**Portland Parks and Recreation City Nature Urban Forestry Permit**
**BES Environmental Services Tree Program (ESTP)**
**FY14-15**

## Annual Report

1. Program activities supported the *Urban Forest Action Plan*

    a. *Protect, preserve, restore, enhance, and expand Portland's urban forest*
    Tree-planting activities of the ESTP helped to increase tree canopy cover and improve species diversity in the urban forest.
    b. *Promote stewardship of and develop and maintain support for the urban forest*
    The ESTP strives to educate and celebrate urban trees and to build community through tree planting. ESTP supported outreach and education through the work of its canvassing and outreach team, through its partnership with the community building NGO Friends of Trees, through participation with the Urban Forestry Commission's outreach and education committee, and through support of PP&R urban forest outreach and education programs.
    c. *Provide equitable urban forest benefits for all residents of the city/ manage the urban forest to maximize community benefits for all residents*
    ESTP planted trees in service of clean rivers, healthy watersheds, and livable, sustainable communities. ESTP managed outreach, education, and planting programs to focus on low-canopy, low-income, racially diverse areas of the city to reduce the current disparity in how and where the urban forest serves Portland residents.

2. Program activities supported the *Portland Watershed Management Plan*

    a. *Watershed health goal #1: Hydrology: Move toward normative stream flow conditions to protect and improve watershed and stream health, channel functions, and public health and safety*
    Tree planting in the built environment helped manage more stormwater where it falls, contributing to more normative stream flow conditions by reducing stormwater runoff and increasing infiltration to groundwater.
    b. *Watershed health goal #2: Physical Habitat: Protect, enhance, and restore aquatic and terrestrial habitat conditions and support key ecological functions and improved productivity, diversity, capacity, and distribution of native fish and wildlife populations and biological communities*
    Planting a diversity of tree types throughout our watersheds improved the structure of the urban forest and thereby its ability to function as habitat for a varied suite of wildlife

c. *Watershed health goal #3: Water Quality: Protect and improve surface water and groundwater quality to protect public health and support native fish and wildlife populations and biological communities*
   Planted trees contributed to reduced surface water sedimentation and supported healthy soil ecosystems that help polish stormwater before it percolates down to groundwater.
d. *Watershed health goal #4: Biological Communities: Protect, enhance, manage and restore native aquatic and terrestrial species and biological communities to improve and maintain biodiversity in Portland's watersheds*
   The ESTP's focus on planting native species where practicable in the built environment provided high-quality habitat and improved habitat connectivity for biological communities through our watersheds.

3. Review of annual accomplishments

During FY14, the Environmental Services Tree Program (ESTP) planted 2,622 street trees under this programmatic permit in the City of Portland with planting partners Cascadian Landscapers, Inc., Friends of Trees, Treecology, and Verde.

BES increased the ability of the urban forest to manage stormwater today and into the future by: (1) investing in community outreach and education to raise awareness of the importance of trees in the urban environment and the benefits they provide; (2) planting trees in the built environment to increase the urban forest canopy and thereby its capacity to intercept precipitation before it becomes stormwater; and (3) investing in young tree structural pruning with nonprofit, city, and community partners to promote healthy, long-lived trees in our urban forest.

BES continued to focus attention on equity issues to improve service delivery in low-canopy, low-income communities and communities of color. FY15 efforts included additional staff training, presenting our program equity scan publicly, delivering and analyzing responses to a customer survey, continuing the partnership with Confluence Environmental Center to build and strengthen partnerships within communities of color and low-income communities, and fine-tuning program delivery strategies to better serve all residents of the city.

BES continued to provide available planting space data for Portland Parks Urban Forestry's tree inventory project.

Table 1. UF targets, progress by quarter, final percentage

| | Targets | | | Qtr2 | Qtr3 | Qtr4 | FINAL |
|---|---|---|---|---|---|---|---|
| (1) | low canopy | at least | 60% | 53% | 80% | 83% | 83% |
| (2) | low income | at least | 30% | 25% | 47% | 40% | 40% |
| (3) | species | at most | 10% | 14% | 11% | 9% | 9% |
| (4) | genus | at most | 20% | 14% | 12% | 9% | 9% |
| (5) | family | at most | 30% | 21% | 16% | 16% | 16% |
| (6) | evergreen | at least | 10% | 1% | 5% | 7% | 7% |
| (7) | native | at least | 10% | 7% | 13% | 13% | 13% |
| (8) | large stature | at least | 40% | 7% | 13% | 16% | 16% |

4. Challenges, obstacles, and successes in achieving permit targets

    a. The limited number of offerings for narrow planting strips combined with the large number of customers choosing from these lists will make it challenging for us to meet the 'at most 10%' target for species. 68% of trees planted by FOT and 40% of trees planted by on-call contractors so far this year are small stature, so we anticipate 1,489 (63%) small stature trees total.
    b. Many customers balk at the idea of an evergreen tree as a street tree. Many evergreens are large conifers that do not fit in most of the available street tree planting spaces in Portland, and broadleaf evergreen options are limited. We offered a primarily native conifer project to 9,549 households; this resulted in 38 trees (30 evergreens) planted. As anticipated, we did not meet this target.
    c. Most Portland natives appropriate for use as street trees are large stature and thereby do not fit in most of the available street tree planting spaces in Portland.
    d. Less than 10% of the available street tree planting locations we have data for are wide enough to house a large-stature tree. Even with our large/native/evergreen project targeted at these wide strips, we were only able to plant 16.5% large-stature trees last planting season (FY14). Each year we get smaller returns from this offer (38 trees this year). As anticipated, we did not meet this target.

