile wire baskets shall be used and that the contractor will come back at the end of the warrantee to inspect trees for survival and remove rope and burlap at that time. |  |  |  |
| 1. Identified locations where tree size at planting is important. (Where smaller caliper trees can be planted the tree planting budget can be extended.) |  |  |  |
| 1. Mulch shall be applied at a 3-4-inch depth and shall not touch the bark of the trees. This shall be included in the bidding documents. |  |  |  |
| 1. Site inspections are required prior to the selection and planting of any trees to ensure that the trees is appropriate for the site, that soil volume is appropriate, and there are no potential impacts when the tree reaches maturity (utilities, roadway, etc.) |  |  |  |
| 1. Education and outreach on property planting practices shall be provided to private property owners in the spring of each year. |  |  |  |
| 1. Other |  |  |  |

**RESOURCES:**

*Tree Selection and Planting Guide and Tree Selector*. The Morton Arboretum. 2015. [http://www.mortonarb.org/news/news-release-morton-arboretum-introduces-guide-selecting-and-planting-trees-northern-illinois](file:///C:\Users\Lydia\Dropbox\Community%20Trees\Urban%20Forestry%20Management%20Plans\Template%202016-04-28.docx)

Urban, J. *Up By Roots:*  *Healthy Soils and Trees in the Built Environment*. International Society of Arboriculture.2008.

*Urban Soil Primer.* USDA, NRCS. [http://www.nrcs.usda.gov/Internet/FSE\_DOCUMENTS/nrcs142p2\_052835.pdf](file:///C:\Users\Lydia\Dropbox\Community%20Trees\Urban%20Forestry%20Management%20Plans\urban%20soil%20primer)

Watson, G and E. Himelick. *Best Management Practices: Tree Planting*. Special companion publication to the ANSI A300 Part 6: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Transplanting). International Society of Arboriculture.

Urban Forest Management

**OBJECTIVES:**

1. Newly planted trees shall receive supplemental watering when needed the first three years after planting.
2. During periods of drought a community watering plan shall be instituted.
3. New trees shall be mulched to maintain 3-4 inches of mulch to the dripline for at least the first three years after planting. Tree health is improved if mulch is provided throughout the life of the tree. Other trees throughout the (insert organization name) shall be mulched as needed. Mulch shall not touch the trunk.
4. Trees shall be pruned and inspected at a frequency of every 4-7 years. Tree pruning shall comply with ANSI A300 Part 1: Tree, Shrub and Other Woody Plan Maintenance – Standard Practices, Pruning. All bidding documents for tree pruning and or maintenance shall comply with the ANSI standards.
5. Forestry staff and staff from other departments shall be cross trained in correct mulching, watering and pruning practices.
6. Forestry staff and staff from other departments shall be cross trained to be watchful of tree health as they go throughout their day, this would include but not be limited to, permit violations, adverse impacts to trees, tree watering needs, tree health and potential pests and pathogens.
7. Information and requirements for tree protection and preservation shall be included as part of the permit process to reduce construction impacts to trees and shall comply with ANSI A300 Part 5: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Management of Trees and Shrubs during Site planning, Site Development and Construction). Any individual or organization working throughout the (insert organization name) shall be required to read this information and the associated standards, which should be included as part of any permit process, so they are aware of potential impacts to tree roots, bark or branches, tree preservation and protection practices and/or requirements.
8. Education and outreach shall be provided to private landowners on basic management and care of trees, pests and pathogen observation, pruning needs and tree preservation and protection. This information shall be provided in the fall of each year.

**BACKGROUND:**

Trees require time to become reestablished after transplant. If they are balled and burlaped their root system has been cut in order to transplant into a new location. Containerized, bag grown and bare root trees have all their roots but they also experience stress during the transplant process. All transplanted trees need the best possible growing conditions to reestablish their roots and become acclimated to their new location. Because these trees are under stress and have not become established in their new location they require extra care. They need to be kept moist and to have as few adverse impacts as possible. A rule of thumb is that it takes at least 1 year for every inch in caliper the tree is at transplanting for a tree to become established. Larger caliper trees require even more time to become established.

A newly planted tree should receive about 15 gallons of water every week. During high temperatures watering may need to be more frequent. To tell if a tree needs water, reach your finger down several inches into the soil well beneath the mulch. If the soil feels moist there is no need to water the tree. If the soil feels dry the tree will need water. Watering needs to be slowly applied so that the water can sink into the root ball and water all of the roots – not just the top layer of soil. Deep watering promotes deep rooting of trees. Care needs to be taken not to overwater the soil. The tree roots need air and water. By watering too much you can drown the tree.

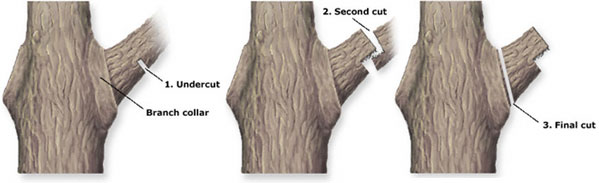
Applying a 3-4 inch layer of mulch over the root zone of the trees helps to hold moisture and keep mowing and weed whipping equipment away from the trunk. It is important that the mulch not touch the bark because additional moisture at the trunk may provide an opportunity for pests and pathogens to impact the tree.

It is recommended that trees be pruned every 4 – 7 years. Typically, this is accomplished by pruning 1/4th to 1/7th of the community each year so that at the end of year 4-7 all of the trees in the community have been pruned. This is a great opportunity to complete a tree inventory at the same time. Professional arborists, conducting tree pruning can identify the tree, measure its diameter, report the condition of the tree, perform a GIS locate on the tree and identify the ground cover under the tree while they are in the vicinity pruning.

Regular tree pruning is important to maintain tree structure and to reduce tree failure. Recent climate conditions have resulted in increased frequency and severity of storm events creating an even more significant need for proper pruning of trees. Research has shown that it is cost effective to maintain well pruned trees. Trees which are not well pruned will result in more mess and debris after a storm event – including overtime and extra equipment charges to deal with the post storm mess. Well pruned trees are less likely to fail during storm events resulting in lower clean-up costs. Well cared for trees are also likely to live longer and continue to provide important benefits and services.

Pruning during the dormant season is typically the best approach for tree health. This is particularly important for some species, such as oaks, that may be susceptible to diseases or pests if they are pruned outside of the dormant season leaving an open wound when conditions are right for transmission of disease or invasion by a pest.

Property pruning practices and frequency will save the (insert organization name) money.



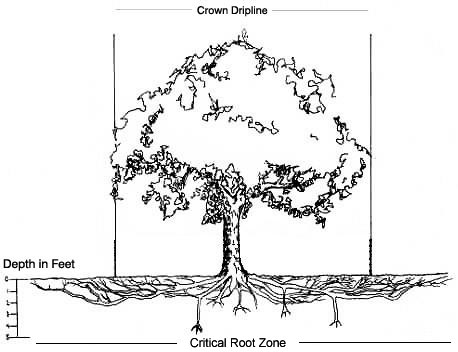
Source: Forest Keepers

It is important to cross train (insert organization name) staff in basic forestry maintenance. This includes watering, mulching, pruning and pest and pathogen identification. These individuals may be required to help clean up after a storm event. It is critical that they know how to correctly prune so they do not cause even more damage to the tree or create more significant instability. These individuals can be called upon during a drought event to help water trees. They are out and about every day and can be the eyes-on-the-ground to spot a potential problem and report it back to someone who can deal with the problem effectively. It is not uncommon for staff to be questioned by private landowners and, if they are trained in basic forestry practices, they will be able to be an advocate for the (insert organization name).

Basic tree preservation and protection information should be provided to anyone required to receive a permit in the (insert organization name), and to private property owners, whether a permit for tree protection is required or not. Trees are important infrastructure for a community. They should be preserved and protected just as other infrastructure. Protection of trees during construction should comply with ANSI A300 Part 5: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Management of Trees and Shrubs during Site planning, Site Development and Construction).

Care should be taken not to impact the root system of a tree within the critical root zone – the area that extends from the trunk out to the edge of the canopy or drip line. Trees to be preserved or which are in danger of being impacted by construction or other activities should have protective fencing installed at the drip line to prohibit any activity from taking place within that area. This includes above and below ground. Structural tree roots should be preserved. Structural roots begin at the base of the tree and anchor the tree preventing it from falling over. The closer to the trunk roots are cut, the higher the probability the tree will be unstable and fall over.  A good rule of thumb is to stay approximately 6” to 12” from the trunk for every inch in diameter the tree is at DBH (diameter at breast height).

Information that is provided to individuals or organizations that may impact trees on public land should be provided to private property owners as well. Again, 70% of the urban forest is on private property. Information and/or incentive programs that encourage the protection and preservation of trees on private property are critical not just for the individual landowner but for the community overall.



Source: Seattle ReLeaf

It is helpful to have a tree inventory of the site to be impacted prior to the start of any work. This would include information on the species, diameter at breast height, condition, and location.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Needs to Be Addressed** | **How These Issues Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
| 1. Have two International Society of Arboriculture Certified Arborists on staff. | * Send two staff to ISA training. * Pay for testing and licensing. |  |  |
| 1. Newly planted trees shall receive supplemental watering when needed the first three years of planting. | * Hire summer laborer who will water the trees. * Purchase a watering tank and trailer. * Purchase a watering tank and trailer for watering needs. |  |  |
| 1. Develop a community wide watering plan for periods of drought. This information would be provided to private landowners. |  |  |  |
| 1. Mulch new trees (three years and less since planting). Trees will be mulched to the dripline. Mulch other tree priority locations as needed, as identified on the attached map. |  |  |  |
| 1. Divide the community into four sections. Put each section on a pruning schedule – resulting in the entire community being pruned every four years. | * Contract for this service. (Estimate for service needed before costs can be identified.) * Contract for a public property tree inventory. * Contract for a private property tree inventory – stratified sample. * Train or volunteers to update the tree inventory daily. |  |  |
| 1. Train forestry staff in   basic urban forestry.  Cross train other community staff on basic urban forestry. Train planners and municipal staff on importance of maintaining structural roots and proper root cutting. | * Send staff to the Urban Forestry Basic Training |  |  |
| 1. Develop an information packet that can be provided with any permit requests that provide advice on how to protect trees. |  |  |  |
| 1. Develop an education and outreach packet for private property owners on basic tree care and protection. |  |  |  |
| 1. Develop an incentive program to encourage private property owners to preserve and protect their trees. |  |  |  |

**RESOURCES:**

Fite, K. and T. Smiley. *Best Management Practices, Managing Trees During Construction*. Companion publication to the ANSI A300 Part 5: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Management of Trees and Shrubs During Site Planning, Site Development, and Construction), International Society of Arboriculture. 2008.

Gilman, E. and S. Lilly. *Best Management Practices: Tree Pruning*. Companion publication to the ANSI A300 Part 1: Tree, Shrub and Other Woody Plant Maintenance – Standard Practices, Pruning. International Society of Arboriculture.

Pruning, Best Management Practices, International Society of Arboriculture.

Urban Forest Risk Assessment and Management

**OBJECTIVES:**

1. Rank trees in the inventory to easily identify trees which are in poor condition and for which work is needed. Have these trees inspected by a tree structural expert or internal staff if trained in Tree Risk Assessment.
2. Provide training to residents and staff on early detection and rapid response to catch potential problems early.
3. Develop a disaster protocol for dealing with woody materials:
   1. Where to take materials.
   2. What equipment may need to be rented, from where, etc.
   3. What streets to clear first.
   4. Staging locations.
   5. Contract with a tree company to provide emergency assistance or become part of the Mutual Aid Network.
   6. Educate residents on what to do and who to call for assistance.
   7. . . .
   8. . . .
4. Identify species which should be avoided due to concentrations in the canopy. Provide alternatives as recommendations to private landowners.

**BACKGROUND:**

The urban forest is infrastructure upon which (insert organization name) relies for air and water quality improvements, energy reduction, stormwater reduction, improved physical and mental health, increased property values and wildlife habitat. This valuable resource requires an understanding of potential risks and how to manage for them.

Recently, lack of species diversity created a substantial risk for landowners and managers. Nearly nine-percent of the urban forest was comprised of ash. Concentrations were even higher along publicly owned properties. An exotic pest attacked and killed nearly all of these trees creating a substantial loss of services these trees provide.

Understanding the species of trees, their location, size and condition can provide valuable information for urban forest management. This knowledge can reduce risk and potential liability in future years. For example:

1. Inventoried trees are typically ranked, often using a system of Good, Fair, Poor, Dead scale. Staff can schedule trees identified as “Dead” or “Poor” for care or removal before they fall apart and hurt someone or something. This allows the (insert organization name) to schedule the removal during the typical work week, reducing costs associated with removing this tree on a weekend or after a storm event when overtime pay will be required.
2. When a tree appears to be in “Poor” condition, a note is usually provided as to why the tree is “Poor” with a recommended action. It may say, keep an eye on the tree for further pruning or removal. Or it may say the tree is diseased or infested. A course of action can be identified to address the problem reducing impacts to other trees.
3. The concentration of a given species can be identified. This will allow the (insert organization name) to adjust species selection to increase or decrease the concentration of this species to reduce impacts from potential pests or pathogens.
4. The trees of the Chicago region have been evaluated for future climate conditions. This list is available on the Chicago Region Trees Initiative website and can help to expand species diversity for future needs.