5. Suggested approaches to achieve permit targets

    We suggest doing away with the targets for the following reasons:

    a. We can only get trees planted where we find willing adjacent property owners to care for them. Though we can conduct our outreach strategically, we must plant opportunistically where we find willing customers.
    b. Space limitations in the right-of-way make it difficult to plant large-stature, evergreen, and (most) native trees, making it difficult to meet the large-stature, native, and evergreen targets.
    c. Planting stock availability and the relatively small number of small-stature species

approved for planting, combined with the large inventory of empty street tree planting spaces that are small, make it difficult to meet the species target.

6. Recommendations for program improvement

As part of our programmatic permit application, we suggested some changes to the existing permit for three main reasons: (1) to improve consistency with other programmatic permits, (2) to reduce the administrative burden on staff, and (3) to better articulate that UF and BES work together in service of the urban forest. The summary of those changes is reproduced below as recommendations for program improvements.

- We re-organized the permit sections and incorporated language from other programmatic permits to "…maintain consistency with City street tree planting specifications, regulations, and permitting" as required by our permit.
- We replaced the targets for large-stature, native, evergreen, low-canopy, and low-income with a new goal statement (1.5) articulating that we target our planting efforts to plant trees of these types in these locations where practicable. We also include racially diverse neighborhoods, and we cite the many city plans that guide this work.
    - Because we may only plant street trees with willing partners who accept maintenance responsibility for them, because the majority of available street tree planting spaces are too narrow for a large-stature tree, and because most native and evergreen trees are large stature, it is not practicable for us to work toward numerical targets. We feel that articulating how we focus our work better reflects our intentions and recognizes the barriers we face. In addition, some targets are at odds with one another in some places (e.g., some areas with relatively more spaces for large-stature trees may not be low income or low canopy), so we have to take a balanced approach.
- We replaced the targets for species, genus, and family with content in two places: (1) with the new goal statement (Goal 1.5) to focus planting activities on a diverse planting palette and (2) with the species diversity requirements language from Title 11 to be consistent with other programmatic permits and city code.
    - In addition to nursery stock availability, the barriers stated above also apply to our ability to control the diversity of species we plant. We are committed to planting a diversity of species that are appropriate for our climate. Limitations in planting site dimensions, and the availability from nurseries of a diversity of species that meet the planting size and condition requirements, impact our ability to meet numerical targets. We feel that articulating our focus, and ensuring we comply with the species diversity requirements in Title 11, better reflects our intentions and recognizes the barriers we face.
- We added the monthly summary report that BES provides to UF. We removed additional sub-annual reporting in favor of annual reporting (1) to reduce staff burden at UF, BES, and FOT, (2) to improve data veracity, and (3) to bring consistency with other UF programmatic permits.
    - Monthly reporting imposes a burden on staff at UF, BES, and FOT. Data are incomplete during planting season when staff resources are focused on planting activities. Annual

detailed reporting aligns with requirements in other permits and provides conditions conducive to better data.

- While we appreciate the opportunity to meet quarterly, the quarterly report requires significant staff time to develop but does not provide data that can help alter the course of the planting season since projects are already locked in.
- We propose doing away with bi-weekly inspection reporting in favor of using the inspection request form as needed. Most BES inspection staff have been doing this work for more than two years, and feedback from UF reflects the high quality of their work. This would reduce the burden on UF for reviewing planting inspections biweekly.

7. Tables

Table 2. Street trees planted by species

| **Botanical Name** | **#** | **%** |
|---|---|---|
| Abies grandis | 14 | 0.53% |
| Amelanchier laevis 'Spring Flurry' | 21 | 0.80% |
| Amelanchier x grandiflora 'Autumn Brilliance' | 25 | 0.95% |
| Arbutus menziesii | 5 | 0.19% |
| Arbutus unedo | 16 | 0.61% |
| Azara microphylla | 29 | 1.11% |
| Calocedrus decurrens | 6 | 0.23% |
| Carpinus betulus 'Frans Fontaine' | 4 | 0.15% |
| Carpinus betulus 'Pyramidalis' | 8 | 0.31% |
| Carpinus caroliniana | 40 | 1.53% |
| Carpinus japonica | 28 | 1.07% |
| Catalpa speciosa | 5 | 0.19% |
| Catalpa x erubescens 'Purpurea' | 8 | 0.31% |
| Celtis occidentalis | 6 | 0.23% |
| Cercis canadensis 'Forest Pansy' | 24 | 0.92% |
| Cercis canadensis 'Merlot' | 21 | 0.80% |
| Chionanthus retusus | 16 | 0.61% |
| Chitalpa tashkentensis 'Pink Dawn' | 10 | 0.38% |
| Cladrastis kentukea | 31 | 1.18% |
| Cladrastis kentukea 'Perkins Pink' | 31 | 1.18% |
| Clerodendrum trichotomum | 5 | 0.19% |
| Cornus ‘Eddie’s White Wonder’ | 1 | 0.04% |
| Cornus controversa 'June Snow-JFS' | 28 | 1.07% |
| Cornus kousa var. chinensis | 26 | 0.99% |
| Cornus kousa x nuttallii 'KN4-43' | 4 | 0.15% |
| Cornus mas | 14 | 0.53% |
| Cornus mas 'Golden Glory' | 24 | 0.92% |
| Corylus colurna | 10 | 0.38% |

| | | |
|---|---|---|
| Cotinus obovatus | 8 | 0.31% |
| Crataegus douglasii | 43 | 1.64% |
| Crataegus phaenopyrum | 13 | 0.50% |
| Crataegus x lavallei | 19 | 0.72% |
| Davidia involucrata | 3 | 0.11% |
| Diospyros kaki 'Fuyu' | 6 | 0.23% |
| Diospyros kaki 'Hachiya' | 6 | 0.23% |
| Fagus sylvatica ‘Atropurpurea’ | 1 | 0.04% |
| Fagus sylvatica 'Roseo-marginata' | 9 | 0.34% |
| Franklinia alatamaha | 17 | 0.65% |
| Ginkgo biloba ‘Magyar’ | 14 | 0.53% |
| Ginkgo biloba ‘Princeton Sentry’ | 6 | 0.23% |
| Ginkgo biloba 'Autumn Gold' | 32 | 1.22% |
| Ginkgo biloba 'Magyar' | 17 | 0.65% |
| Gymnocladus dioicus 'Espresso' | 4 | 0.15% |
| Heptacodium miconioides | 24 | 0.92% |
| Juglans regia 'English Carpathian' | 8 | 0.31% |
| Koelreuteria paniculata | 5 | 0.19% |
| Koelreuteria paniculata 'Coral Sun' | 5 | 0.19% |
| Lagerstroemia 'Arapaho' | 3 | 0.11% |
| Lagerstroemia indica | 2 | 0.08% |
| Lagerstroemia indica x fauriei 'Natchez' | 7 | 0.27% |
| Lagerstroemia indica x fauriei 'Tuscarora' | 74 | 2.82% |
| Lagerstroemia 'Muskogee' | 5 | 0.19% |
| Lagerstroemia 'Natchez' | 2 | 0.08% |
| Lagerstroemia 'Tuscarora' | 14 | 0.53% |
| Liriodendron tulipifera | 27 | 1.03% |
| Maackia amurensis | 47 | 1.79% |
| Magnolia 'Butterflies' | 36 | 1.37% |
| Magnolia denudata | 4 | 0.15% |
| Magnolia 'Elizabeth' | 5 | 0.19% |
| Magnolia 'Galaxy' | 30 | 1.14% |
| Magnolia grandiflora ‘Edith Bogue’ | 45 | 1.72% |
| Magnolia grandiflora 'Edith Bogue' | 17 | 0.65% |
| Magnolia grandiflora 'Victoria' | 8 | 0.31% |
| Magnolia virginiana 'Jim Wilson' | 12 | 0.46% |
| Magnolia x 'Butterflies' | 1 | 0.04% |
| Magnolia x 'Vulcan' | 3 | 0.11% |
| Malus domestica 'Spartan' | 8 | 0.31% |
| Malus 'Purple Prince' | 84 | 3.20% |
| Malus 'Royal Raindrops' | 38 | 1.45% |

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|---|---|---|
| Malus transitoria 'Schmidtcutleaf' | 78 | 2.97% |
| Metasequoia glyptostroboides | 6 | 0.23% |
| Nyssa sylvatica | 114 | 4.35% |
| Nyssa sylvatica 'David Odom' | 3 | 0.11% |
| Nyssa sylvatica 'Haymanred' | 2 | 0.08% |
| Ostrya virginiana | 51 | 1.95% |
| Parrotia persica | 77 | 2.94% |
| Parrotia persica 'Ruby Vase' | 8 | 0.31% |
| Parrotia persica 'Vanessa' | 10 | 0.38% |
| Pinus flexilis 'Vanderwolf's Pyramid' | 34 | 1.30% |
| Pinus ponderosa | 68 | 2.59% |
| Pistacia chinensis | 23 | 0.88% |
| Platanus x acerifolia 'Bloodgood' | 29 | 1.11% |
| Prunus domestica 'Seneca' Semi-Dwarf | 7 | 0.27% |
| Prunus salicinia 'Beauty' Semi-Dwarf | 1 | 0.04% |
| Pseudotsuga menziesii | 11 | 0.42% |
| Pyrus communis 'Anjou' Semi-Dwarf | 4 | 0.15% |
| Pyrus communis 'Bartlett' Semi-Dwarf | 6 | 0.23% |
| Pyrus communis 'Comice' Semi-Dwarf | 1 | 0.04% |
| Pyrus pyrifolia 'Korean Giant' | 2 | 0.08% |
| Pyrus pyrifolia 'Nijiseiki' | 4 | 0.15% |
| Pyrus pyrifolia 'Shinseiki' | 4 | 0.15% |
| Quercus acutissima | 3 | 0.11% |
| Quercus bicolor | 3 | 0.11% |
| Quercus coccinea | 21 | 0.80% |
| Quercus frainetto 'Schmidt' | 20 | 0.76% |
| Quercus garryana | 99 | 3.78% |
| Quercus ilex | 2 | 0.08% |
| Quercus macrocarpa | 5 | 0.19% |
| Quercus macrocarpa ‘JFS-KW3’ | 4 | 0.15% |
| Quercus phellos | 19 | 0.72% |
| Quercus robur x alba 'Crimschmidt' | 1 | 0.04% |
| Quercus shumardii | 30 | 1.14% |
| Quercus virginiana | 3 | 0.11% |
| Rhamnus purshiana | 127 | 4.84% |
| Sequoiadendron giganteum | 5 | 0.19% |
| Sophora japonica | 10 | 0.38% |
| Stewartia pseudocamellia | 35 | 1.33% |
| Styrax japonicus | 122 | 4.65% |
| Styrax japonicus 'Emerald Pagoda' | 9 | 0.34% |
| Styrax japonicus 'JFS-D' | 69 | 2.63% |