All of these issues are risk assessments that can be identified during the inventory and/or pruning cycle. Management strategies can be identified resulting in reduced maintenance costs, legal fees and loss of valuable benefits.

Pruning frequency will help to reduce potential risks. Trees which are maintained regularly are less likely to create problems during a storm event. Post storm clean-up can be very expensive. Rental of equipment, over-time pay, disposal costs, etc. are all at a premium. Good tree structure improves the health and long-term performance of the tree resulting in more benefits and services throughout the life of the tree.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

Based on (insert organization name) inventory the following risks have been identified.

(Insert risks identified during the planning process. Insert here only those that are general risks not individual tree risks.)

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| **Needs to Be Addressed** | **How These Issues Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
| 30% of (insert organization name) are maples | Reduce concentration of maples by removing this genus from the planting list until more diversity can be achieved. Reduce potential impacts from a new invader that kills maples. When maples die replace them with other species. | On-going |  |
| Old Town Neighborhood | Trees are all of the same age and all are at maturity starting to decline. Begin to remove trees that are in “Poor” condition and replace them. | Five – Ten Years |  |
| Increased standing stormwater | Identify locations where there is prolonged standing water. Select trees that tolerate water to help reduce stormwater run-off and flooding. | One – Ten Years |  |
| Buckthorn | Buckthorn is an invasive species that outcompetes other plants. Identify sections of (insert organization name) where buckthorn is present and impacting water quality, other trees and plants, etc. and remove these trees. Make a goal of 5% of the (insert organization name) “buckthorn free” each year. | Twenty years |  |
| Power Lines | Identify a strategy for the removal and replacement of trees that impact powerlines. Work with the local utilities on a grant program, assistance in removals and replanting strategy. | Twenty years |  |

**RESOURCES:**

Wiseman, P. *Best Management Practices: Integrated Pest Management.* International Society of Arboriculture.

Provide resource for pruning frequency recommendation.

**OBJECTIVES:**

Legacy Trees

1. Develop a legacy tree program for public and private property trees within the community. This would include a nomination form, formal designation process, mapping and signage acknowledging these trees.
2. This program will recognize trees which meet any of the following criteria:
3. Size – over \_\_\_\_ inches in diameter.
4. Age – over \_\_\_\_\_ years.
5. Rare species (less than 1% of the community inventory are this species)
6. Trees that have been planted in memory or someone or an event.
7. Specific species which are special to the community (native species?)
8. Incorporate the legacy tree program into the community ordinance outlining the specific protections provided to these trees.

**BACKGROUND:**

Trees are long lived species. It takes tens of years for trees to reach maturity and it is inspiring to look at a mature tree and know that it has been here for a long time – perhaps it was here long before the area was settled. There may even be some of these trees in our community! A legacy is “something transmitted by or received from an ancestor or predecessor from the past”. Our forest legacy is worthy of protection and it is important that we preserve and protect existing trees so that generations after us will have a forest legacy.

By establishing a legacy tree program, residents can become more engaged in protecting and preserving legacy trees in the community. Legacy trees don’t have to be the largest trees but they should have some significance to the community. For instance, a tree may be planted for the 100th anniversary of the community. This tree should be designated a legacy tree so that 100 years from how, residents can come together and reflect on the significance of this prior time and commitment to the community.

Working with the Tree Board and a group of interested residents a legacy program can be developed. This program should include nomination criteria, a process for nomination – including an application form, recognition in a community wide publication, mapping of legacy trees and inclusion in the community ordinance to provide for preservation and enforcement of this preservation.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

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| **Needs to Be Addressed** | **How These Issues Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
| Preservation of large and/or special trees. | Develop a Legacy Tree Program | 2018 |  |
|  |  |  |  |
|  |  |  |  |

**RESOURCES:**

American Forests, How to Establish a Heritage Tree or Champion Big Tree Program, [ttps://www.americanforests.org/bigtrees/tree-protection-toolkit/establish-a-heritage-tree-or-champion-big-tree-program](file:///C:\Users\lscott\Downloads\Managment%20Plan%20Template%205-30-LS.docx)

City of Urbana Legacy Tree Program, <http://urbanaillinois.us/legacytree>

Village of Glenview Heritage Tree Program, <http://glenview.il.us/about/Pages/Heritage-Trees.aspx>

Portland, Oregon, Heritage Tree Program, <https://www.portlandoregon.gov/parks/40280>

Urban Forest in Natural Areas

**OBJECTIVES:**

1. Identify and map all naturalized woodlands on public property.
2. Identify and map all naturalized woodlands on private property – over one acre in size
3. Conduct a site assessment of public naturalized areas including identification of species composition.
4. Develop site management plans based on the site assessments.
5. Layer mapped naturalized woodlands with the oak ecosystem recovery plan mapping.
6. Work with the forest preserve or conservation district to develop compatible management plans when adjoining sites exist.
7. Commit to eradicate buckthorn from at least 5% of total acres of naturalized woodlands on public property annually.
8. Develop a private property education and incentive program to eliminate buckthorn from private property.
9. Develop a citizen stewardship program to help with invasive species removal, site assessments and management plans.
10. Goal for the community: by 2027 50% of all buckthorn on public property is eliminated and 50% of all buckthorn on private property is eliminated.
11. Set a goal for community wide buckthorn eradication on public and private property by 2050.

**BACKGROUND:**

As development has occurred across the Chicago region large stands of our oak/hickory ecosystems were removed to make way for homes, businesses and roads. By 2010, approximately 80% of these oak ecosystems were destroyed. Naturalized woodlands are part of our ecological heritage and oaks are a keystone species for our native ecosystems. Oaks and hickories are also large canopy trees that provide tremendous benefits. Organizations across the Chicago region are working together to preserve and protect remaining oak ecosystems. Chicago Wilderness sponsored a plan, written by The Morton Arboretum and Lake County Forest Preserve District, called the Oak Ecosystem Recovery Plan (<http://c.ymcdn.com/sites/www.chicagowilderness.org/resource/resmgr/Publications/OERP-Ext-Report-lowres-pgs_(.pdf)> .

The Oak Ecosystem Recovery Plan is built upon the presettlement land survey and 2010 woodland mapping for the Chicago region. Comparing this mapping helps to identify what was existing prior to European settlement, what we have today, and where there is opportunity to plant, expand and connect oak ecosystems. It also helps identify opportunities for collaboration of landowners and managers to preserve oak ecosystems across the region.