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|---|---|---|
| Styrax japonicus 'Pink Chimes' | 6 | 0.23% |
| Styrax obassia | 45 | 1.72% |
| Sycoparrotia x semidecidua | 3 | 0.11% |
| Syringa pekinensis 'Morton' | 1 | 0.04% |
| Syringa pekinensis 'Summer Charm' | 13 | 0.50% |
| Syringa reticulata 'Ivory Silk' | 62 | 2.36% |
| Taxodium distichum 'Mickelson' | 8 | 0.31% |
| Thuja plicata | 30 | 1.14% |
| Thuja plicata 'Hogan' | 1 | 0.04% |
| Tilia americana 'Redmond' | 2 | 0.08% |
| Tilia cordata 'Greenspire' | 8 | 0.31% |
| Tilia cordata 'Halka' | 12 | 0.46% |
| Tilia tomentosa 'Sterling' | 2 | 0.08% |
| Tilia x mongolica 'Harvest Gold' | 2 | 0.08% |
| Ulmus ‘Frontier’ | 1 | 0.04% |
| Ulmus americana 'Jefferson' | 16 | 0.61% |
| Ulmus 'Frontier' | 23 | 0.88% |
| Ulmus 'Morton' | 16 | 0.61% |
| Ulmus propinqua ‘JFS-Bieberich’ | 26 | 0.99% |
| Ulmus propinqua 'JFS-Bieberich' | 5 | 0.19% |
| Zelkova serrata ‘Musashino’ | 12 | 0.46% |
| Zelkova serrata ‘Schmidtlow’ | 13 | 0.50% |
| Zelkova serrata 'City Sprite' | 7 | 0.27% |
| Zelkova serrata 'Green Vase' | 6 | 0.23% |
| **Grand Total** | **2622** | 100.00% |

Table 3. Street trees planted by genus

| **Botanical Name** | **#** | **%** |
|---|---|---|
| Abies | 14 | 0.53% |
| Amelanchier | 46 | 1.75% |
| Arbutus | 21 | 0.80% |
| Azara | 29 | 1.11% |
| Calocedrus | 6 | 0.23% |
| Carpinus | 80 | 3.05% |
| Catalpa | 13 | 0.50% |
| Celtis | 6 | 0.23% |
| Cercis | 45 | 1.72% |
| Chionanthus | 16 | 0.61% |
| Chitalpa | 10 | 0.38% |
| Cladrastis | 62 | 2.36% |

| | | |
|---|---|---|
| Clerodendrum | 5 | 0.19% |
| Cornus | 97 | 3.70% |
| Corylus | 10 | 0.38% |
| Cotinus | 8 | 0.31% |
| Crataegus | 75 | 2.86% |
| Davidia | 3 | 0.11% |
| Diospyros | 12 | 0.46% |
| Fagus | 10 | 0.38% |
| Franklinia | 17 | 0.65% |
| Ginkgo | 69 | 2.63% |
| Gymnocladus | 4 | 0.15% |
| Heptacodium | 24 | 0.92% |
| Juglans | 8 | 0.31% |
| Koelreuteria | 10 | 0.38% |
| Lagerstroemia | 107 | 4.08% |
| Liriodendron | 27 | 1.03% |
| Maackia | 47 | 1.79% |
| Magnolia | 161 | 6.14% |
| Malus | 208 | 7.93% |
| Metasequoia | 6 | 0.23% |
| Nyssa | 119 | 4.54% |
| Ostrya | 51 | 1.95% |
| Parrotia | 95 | 3.62% |
| Pinus | 102 | 3.89% |
| Pistacia | 23 | 0.88% |
| Platanus | 29 | 1.11% |
| Prunus | 8 | 0.31% |
| Pseudotsuga | 11 | 0.42% |
| Pyrus | 21 | 0.80% |
| Quercus | 210 | 8.01% |
| Rhamnus | 127 | 4.84% |
| Sequoiadendron | 5 | 0.19% |
| Sophora | 10 | 0.38% |
| Stewartia | 35 | 1.33% |
| Styrax | 251 | 9.57% |
| Sycoparrotia | 3 | 0.11% |
| Syringa | 76 | 2.90% |
| Taxodium | 8 | 0.31% |
| Thuja | 31 | 1.18% |
| Tilia | 26 | 0.99% |
| Ulmus | 87 | 3.32% |

| | | |
|---|---|---|
| Zelkova | 38 | 1.45% |
| **Grand Total** | **2622** | 100.00% |

Table 4. Street trees planted by family

| **Botanical Name** | **#** | **%** |
|---|---|---|
| Anacardiaceae | 31 | 1.18% |
| Betulaceae | 136 | 5.19% |
| Bignoniaceae | 23 | 0.88% |
| Cannabaceae | 6 | 0.23% |
| Caprifoliaceae | 24 | 0.92% |
| Carpinaceae | 5 | 0.19% |
| Cornaceae | 143 | 5.45% |
| Cupressaceae | 56 | 2.14% |
| Davidiaceae | 3 | 0.11% |
| Ebenaceae | 12 | 0.46% |
| Ericaceae | 21 | 0.80% |
| Fabaceae | 156 | 5.95% |
| Fagaceae | 220 | 8.39% |
| Ginkgoaceae | 69 | 2.63% |
| Hamamelidaceae | 98 | 3.74% |
| Juglandaceae | 8 | 0.31% |
| Leguminosae | 12 | 0.46% |
| Lythraceae | 107 | 4.08% |
| Magnoliaceae | 188 | 7.17% |
| Nyssaceae | 73 | 2.78% |
| Oleaceae | 92 | 3.51% |
| Pinaceae | 127 | 4.84% |
| Platanaceae | 29 | 1.11% |
| Rhamnaceae | 127 | 4.84% |
| Rosaceae | 358 | 13.65% |
| Salicaceae | 29 | 1.11% |
| Sapindaceae | 10 | 0.38% |
| Styracaceae | 251 | 9.57% |
| Theaceae | 52 | 1.98% |
| Tiliaceae | 26 | 0.99% |
| Ulmaceae | 125 | 4.77% |
| Verbenaceae | 5 | 0.19% |
| **Grand Total** | **2622** | 100.00% |

Table 5. Street trees planted by native origin

| | # | % |
|---|---|---|
| N | 2225 | 84.86% |
| Y | 397 | 15.14% |
| **Grand Total** | **2622** | |

| | # | % |
|---|---|---|
| N | 2334 | 89.02% |
| Y | 288 | 10.98% |
| **Grand Total** | 2,622 | |

Table 7. Street trees planted by strip code

| **Strip Code** | **#** | **%** |
|---|---|---|
| A | 437 | 16.67% |
| B | 631 | 24.07% |
| C | 277 | 10.56% |
| D | 135 | 5.15% |
| E | 75 | 2.86% |
| F | 237 | 9.04% |
| G | 229 | 8.73% |
| H | 155 | 5.91% |
| I | 183 | 6.98% |
| J | 144 | 5.49% |
| K | 59 | 2.25% |
| L | 23 | 0.88% |
| M | 25 | 0.95% |
| N | 12 | 0.46% |
| **Grand Total** | **2622** | |

Table 8. Street trees planted in low income (+) and low canopy (*) neighborhoods.

| | | |
|---|---|---|
| ALAMEDA* | GOOSE HOLLOW+ | PARKROSE HEIGHTS* |
| ARBOR LODGE* | GRANT PARK* | PIEDMONT* |

| | | |
|---|---|---|
| ARGAY* | HAZELWOOD*+ | PORTSMOUTH+ |
| BEAUMONT-WILSHIRE* | HOSFORD-ABERNETHY* | POWELLHURST-GILBERT |
| BOISE*+ | HUMBOLDT*+ | REED*+ |
| BRENTWOOD-DARLINGTON*+ | KENTON* | RICHMOND* |
| BRIDGETON* | KERNS*+ | ROSE CITY PARK* |
| BROOKLYN* | KING* | ROSEWAY* |
| BUCKMAN*+ | LAURELHURST | RUSSELL* |
| CATHEDRAL PARK*+ | LENTS*+ | SABIN* |
| CENTENNIAL*+ | MILL PARK*+ | SOUTH TABOR* |
| CONCORDIA* | MONTAVILLA* | ST. JOHNS* |
| CRESTON-KENILWORTH*+ | MT. SCOTT-ARLETA* | SULLIVAN'S GULCH* |
| CULLY*+ | MT. TABOR* | SUMNER*+ |
| EAST COLUMBIA* | NORTH TABOR* | SUNNYSIDE* |
| ELIOT* | NORTHWEST DISTRICT*+ | VERNON* |
| FOSTER-POWELL*+ | OVERLOOK* | WOODLAWN* |
| GLENFAIR+ | PARKROSE*+ | WOODSTOCK* |