Most of the forest preserves in the region have identified high quality woodlands and are working to restore and preserve those woodlands for future generations. A critical component of the plan is the education and engagement of other landowners so that these fragmented woodlands can be reconnected to form larger more significant woodlands and preservation of plants and animals that rely on oak ecosystems.

There are several concerns with respect to our oak ecosystems:

1. Lack of age structure - Many of the oaks in our naturalized woodlands are large with no smaller stature oaks growing to replace them. This is due to infestations of buckthorn and honeysuckle or shade tolerant species that can outcompete native oaks and hickories.
2. Challenges from wildlife populations out of balance - Over grazing of young oak and hickory saplings eliminates young trees.
3. Fragmentation - Some species of wildlife and plants cannot exist without larger stands of oak woodlands. These species are often sensitive to outside impacts and need larger buffers. Also, without connectivity, wildlife and plants cannot move to accommodate challenges from exterior impacts and climate.
4. Invasive species – Non-native plants, insects and pathogens are suppressing or killing our oaks and related native species. Buckthorn and honeysuckle make up 30% of the total of all trees across the seven country region. They are aggressive, leaf out before other plants and keep their leaves in the fall so they can outcompete native species. This competition results in thick stands of invasive species with no other species and changes in the soil structure making it harder for native plants to repopulate even after the invasive species are removed.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

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| --- | --- | --- | --- |
| **Needs to Be Addressed** | **How These Issues Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
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**RESOURCES:**

Oak Ecosystem Recovery Plan, <http://c.ymcdn.com/sites/www.chicagowilderness.org/resource/resmgr/Publications/OERP-Ext-Report-lowres-pgs_(.pdf>

Chicago Wilderness Biodiversity Recovery Plan, <http://c.ymcdn.com/sites/www.chicagowilderness.org/resource/resmgr/Publications/biodiversity_recovery_plan.pdf>

Urban Forest Volunteer Development and Retention

**OBJECTIVES:**

1. Develop an urban forestry volunteer program.
2. Identify community needs that volunteers can address.
3. Train volunteers who are committed to a regular routine and work schedule to perform these tasks.
4. Acknowledge these volunteers and integrate them into departmental trainings.
5. Host a community TreeKeeper chapter training program.

**BACKGROUND:**

The (insert organization name) is not able to achieve all of our goals for the urban and community forest because of lack of resources. This includes staff and financial resources. Utilization of one of our best resources – our residents – can help bring us closer to these goals. In addition to providing their skills and time, this experience also increased community engagement and good will.

In 2013, about 62.6 million Americans gave 7.7 billion hours of volunteer service at a dollar value of $173 billion. (Source: Corporation for National and Community Service.) Many communities do not tap into this resource and are wasting the value of trained, informed volunteers as well as commitment and support for the community overall.

Partnering with volunteers has important advantages for the urban forestry program. Among them are:

1. Volunteers can be utilized to accomplish things that paid labor does not have the time to do.
2. Volunteers who see forestry operations close at hand will have a better understanding of community goals and values.
3. Engaged residents who are volunteers are more likely to express their tree concerns to staff with whom they have a working relationship and less likely to take those concerns to the mayor or other elected officials.
4. Volunteers can educate their neighbors on good urban forestry practices and gather support for the urban forestry management plan.
5. Volunteers may be willing to step into positions of leadership in the community and can become goodwill ambassadors across the community.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

The (insert organization name) has set a goal of establishing an urban forestry volunteer program.

How to get a volunteer program started:

It is important to start small and to build slowly so that each step can be successful and learned from.

1. Identify urban forestry basic needs. With the help of staff, make a list of projects that are not getting done.
2. Consider which of these tasks are suitable for volunteers. Volunteers should augment

and support urban forestry staff and operations. For example, volunteers may be able to:

* Water trees and plants
* Mulch trees
* Weed and trim perennial beds
* Cut buckthorn and apply herbicide to stumps (Volunteers can get licensed to apply pesticides!)
* Take messages
* Help conduct and log a tree inventory
* Input work logs and update the manpower records
* Help with GIS mapping of tree locations

1. For those projects determined appropriate, define and describe volunteer positions. A volunteer job description does not need to be lengthy but should explain the tasks to be accomplished, skills required, schedule, and hours that must be committed.
2. Identify those projects in a log. Include:

* Type of project—office, shop, field;
* Time required for each project;
* Number of individuals required for each project;
* Frequency;
* Special skills required;
* Physical requirements;
* Training needed; and
* Individual, team (staff and volunteer), independent, or group projects.

1. Make a plan to help ensure that volunteers are an asset and that managing them is not a burden.

* Develop a structure for your volunteer program that it fits into your work program and meets both your needs and the needs of the volunteers.
* Create a schedule for volunteers’ work.
* Seek out those who are willing to keep to an established routine; repeat volunteers are easier to manage.
* Give volunteers the training they need to perform the work.

1. Look for a volunteer to help run the volunteer program. There is probably someone in your community who has experience in staff development or office management. Solicit this person through the local newsletter, website or other sources. A local business may be willing to dedicate staff to help with this.
2. Once projects have been defined and job descriptions created, begin to look for volunteers. Looking for volunteers is accomplished in much the same way that employees are found. Place volunteer notices in:

* Local newspapers;
* Community newsletters;
* Websites of your agency and partner agencies;
* Your community’s website, Facebook, and Twitter accounts; and
* Volunteer network websites such as volunteermatch.org, givingdupage.org, and pointsoflight.org.

1. Not all volunteers are interested in the same types of opportunities. For example, Millennials tend to be interested in volunteer opportunities in which they can engage with others. Some volunteers will have professional skills that can benefit urban forestry programs and those skills should be utilized.
2. Every year, communities receive requests from corporations and service groups such as Girl and Boy Scouts for service projects. It is important to plan ahead for these opportunities. Create a list of suitable projects that could be completed over the next year and identify potential dates and times. Post these opportunities on the community’s website. Notify the chamber of commerce and the human resources departments of nearby major employers of needs and opportunities. When calls come in from these organizations, if the community website has a volunteer opportunities section, corporations and service organizations can be directed to the website. They can also submit an online application to participate. The more forethought and planning that goes into recruiting, training, and deploying volunteers, the more effective the program will be for everyone.
3. Candidates for ongoing volunteer work should be interviewed to make sure that they have the skills required for the task, and that the experience is likely to be agreeable and rewarding for them. Both the community and the volunteer must agree that the opportunity is a good fit.
4. Have the volunteer complete a volunteer application. It should include:

* Name;
* Address and contact information;
* Experience;
* Skills;
* Why they are interested in volunteering and what they hope to get from the experience;
* Availability;
* References; and
* Questions they may have about the volunteer position.

1. Proper planning can minimize legal concerns. When procedures are clearly outlined and implemented, legal issues rarely arise concerning volunteer work and the potential for lawsuits is small. Urban forestry volunteers are successfully used in a wide variety of roles all across the country.
2. Each volunteer should complete and sign a waiver of liability form. These forms should be completed annually and kept on file.
3. Conduct background checks on all volunteers before offering them positions. Check with legal counsel about additional materials that may be required.

Develop a Volunteer Manual

Once the urban forestry volunteer program is up and running, a formal manual can help it operate smoothly by answering many questions and by defining roles for both volunteers and paid staff. In some ways, it will be similar to an employee handbook.

The manual should include:

* Community and/or department goals for the volunteer program;
* Benefits to the community and to volunteers;
* Screening process;
* Volunteer responsibilities -- some of these responsibilities will be general to being a volunteer while others will be specific to the position;
* Forms (application, waiver of liability, accident and emergency information);
* List of personal property or equipment required, days and hours of service;
* Policies, such as drug-free workplace, anti-harassment, and equal opportunity, communicable disease and other as identified by the community;
* Locations of first-aid kits and emergency medical equipment;
* Emergency response plan;
* Right-to-know information;
* Dismissal and/or removal procedures; and
* Supervisor contact information.

Provide Training

All volunteers should receive orientation and some training.

* Provide information on the mission, goals, and organizational structure of the department;
* Explain why you are looking for someone to volunteer in each specific capacity;
* Introduce the volunteers to their supervisors;
* Review safety practices and standards required;
* Clearly define expectations; and
* Ask for questions.

It is a good idea to set up regular sessions that coincide with staff training, safety programs and orientations. Invite volunteers to participate in staff training sessions. This will help them feel part of your ongoing operations and will also protect them with the knowledge they need.

Allowing Volunteers to Drive a Community Vehicle

In some cases, it may be reasonable to allow a volunteer to drive an agency vehicle. However, for the protection of your community and the volunteer, consider this use of volunteers carefully. If a volunteer is to drive a community vehicle:

* Each volunteer, new or current, should agree to an initial driver record abstract review through the Secretary of State’s office and thereafter on an annual basis.
* The review will confirm that the volunteer has a valid license, determine the type of vehicle that the volunteer can legally operate, and highlight any vehicle-related convictions that could be a concern.
* The volunteer’s driving record should meet the minimum driving standards of the community.
* Volunteers should be given a community orientation, vehicle orientation, and road check.
* The community should also arrange for volunteer drivers to participate in a defensive driving course.
* It is not recommended that volunteers transport visitors or patrons at events.

Track Progress and Celebrate Success

Keep track of how volunteers are doing at their tasks, whether the experience is a good one, and whether new possibilities for volunteer work are in sight. Give the volunteers feedback and appreciation so they feel that their contributions are valued.

All volunteers should have regular personal evaluations with their supervisors. These conversations do not need to be lengthy, but should reinforce whether the volunteer is serving effectively. Ask them how they feel about their experience and whether they are ready for a new challenge.

Expect that some volunteer relationships will be unsatisfactory. Include basic procedures for dismissal or removal of a volunteer in your manual. Suggest adequate notice that a volunteer should provide who wishes to stop participating.

Recognize and Retain Volunteers

It is important that volunteers have a positive experience and feel valued for their service. Include volunteers in learning opportunities, lunches, and other staff get-togethers. Volunteers who feel included will serve longer and more effectively than those who do not.

Volunteers cannot receive monetary rewards for their experience or any goods that have a value of more than $500 each year. They can accept small tokens of thanks. One way to thank them is to host an annual volunteer recognition event. This can be a dinner or meeting where volunteers are recognized for their contributions. Encourage volunteers to meet each other and talk about what they do. The volunteers’ supervisors should be included in these events and encouraged to share their experience.

The two most important factors in retaining volunteers are a rewarding experience and a sense that they are appreciated. They need to feel that they are part of something bigger and are making a contribution. Tell volunteers how much they are valued and publicly acknowledge their help. Ask for their opinions and recommendations.

To build community volunteer capacity, identify skills in some volunteers that might make them good mentors for other volunteers. Happy volunteers can help recruit and train other volunteers.

Find Volunteers with Basic Tree Knowledge

The Openlands TreeKeepers™ program is a good place to start. This urban forestry volunteer organization, which has operated in the city of Chicago for more than two decades, is expanding to counties across the region. Trained TreeKeepers are asked to provide a minimum of 24 hours of volunteer time annually.

The program teaches volunteers basic forestry knowledge and skills such as:

* Tree physiology;
* Basic soils;
* Tree protection and preservation;
* Tree identification;
* Insect and pest problems identification;
* Correct tree planting;
* Watering; and
* Pruning (from the ground).

TreeKeepers also are taught and encouraged to be advocates for trees in urban and suburban areas. For more information on Openlands TreeKeepers™ go to openlands.org.

Working Together Builds a Healthier Urban Forest and Community

Working with volunteers in an orderly, planned way can create a powerful partnership for trees in your community that brings resources, support and leadership to your urban forestry efforts.

**RESOURCES**

* DuPage Association of Volunteer Administration (see other county opportunities): dava-il.org
* Energize, Inc., (resources for volunteer leaders): energize.com
* Serve.Illinois.gov, (resources to create and manage a volunteer program) <http://www2.illinois.gov/serve/Pages/managing_programs.aspx>
* Hands On Network, (strategies and solutions for local government managers): handsonnetwork.org

<http://www.handsonnetwork.org/files/resources/Build_a_Successful_Volunteer_Program_to_Drive_Growth_and_Recovery.pdf>

* Cities of Service, (coalition of mayors dedicated to utilizing volunteers): citiesofservice.org
* Idealist, (resources for developing a volunteer program): idealist.org
* Volunteers and Your Community, Tree Tool, The Morton Arboretum mortonarb.org/Tree-Tool.

SAMPLE WAIVER OF LIABILITY FORM

***This document is an example. Any waiver or liability form used should be reviewed by legal counsel.***

IMPORTANT INFORMATION

The (community/park district) is committed to conducting its operations and activities program in a safe manner and holds the safety of volunteers in high regard. The (community/park district) continually strives to reduce such risks and asks that all volunteers follow safety rules and instructions that are designed to protect the volunteer’s safety. However, volunteers must recognize that there is an inherent risk of injury when choosing to volunteer for any project, activity or program.

Please recognize that the (community/park district) carries only limited medical accident coverage for volunteers; therefore, it is strongly urged that all volunteers review their own health insurance policy for coverage. Additionally, each volunteer is solely responsible for determining if he/she is physically fit and/or properly skilled for any volunteer activity. It is always advisable, especially if the volunteer is pregnant, disabled in any way or recently suffered an illness, injury or impairment, to consult a physician before undertaking any physical activity.