Table 9. Street trees planted in low income neighborhoods

| **Botanical Name** | **#** | **%** |
|---|---|---|
| Abies grandis | 4 | 0.39% |
| Amelanchier laevis 'Spring Flurry' | 7 | 0.68% |
| Amelanchier x grandiflora 'Autumn Brilliance' | 11 | 1.08% |
| Arbutus menziesii | 1 | 0.10% |
| Arbutus unedo | 4 | 0.39% |

| | | |
|---|---|---|
| Azara microphylla | 9 | 0.88% |
| Calocedrus decurrens | 1 | 0.10% |
| Carpinus betulus 'Frans Fontaine' | 3 | 0.29% |
| Carpinus betulus 'Pyramidalis' | 2 | 0.20% |
| Carpinus caroliniana | 16 | 1.56% |
| Carpinus japonica | 17 | 1.66% |
| Celtis occidentalis | 5 | 0.49% |
| Cercis canadensis 'Forest Pansy' | 11 | 1.08% |
| Chionanthus retusus | 5 | 0.49% |
| Chitalpa tashkentensis 'Pink Dawn' | 3 | 0.29% |
| Cladrastis kentukea | 12 | 1.17% |
| Cladrastis kentukea 'Perkins Pink' | 15 | 1.47% |
| Clerodendrum trichotomum | 3 | 0.29% |
| Cornus ‘Eddie’s White Wonder’ | 1 | 0.10% |
| Cornus controversa 'June Snow-JFS' | 17 | 1.66% |
| Cornus kousa var. chinensis | 7 | 0.68% |
| Cornus mas | 5 | 0.49% |
| Cornus mas 'Golden Glory' | 7 | 0.68% |
| Corylus colurna | 4 | 0.39% |
| Cotinus obovatus | 2 | 0.20% |
| Crataegus douglasii | 14 | 1.37% |
| Crataegus phaenopyrum | 6 | 0.59% |
| Crataegus x lavallei | 6 | 0.59% |
| Diospyros kaki 'Fuyu' | 3 | 0.29% |
| Diospyros kaki 'Hachiya' | 4 | 0.39% |
| Fagus sylvatica 'Roseo-marginata' | 2 | 0.20% |
| Franklinia alatamaha | 14 | 1.37% |
| Ginkgo biloba 'Autumn Gold' | 9 | 0.88% |
| Ginkgo biloba 'Magyar' | 10 | 0.98% |
| Gymnocladus dioicus 'Espresso' | 3 | 0.29% |
| Heptacodium miconioides | 10 | 0.98% |
| Juglans regia 'English Carpathian' | 5 | 0.49% |
| Koelreuteria paniculata | 1 | 0.10% |
| Koelreuteria paniculata 'Coral Sun' | 2 | 0.20% |
| Lagerstroemia 'Arapaho' | 3 | 0.29% |
| Lagerstroemia indica x fauriei 'Natchez' | 1 | 0.10% |
| Lagerstroemia indica x fauriei 'Tuscarora' | 34 | 3.32% |
| Lagerstroemia 'Muskogee' | 5 | 0.49% |
| Lagerstroemia 'Tuscarora' | 14 | 1.37% |
| Liriodendron tulipifera | 8 | 0.78% |
| Maackia amurensis | 32 | 3.13% |

| | | |
|---|---|---|
| Magnolia 'Butterflies' | 9 | 0.88% |
| Magnolia denudata | 4 | 0.39% |
| Magnolia 'Elizabeth' | 1 | 0.10% |
| Magnolia 'Galaxy' | 6 | 0.59% |
| Magnolia grandiflora ‘Edith Bogue’ | 22 | 2.15% |
| Magnolia grandiflora 'Edith Bogue' | 7 | 0.68% |
| Magnolia grandiflora 'Victoria' | 8 | 0.78% |
| Magnolia virginiana 'Jim Wilson' | 12 | 1.17% |
| Malus domestica 'Spartan' | 2 | 0.20% |
| Malus 'Purple Prince' | 26 | 2.54% |
| Malus 'Royal Raindrops' | 6 | 0.59% |
| Malus transitoria 'Schmidtcutleaf' | 27 | 2.64% |
| Nyssa sylvatica | 24 | 2.35% |
| Nyssa sylvatica 'David Odom' | 1 | 0.10% |
| Nyssa sylvatica 'Haymanred' | 2 | 0.20% |
| Ostrya virginiana | 38 | 3.71% |
| Parrotia persica | 35 | 3.42% |
| Parrotia persica 'Ruby Vase' | 7 | 0.68% |
| Parrotia persica 'Vanessa' | 1 | 0.10% |
| Pinus ponderosa | 22 | 2.15% |
| Pistacia chinensis | 16 | 1.56% |
| Platanus x acerifolia 'Bloodgood' | 18 | 1.76% |
| Prunus domestica 'Seneca' Semi-Dwarf | 1 | 0.10% |
| Prunus salicinia 'Beauty' Semi-Dwarf | 1 | 0.10% |
| Pseudotsuga menziesii | 6 | 0.59% |
| Pyrus pyrifolia 'Korean Giant' | 1 | 0.10% |
| Pyrus pyrifolia 'Nijiseiki' | 1 | 0.10% |
| Pyrus pyrifolia 'Shinseiki' | 1 | 0.10% |
| Quercus bicolor | 1 | 0.10% |
| Quercus coccinea | 7 | 0.68% |
| Quercus frainetto 'Schmidt' | 5 | 0.49% |
| Quercus garryana | 43 | 4.20% |
| Quercus macrocarpa | 2 | 0.20% |
| Quercus macrocarpa ‘JFS-KW3’ | 4 | 0.39% |
| Quercus phellos | 13 | 1.27% |
| Quercus shumardii | 20 | 1.96% |
| Quercus virginiana | 2 | 0.20% |
| Rhamnus purshiana | 24 | 2.35% |
| Sequoiadendron giganteum | 1 | 0.10% |
| Sophora japonica | 4 | 0.39% |
| Stewartia pseudocamellia | 15 | 1.47% |

| | | |
|---|---|---|
| Styrax japonicus | 26 | 2.54% |
| Styrax japonicus 'Emerald Pagoda' | 5 | 0.49% |
| Styrax japonicus 'JFS-D' | 40 | 3.91% |
| Styrax japonicus 'Pink Chimes' | 4 | 0.39% |
| Styrax obassia | 28 | 2.74% |
| Sycoparrotia x semidecidua | 1 | 0.10% |
| Syringa pekinensis 'Morton' | 1 | 0.10% |
| Syringa pekinensis 'Summer Charm' | 7 | 0.68% |
| Syringa reticulata 'Ivory Silk' | 49 | 4.79% |
| Thuja plicata | 2 | 0.20% |
| Tilia cordata 'Halka' | 7 | 0.68% |
| Ulmus ‘Frontier’ | 1 | 0.10% |
| Ulmus americana 'Jefferson' | 16 | 1.56% |
| Ulmus 'Frontier' | 5 | 0.49% |
| Ulmus propinqua ‘JFS-Bieberich’ | 10 | 0.98% |
| Ulmus propinqua 'JFS-Bieberich' | 3 | 0.29% |
| Zelkova serrata ‘Schmidtlow’ | 13 | 1.27% |
| Zelkova serrata 'City Sprite' | 1 | 0.10% |
| **Grand Total** | **1023** | 100.00% |

Table 10. Street trees planted in low income neighborhoods

| **Botanical Name** | **#** | **%** |
|---|---|---|
| Abies grandis | 14 | 0.68% |
| Amelanchier laevis 'Spring Flurry' | 17 | 0.82% |
| Amelanchier x grandiflora 'Autumn Brilliance' | 23 | 1.12% |
| Arbutus menziesii | 4 | 0.19% |
| Arbutus unedo | 16 | 0.78% |
| Azara microphylla | 28 | 1.36% |
| Calocedrus decurrens | 5 | 0.24% |
| Carpinus betulus 'Frans Fontaine' | 4 | 0.19% |
| Carpinus betulus 'Pyramidalis' | 8 | 0.39% |
| Carpinus caroliniana | 32 | 1.55% |
| Carpinus japonica | 12 | 0.58% |
| Catalpa speciosa | 5 | 0.24% |
| Catalpa x erubescens 'Purpurea' | 4 | 0.19% |
| Cercis canadensis 'Forest Pansy' | 17 | 0.82% |
| Cercis canadensis 'Merlot' | 11 | 0.53% |
| Chionanthus retusus | 11 | 0.53% |
| Chitalpa tashkentensis 'Pink Dawn' | 8 | 0.39% |
| Cladrastis kentukea | 22 | 1.07% |

| | | |
|---|---|---|
| Cladrastis kentukea 'Perkins Pink' | 18 | 0.87% |
| Clerodendrum trichotomum | 4 | 0.19% |
| Cornus ‘Eddie’s White Wonder’ | 1 | 0.05% |
| Cornus controversa 'June Snow-JFS' | 19 | 0.92% |
| Cornus kousa var. chinensis | 20 | 0.97% |
| Cornus kousa x nuttallii 'KN4-43' | 4 | 0.19% |
| Cornus mas | 13 | 0.63% |
| Cornus mas 'Golden Glory' | 23 | 1.12% |
| Corylus colurna | 10 | 0.49% |
| Cotinus obovatus | 5 | 0.24% |
| Crataegus douglasii | 41 | 1.99% |
| Crataegus phaenopyrum | 10 | 0.49% |
| Crataegus x lavallei | 19 | 0.92% |
| Davidia involucrata | 3 | 0.15% |
| Diospyros kaki 'Fuyu' | 6 | 0.29% |
| Diospyros kaki 'Hachiya' | 6 | 0.29% |
| Fagus sylvatica 'Roseo-marginata' | 6 | 0.29% |
| Franklinia alatamaha | 11 | 0.53% |
| Ginkgo biloba ‘Magyar’ | 14 | 0.68% |
| Ginkgo biloba ‘Princeton Sentry’ | 6 | 0.29% |
| Ginkgo biloba 'Autumn Gold' | 29 | 1.41% |
| Ginkgo biloba 'Magyar' | 7 | 0.34% |
| Gymnocladus dioicus 'Espresso' | 3 | 0.15% |
| Heptacodium miconioides | 18 | 0.87% |
| Juglans regia 'English Carpathian' | 8 | 0.39% |
| Koelreuteria paniculata | 5 | 0.24% |
| Koelreuteria paniculata 'Coral Sun' | 4 | 0.19% |
| Lagerstroemia indica x fauriei 'Natchez' | 5 | 0.24% |
| Lagerstroemia indica x fauriei 'Tuscarora' | 58 | 2.81% |
| Lagerstroemia 'Muskogee' | 5 | 0.24% |
| Lagerstroemia 'Tuscarora' | 14 | 0.68% |
| Liriodendron tulipifera | 24 | 1.16% |
| Maackia amurensis | 32 | 1.55% |
| Magnolia 'Butterflies' | 30 | 1.46% |
| Magnolia 'Elizabeth' | 4 | 0.19% |
| Magnolia 'Galaxy' | 24 | 1.16% |
| Magnolia grandiflora ‘Edith Bogue’ | 34 | 1.65% |
| Magnolia grandiflora 'Edith Bogue' | 8 | 0.39% |
| Magnolia grandiflora 'Victoria' | 1 | 0.05% |
| Magnolia virginiana 'Jim Wilson' | 1 | 0.05% |
| Magnolia x 'Vulcan' | 3 | 0.15% |