WARNING OF RISK

Despite careful and proper preparation, instruction, medical advice, conditioning and equipment, there is still a risk of serious injury when providing volunteer services. Understandably, not all hazards or dangers can be foreseen. Volunteers must understand that depending upon the volunteer services, certain risks, dangers and injuries due to acts of God, inclement weather, slip and falls, inadequate or defective equipment, failure in supervision or instruction, premises defects, horseplay, carelessness, lack of skill or technique, and all other circumstances inherent to the particular volunteer services exist. In this regard, it must be recognized that it is impossible for the (community/park district) to guarantee absolute safety.

WAIVER AND RELEASE OF ALL CLAIMS AND ASSUMPTION OF RISK

Please read this form carefully and be aware that in consideration for providing volunteer services, you will be expressly assuming the risk and legal liability and waiving and releasing all claims for injuries, damages, or loss which you may sustain as a result of participating in any and all activities connected with and associated with your volunteer services (including transportation services/vehicle operations, when provided).

As a volunteer, I recognize and acknowledge that there are certain risks of physical injury to volunteers in the project/program/activity in which I am engaged. I voluntarily agree to assume the full risk of any and all injuries, damages, or loss, regardless of severity, that I may sustain as a result of my volunteer services against the (community/park district), including its officers, officials, agents, volunteers, and employees (hereinafter collectively referred to as “Parties”).

I do hereby fully release and forever discharge the Parties from any and all claims for injuries, damages, or loss that I may have or which may accrue to me and arising out of, connected with, or in any way associated with my volunteer services.

I have read and understand the above Important Information, Warning of Risk, assumption of risk and waiver and release of all claims. If registering on-line or via fax, my on-line or facsimile signature shall substitute for and have the same legal effect as an original form signature.

PLEASE PRINT Volunteer’s Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_ Volunteer’s Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PARTICIPANT WILL BE DENIED if the signature of the volunteer and date are not on this waiver.**

Urban Wood Utilization

**OBJECTIVES:**

1. Identify projects where trees may be removed and the trees are of a quality that would enable them to be used for a higher use than being chipped or burned.
2. Develop a resource list of sawyers and others who are interested in taking urban wood.
3. Work with the local high school, college and university wood working programs to supply wood.
4. . . .

**BACKGROUND:**

Urban wood can be used in a wide variety of applications. Oak, walnut, cherry, ash, maple – these are all very desirable species for wood working. However, urban wood is often not harvested with intent to use it for anything other than mulch. It is often even considered a liability. By planning ahead and knowing what you have and what you will be harvesting it is possible to put this wood to a higher use.

One of the biggest challenges is getting the wood to the sawyer or end user. There are a number of sawyers in the Chicago region. In some instances, sawyers will come to the property where the wood is to be harvested and collect it. In other instances, they will request that the wood be delivered. By understanding their needs and interests you can match them with your own so that it is cost effective to partner on wood utilization. Local high schools, universities and colleges may have a wood working program and may be interested in receiving the wood. Check with them to see what size they need the logs and what species they are most interested in.

Some manufactures, might be interested in receiving urban wood for manufacturing purposes.

Another option is to consider selling or giving wood to residents. This can be for wood working or firewood. The City of Evanston sells firewood to residents and recoups approximately $30,000 annually.

**RECOMMENDATIONS DATES FOR COMPLETION:**

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| **Needs to Be Addressed** | **How These Issues Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
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**RESOURCES:**

Illinois Wood Utilization Team, <http://illinoisurbanwood.org/resources/>

Sterling, <http://www.sterlinglumber.com/sterling-crane-mats/>

Urban Forest Community Engagement and Education

**OBJECTIVES:**

1. Private property owners shall receive urban forestry messaging via letter three times per year.
   1. In the spring of the year they shall be provided information on the need to select diverse and site specific species for planting. Information on correct planting, mulching and watering shall also be provided. This information shall be in conformance with the ANSI standards.
   2. In the fall of the year, they shall be provided information on property pruning practices. This information shall be in conformance with the ANSI standards.
   3. In the winter of the year, they shall be provided information on how to select a qualified company to perform urban forestry related work. The International Society of Arboriculture, Tree Care Industry Association and Illinois Landscape Contractors Association are excellent sources of information for certification and qualifications.
2. Informational articles on the value and benefits that trees provide shall be provided at least twice annually through the community newsletter and website.
3. At least once per year the community shall sponsor a community service event inviting community members to participate in a day of tree service. These events can include tree mulching, watering, planting, weeding, invasive species removal and other types of activities. These activities should be family oriented so that youth and adults can participate.
4. The community shall also develop information packets to be provided to contractors with permit applications for other types of work within the community. These packets would outline tree protection practices to reduce adverse impacts to trees during construction related projects.
5. Private property owners shall be encouraged to utilize the “Preferred Species List” and to avoid the “Non Preferred Species List” for tree planting.

**BACKGROUND:**

The urban forest is comprised of all the trees on public and private property throughout the urban environment. Seventy-percent of these trees are located on private property – meaning approximately 70% of the benefits the urban forest provides are from these trees.

Many landowners and managers do not understand the value and benefits that trees provide for quality of life. The urban forest is a collective asset and critical infrastructure. It is therefore the responsibility of the community to help educate and engage these property owners in good urban forestry practices to protect this critical resource.

Not all communities regulate the preservation, protection and enhancement of the urban forest on private lands and so education and outreach must be provided to these landowners and managers. Property owners notice when a neighbor or builder cuts down a mature tree on their property. The loss of that tree impacts surrounding properties through increased stormwater run-off, increased heat, lost wildlife habitat and a reduction in air and water quality. If the value of the urban forest is not regulated on private property it should be incentivized. For example, some communities will expedite construction permits and reduce permit fees when tree preservation practices are implemented.