| | | |
|---|---|---|
| Malus domestica 'Spartan' | 6 | 0.29% |
| Malus 'Purple Prince' | 62 | 3.01% |
| Malus 'Royal Raindrops' | 29 | 1.41% |
| Malus transitoria 'Schmidtcutleaf' | 73 | 3.54% |
| Metasequoia glyptostroboides | 6 | 0.29% |
| Nyssa sylvatica | 102 | 4.95% |
| Nyssa sylvatica 'David Odom' | 2 | 0.10% |
| Nyssa sylvatica 'Haymanred' | 2 | 0.10% |
| Ostrya virginiana | 25 | 1.21% |
| Parrotia persica | 63 | 3.06% |
| Parrotia persica 'Ruby Vase' | 7 | 0.34% |
| Parrotia persica 'Vanessa' | 7 | 0.34% |
| Pinus flexilis 'Vanderwolf's Pyramid' | 34 | 1.65% |
| Pinus ponderosa | 63 | 3.06% |
| Pistacia chinensis | 17 | 0.82% |
| Platanus x acerifolia 'Bloodgood' | 19 | 0.92% |
| Prunus domestica 'Seneca' Semi-Dwarf | 6 | 0.29% |
| Prunus salicinia 'Beauty' Semi-Dwarf | 1 | 0.05% |
| Pseudotsuga menziesii | 5 | 0.24% |
| Pyrus communis 'Anjou' Semi-Dwarf | 4 | 0.19% |
| Pyrus communis 'Bartlett' Semi-Dwarf | 6 | 0.29% |
| Pyrus communis 'Comice' Semi-Dwarf | 1 | 0.05% |
| Pyrus pyrifolia 'Korean Giant' | 2 | 0.10% |
| Pyrus pyrifolia 'Nijiseiki' | 4 | 0.19% |
| Pyrus pyrifolia 'Shinseiki' | 4 | 0.19% |
| Quercus acutissima | 3 | 0.15% |
| Quercus bicolor | 3 | 0.15% |
| Quercus coccinea | 16 | 0.78% |
| Quercus frainetto 'Schmidt' | 14 | 0.68% |
| Quercus garryana | 73 | 3.54% |
| Quercus ilex | 2 | 0.10% |
| Quercus macrocarpa | 5 | 0.24% |
| Quercus macrocarpa ‘JFS-KW3’ | 2 | 0.10% |
| Quercus phellos | 7 | 0.34% |
| Quercus robur x alba 'Crimschmidt' | 1 | 0.05% |
| Quercus shumardii | 19 | 0.92% |
| Quercus virginiana | 1 | 0.05% |
| Rhamnus purshiana | 106 | 5.14% |
| Sequoiadendron giganteum | 4 | 0.19% |
| Sophora japonica | 3 | 0.15% |
| Stewartia pseudocamellia | 30 | 1.46% |

| | | |
|---|---|---|
| Styrax japonicus | 94 | 4.56% |
| Styrax japonicus 'Emerald Pagoda' | 9 | 0.44% |
| Styrax japonicus 'JFS-D' | 50 | 2.43% |
| Styrax japonicus 'Pink Chimes' | 6 | 0.29% |
| Styrax obassia | 37 | 1.80% |
| Sycoparrotia x semidecidua | 3 | 0.15% |
| Syringa pekinensis 'Morton' | 1 | 0.05% |
| Syringa pekinensis 'Summer Charm' | 12 | 0.58% |
| Syringa reticulata 'Ivory Silk' | 48 | 2.33% |
| Taxodium distichum 'Mickelson' | 8 | 0.39% |
| Thuja plicata | 30 | 1.46% |
| Thuja plicata 'Hogan' | 1 | 0.05% |
| Tilia americana 'Redmond' | 2 | 0.10% |
| Tilia cordata 'Greenspire' | 6 | 0.29% |
| Tilia cordata 'Halka' | 11 | 0.53% |
| Tilia tomentosa 'Sterling' | 2 | 0.10% |
| Tilia x mongolica 'Harvest Gold' | 2 | 0.10% |
| Ulmus ‘Frontier’ | 1 | 0.05% |
| Ulmus americana 'Jefferson' | 11 | 0.53% |
| Ulmus 'Frontier' | 20 | 0.97% |
| Ulmus 'Morton' | 14 | 0.68% |
| Ulmus propinqua ‘JFS-Bieberich’ | 24 | 1.16% |
| Ulmus propinqua 'JFS-Bieberich' | 1 | 0.05% |
| Zelkova serrata ‘Musashino’ | 12 | 0.58% |
| Zelkova serrata ‘Schmidtlow’ | 10 | 0.49% |
| Zelkova serrata 'City Sprite' | 6 | 0.29% |
| Zelkova serrata 'Green Vase' | 4 | 0.19% |
| **Grand Total** | **2061** | 100.00% |