Some landowners manage their own properties but many do not. Residential, commercial, industrial, corporate – these are all different types of private properties. Many of these properties are maintained by landscape, environmental and/or arboricultural companies. Some communities require that these companies be licensed and/or registered to provide services in their communities. Others do not require licensing or registration. Consistent and clear identification of performance expectations is required to ensure that the urban trees on these properties be properly maintained, preserved and planted.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

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| --- | --- | --- | --- |
| **Needs to Be Addressed** | **How These Issues Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
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**RESOURCES:**

The Nature Conservancy, Healthy Trees Healthy Cities, <https://www.conservationgateway.org/ConservationPractices/cities/hthc/Pages/default.aspx>

Openlands, TreeKeepers, <http://www.openlands.org/treekeepers>

The Morton Arboretum, <http://www.mortonarb.org/>

Urban Forest Staff and Support

**OBJECTIVES:**

Qualifications:

(Insert here what your existing staff includes and what you staff needs are. You will identify the costs associated with these positions in your budget.)

|  |  |  |
| --- | --- | --- |
| **Staff** | **Existing** | **Needed** |
| 2 International Society of Arboriculture Certified Arborists | 1 | 1 |
| 2 Summer laborers | 0 | 2 |
| 1 Office Assistant (can be a volunteer\*) | 0 | 1 |
| 1 Grant Writer (can be a supervisor, planner, assistant administrator or other) | 1 | 0 |
| 5 Cross trained staff from other departments | 0 | 5 |
| 10 Volunteer TreeKeepers\* | 0 | 10 |

\*Here you would reference back to the volunteer section

Training

1. At least two community staff shall be certified arborists. Licensing and funding shall be provided to allow participation in a minimum of 35 hours of continuing education units over every three-year period and continued certification costs.
2. Funding shall be provided so that all community operations and planning staff shall participate in Urban Forestry Basic Training.
3. At least two community staff shall be licensed pesticide Applicators. Two volunteers shall be licensed as pesticide Operators.
4. Training shall be provided in salt-reduction methods and plowing practices to reduce impacts of road salt on trees and detention areas.
5. Staff shall be encouraged to participate in American Public Works Association and Illinois Arborists Association training on safety, esp. proper chain saw and bucket truck use.
6. A designated member of staff shall be encouraged to participate in training on grant writing.
7. Staff shall assist with the development or acquisition of outreach and education materials for private property owners.
8. Staff shall organize at least one community urban forestry event per year.
9. Staff shall present an educational program to the community on urban forestry per year. Topics may include: tree selection, what to look for in a professional arborist, tree care, etc.

**BACKGROUND:**

The urban forest is infrastructure. Just like streets, storm sewers, water mains and other infrastructure. This urban forest infrastructure has a significant value and there is a public obligation to preserve, protect and enhance this infrastructure so that it functions at is potential and is able to provide the services the public requires.

The (insert organization name) has approximately \_\_\_\_\_\_\_ trees. These trees provide the following benefits and services to (insert organization name):

* Air quality
* Water quality
* Stormwater run-off reduction
* Heat reduction
* Energy reduction
* Increased property values
* Improved commercial districts
* Health and mental wellness
* Habitat for wildlife

Professional management and care of this valuable resource is required, so that it can perform to its’ potential. If the investment in the urban forest is to be maximized, then it is critical that a professional oversee this investment.

The (insert organization name) must have at least one certified arborist on staff and at least one other staff person in the process of certification at all times. Expenses related to this certification are small when compared to the knowledge and skill provided. For instance, the cost of certifying one staff person as an arborist is comparable to the cost of contracting for 6 hours of time from a professional arborist or the cost to remove two medium trees. The small investment in staff will result in huge dividends throughout the community and reduced costs overall.

It is critical that staff be cross trained in basic urban forestry. For instance, if the building inspector is trained in basic urban forestry, she can be on the look-out for potential problems and conflicts with trees as she conducts her inspections and property visits. Streets personnel will be thoughtful in how they approach curb replacements. Water personnel will consider directional boring to open pit work. All of these interactions support the improved function of the community overall and the health of the urban forest for the future.

Investment in professional staff represents an investment in the community and the community infrastructure. Investment in staff builds a strong professional atmosphere within the department, draws quality applicants for positions and supports retention. Expectations for performance are high because investment in people is provided.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Needs to Be Addressed** | **How These Issues Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**RESOURCES:**

Chicago Region Trees Initiative, <http://chicagorti.org/>

Illinois Arborist Association, <http://illinoisarborist.org/>

Illinois Department of Natural Resources, <http://www.dnr.illinois.gov/conservation/Forestry/UrbanForestry/Pages/default.aspx>

International Society of Arboriculture, <http://www.isa-arbor.com/>

Society of Municipal Arborists, <http://www.urban-forestry.com/>

The Morton Arboretum, Community Trees Program, <http://www.mortonarb.org/trees-plants/community-trees-program>

The Nature Conservancy, Healthy Trees Healthy Cities, <https://www.conservationgateway.org/ConservationPractices/cities/hthc/Pages/default.aspx>

Urban Forest Contracted Labor and Consulting

**OBJECTIVES:**

1. The (insert organization name) shall identify where needs shall be met by in-house staff and what needs require the use of contracted labor or consulting services.
2. Where contracted and/or consulting services are required, all work shall be in compliance with relevant ANSI standards.
3. All contractors and/or consultants under consideration shall have no less than 3 years’ experience in comparable projects.
4. All site work to be conducted shall require a certified arborist on site at all times.
5. All contractors and/or consultants under consideration shall provide a list of all comparable projects completed within the last two years with reference for at least three of these projects
6. All contractors and/or consultants shall carry the required insurance.

Projects where consultant and/or contractor services are needed:

|  |  |  |
| --- | --- | --- |
| **Project** | **Need** | **Timeline** |
| Consultant to serve as community arborist. | 1 day per week | 2017 – On going |
| Contractor to perform 1/6th of the community tree pruning and inventory | Annually | 2017 – On going |
| Contractor to provide ash removals and stump grinding | 5 days per week, November – February | 2017 - 2022 |
| Contractor to provide planting, watering and inspection services for new trees | April – June and September – November | 2017 – 2018 |
| Consultant to write grant proposal for tree replacement | April – June | 2016 |

**BACKGROUND:**

Most communities do not handle all of the tree related tasks with staff alone. Contractors and consultants are contracted to perform these tasks. It is important, when preparing a bid document for these services that legal counsel reviews the document to ensure that proper insurance, minimum wage, etc. be met.

Of primary concern is the ability of the contractor and/or consultant to provide the best possible service. Request examples of similar services and check references to be sure that past clients were satisfied with their work. Check and verify credentials to be sure that registrations and certifications are up-to-date. Visit sites where previous work has taken place and inspect the work – make sure that it meets your standards and ANSI specifications.

**RECOMMENDATIONS AND DATES FOR COMPLETION:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Needs to Be Addressed** | **How These Issues Will Be Resolved** | **Date for Completion** | **Staffing and Financial Needs** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**RESOURCES**:

International Society of Arboriculture, [isa-arbor.com](file:///C:\Users\Lydia\Dropbox\Community%20Trees\Urban%20Forestry%20Management%20Plans\Template%202016-04-28.docx)

Tree Care Industry Association, [TCIA.org](file:///C:\Users\Lydia\Dropbox\Community%20Trees\Urban%20Forestry%20Management%20Plans\Template%202016-04-28.docx)

Urban Forest Equipment and Resources

**OBJECTIVES:**

Following is a listing of equipment and resources currently owned by (insert organization name) and also a list of equipment and resources needed to manage the urban forest. Included in the list is the replacement date and estimated cost for each. A separate product sheet is provided for each piece of equipment with a value over $500. This equipment and all other equipment are listed below along with its replacement date, estimate value and estimated replacement cost. All equipment in need of replacement within the next ten years will be shown on the Urban Forestry Management Plan budget so that appropriate allocations can be made and prepared for.

(Insert here an inventory of equipment required to manage the urban forest. Include equipment already acquired and equipment needed. Identify if this equipment can be rented or must be purchased. Identify a timeline for acquisition and, if the equipment is existing, when it might need to be replaced. Note that individual equipment sheets detailing each piece of equipment should be kept in an urban forestry equipment inventory as part of the 10- year budget. This inventory can then be updated as equipment is purchased, repaired or sold. Following are some examples for consideration.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Equipment Required** | **Existing** | **Replacement**  **Needed** | **Depreciated Value** | **Replacement Cost** |
| 2 pick-up trucks, #201 and #202  Trade in #201 in 2020  Trade in #202 in 2025 | Yes | 2020  2025 | $15,000  $12,000 | $35,000  $40,000 |
| 1, 2-ton dump truck, #203  Trade in #203 in 2023 | Yes | 2023 | $20,000 | $80,000 |
| Chipper (Note consider rental) | No | Yes | $15,000 | $40,000 |
| 4, chain saws  2, 20”  1, 24”  1, 28” | No  Yes  Yes | No  Yes  Yes | $200  $250 | $500  $600  $900 |
| 1, 10 ft. trailer\* new tires and repairs to the axels will be required but can be taken care of in-house. | Yes | No | $4,000 | $0 |
| 1, 300 gallon watering tank, 1 horsepower motor, hose and valve\* new hoses ($100) and a motor replacement may be required. Estimated cost of the motor is $400. | Yes | 2020 | $1,000 | $500 |
| 8, shovels | Yes | No |  |  |
| 8, hand pruners  10, hand pruners for use by volunteer TreeKeepers | Yes | No |  |  |
| 8, hand saws  10 hand saws for use by volunteer TreeKeepers |  |  |  |  |
| 2, pole saws |  |  |  |  |
| 4 wheel barrows |  |  |  |  |
| 4, chaps |  |  |  |  |
| 4 helmets |  |  |  |  |
| 10, leather gloves |  |  |  |  |
| 4, protective eye wear  10, protective eye wear for use by volunteer TreeKeepers |  |  |  |  |
| ANSI Standards |  |  |  |  |
| Etc. |  |  |  |  |

**RESOURCES:**

(Insert sources for equipment purchases if needed. This information would also be included on your individual product sheet with the cut sheet for the product and three vendors to supply the product estimate.):

Chainsaws – Stihl, Arlington Power Equipment

Urban Forest Other

Urban Forest Budget

(See attached)

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2. <http://www.fs.fed.us/nrs/pubs/rb/rb_nrs84.pdf> [↑](#footnote-ref-2)
3. <http://www.state.sc.us/forest/urbben.htm> [↑](#footnote-ref-3)
4. <http://phys.org/news/2014-09-trees-asthma-respiratory-diseases.html> [↑](#footnote-ref-4)
5. <http://jpl.sagepub.com/content/30/4/433.abstract> [↑](#footnote-ref-5)
6. <http://www.biology-pages.info/G/GasExchange.html> [↑](#footnote-ref-6)
7. McAliney, Mike. Arguments for Land Conservation: Documentation and Information Sources for Land Resources Protection, Trust for Public Land, Sacramento, CA, December, 1993 [↑](#footnote-ref-7)
8. <http://www.na.fs.fed.us/spfo/pubs/uf/techguide/values.htm> [↑](#footnote-ref-8)
9. <http://www.naturewithin.info/UF/TreeBenefitsUK.pdf> [↑](#footnote-ref-9)
10. Day, Susan et al. “Development of a Green Infrastructure Technology that Links Trees and Engineered Soil to Minimize Runoff from Pavement.” November 15, 2008. [↑](#footnote-ref-10)
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13. <http://www.sciencedirect.com/science/article/pii/S1618866714000661> [↑](#footnote-ref-13)
14. <https://www.epa.gov/heat-islands/using-trees-and-vegetation-reduce-heat-islands> [↑](#footnote-ref-14)
15. <http://www.umass.edu/ecologicalcities/documents/ec_book.htm> [↑](#footnote-ref-15)
16. <https://www.americanforests.org/magazine/article/backyard-biodiversity/> [↑](#footnote-ref-16)
17. <http://www.aces.uiuc.edu/vista/html_pubs/mulch/MULCH.html> [↑](#footnote-ref-17)
18. <http://www.state.sc.us/forest/urbben.htm> [↑](#footnote-ref-18)
19. McPherson, G. and Muchnick, J. Effects of Street Tree Shade on Asphalt and Concrete Pavement. Journal of Arboriculture 31(6). November 2005. pp. 303-310. [↑](#footnote-ref-19)
20. Wolf, K.L. 2007 (August). City Trees and Property Values. Arborist News 16, 4:34-36. [↑](#footnote-ref-20)
21. Laverne, R.J., and K. Winson-Geideman. 2003. The Influence of Trees and Landscaping on Rental Rates at Office Buildings. Journal of Arboriculture 29, 5:281-290. [↑](#footnote-ref-21)
22. Wolf, K.L. 2005. Business District Streetscapes, Trees and Consumer Response. Journal of Forestry 103, 8:396-400. [↑](#footnote-ref-22)
23. <http://www.naturewithin.info/CityBiz/StripMall_ArbUF.pdf> [↑](#footnote-ref-23)
24. <http://www.walklive.org/storm-water-techniques/?rq=trees> [↑](#footnote-ref-24)
25. <https://www.researchgate.net/publication/23515715_The_Economic_Impact_of_the_Green_Industry_in_the_United_States> [↑](#footnote-ref-25)
26. <http://www.usgbc.org/content/li-10300> [↑](#footnote-ref-26)
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    Cambridge: Cambridge UP, 1989. Web. [↑](#footnote-ref-32)
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37. [www.nrs.fs.fed.us/pubs/jrnl/2012/nrs\_2012\_troy\_001.pdf](file:///C:\Users\bcorrigan\Dropbox\LydiaWorking\www.nrs.fs.fed.us\pubs\jrnl\2012\nrs_2012_troy_001.pdf) [↑](#footnote-ref-37)
38. <http://www.naturewithin.info/CivicEco/ArbNews_PhysActvty.pdf> [↑](#footnote-ref-38)
39. [www.cdc.gov/mmwr/preview/mmwrhtml/rr5018al.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5018al.htm) [↑](#footnote-ref-39)
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