



 Urban Offsets City Series, Durham

## **Delta Air Lines and Duke University's Urban Forestry Partnership**

# Delta Air Lines and Duke University’s Urban Forestry Partnership Peer Validation Report

General Verification Information	
Project Title	<i>Delta Airlines and Duke University’s Urban Forest Partnership</i>
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Work carried out by	<i>David Vandermast and Kylie Roehrle</i>
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## Table of Contents

<b>Validation Summary</b> .....	<b>2</b>
<b>Eligibility Conditions</b> .....	<b>3</b>
<b>Permanence</b> .....	<b>3</b>
<b>Additional</b> .....	<b>4</b>
<b>Verifiable</b> .....	<b>5</b>
<b>Enforceable</b> .....	<b>5</b>
<b>Real</b> .....	<b>6</b>
<b>Co-Benefits of Urban Tree Plantings</b> .....	<b>6</b>
<b>Interview Questions for Project Participants</b> .....	<b>7</b>
<b>Site Visit</b> .....	<b>9</b>

<b>Validation Statement .....</b>	<b>10</b>
<b>(Use this space to build the Validation Statement) .....</b>	<b>4</b>
<b>Appendices .....</b>	<b>11</b>

## Validation Summary

This project is an afforestation of urban streets in the City of Durham, NC for the purpose of accumulating carbon offset credits for the purchasers, to establish that Duke Carbon Offset Initiative's (DCOI) Urban Forestry Protocol as a viable business model. Urban Offsets owns the carbon as it accumulates and will sell the offsets to Duke University and another purchaser once the trees reach maturity. The stakeholders in this project are Duke University and a second entity (purchasers of the offset credits), Duke Carbon Offsets Initiative (provider of the offset protocol), Keep Durham Beautiful (a non-profit that arranges assistance form volunteers and distributes funds for the plantings) and the City of Durham (provider of the planting sites and ongoing maintenance of the trees).

This project involves reviewing a database of 1124 trees planted on Durham city streets from January 2018 to February 2018. In July 2018 the database was verified during a site visit using data uploaded by Urban Offsets to Fulcrum, a downloadable app with GPS coordinates, tree vitality, and size (dbh).

Tree verification involved using Fulcrum to visit every tree listed for this planting and verifying location, tree species identity, and tree health condition. The verification identified sites where 1117 trees were planted, seven fewer trees than given in the Project Description Document (PDD).

Trees planted for this project are in a location where other, similarly sized, non-carbon-offset trees are also planted. Determining which trees were part of this planting versus those from other plantings is of enough concern that we believe it did affect the verification.

We conclude that this project does not currently meet the PAVER requirements because of the excessive number of dead and missing trees. These trees cannot be used to attain the carbon offsets determined by the PDD. We also found that errors in tree identification will change the number of carbon offsets expected for this project. Because of contradictory language in some of the documents and differences in management expectations between the City of Durham and DCOI protocol, we feel that this project is not currently a useful model for the Duke Carbon Offset Initiative as a model. This project should meet the co-benefits described in the PDD.

## **Eligibility Conditions**

### **Project Location:**

As defined by the most recent publication of the United States Census Bureau, the project sites is located within an Urban Area boundary and has not experienced commercial harvesting of timber within the last ten years. There is an electronic file available that identifies the project boundaries located on the Fulcrum website. An “end-of-life use” plan for fallen, damaged or management directed tree removals exist per the standard Urban Management Forestry Plan for the City of Durham.

### **Project Commencement**

In the PDD, the protocol eligibility conditions and justification section states that the project commenced on November 8, 2017, the day the supply side contract was signed. But, the chronological project plan states that the project commencement date is “2018”. The PDD is not consistent in the project commencement date. The Project commencement date was approved by Duke Carbon Offset Initiative (DCOI). The initial project inventory was completed during May of 2017 by Alex Johnson, the Urban Forestry Manager at City of Durham.

### **Legal Requirements**

The project is not the result of compliance with any federal, state or local law, statute, rule, regulation, ordinance, court order or other legally binding mandates. The project will yield surplus emission reductions above and beyond legal and compliance requirements for the area. The City of Durham acknowledges this directly via their contract with Urban Offsets.

### **Minimum Time Commitment**

Alex Johnson is charged with conducting annual monitoring events but does not know about the DCOI protocol. He is following the City of Durham Urban Forest Management Plan (UFMP) protocol. The VERPA states that he should use the same management practices to care for the Delta plantings as he does for all of the other trees in Durham, which agree with the DCOI protocol. His maintenance plan is as follows:

- Full inventory of the trees during the first two years
- Inspections then occurring every two years
- Once the trees are older, inspections will occur every seven to ten years

The project crediting period is 20 years with option for renewal and is expected to be renewed and span two crediting periods. Project establishes a timeline of 40 years via the contract between Urban Offset, Keep Durham Beautiful and the City of Durham.

## **Permanence**

The UFMP establishes the maintenance practices in place at the site of the urban forest project. Durham’s UFMP is relevant to the climate region and species planted at the project site. It includes

provisions for pruning and recommends that pruning cycles should be implemented. Alex Johnson, in response to interview questions, is planning on pruning on an as needed basis. There are no provisions for watering in times of high heat or drought to prevent die-off. There are no irrigation systems present at any of the project locations.

The DCOI recommends that the city annually inspect and provide natural mulch to trees using staff and volunteers and provide public education and staff training to prevent tree injury in order to increase root zone protection. The management plan recognizes scale insects, defoliators and borers as potential pests. The plan recommends the city avoid planting trees with known associated lethal insect pests, monitor vulnerable populations, and consider funding for treatment options when necessary. The management plan recommends that the city plant a diversity of tree species and varieties in order to minimize the effects of disease. It is also recommended that the city consider the costs and benefits of treating individual trees in the event an epidemic of treatable disease threatens major portions of Durham's Urban Forest.

The management plan includes provisions for the replacement of dead trees if beyond anticipated project mortality. According to the PDD, Keep Durham Beautiful is to ensure that at least 85% of the trees survive. If more than 15% of the trees die, the City of Durham is to present a replacement plan resulting in an equal amount of carbon sequestration. 3-8% mortality rate is expected. Based on the interviews, it seems like it is more like that the City of Durham will ensure that at least 85% of the trees survive and Keep Durham Beautiful is involved with the funding and volunteer efforts. Because of these discrepancies, it is not clear whose job it is to take care of the trees. Also, according to the PDD this project uses the DCOI protocol's standard 40-year timeline for permanence. To reduce risk, the Sustainable Sandhills has agreed via legal contract to replace any trees that die in the program within 1 year of that tree's death with a similar tree at least 1" caliper in diameter. The PDD does not explain what Sustainable Sandhills is and how it is involved with the project aside from replacing the trees. Overall, it is unclear as to which entity is in charge of taking care of the trees and replacing them if they die.

### **Buffer Pool and Risk**

There is no reason for the project to deviate from the standard 15% contribution of generated credits as stated by the DCOI protocol. The appropriate buffer pool contribution is being made and separated from the available project credits. The project is expected to produce a total of 8950.47 carbon offsets by maturity and 15% of that total is 1342.57 carbon offsets, which will be placed into the buffer pool. Duke University will receive 2500 VERs and buyer 2 will receive 2500 VERs according to the PDD, which leaves 2607.89 credits unaccounted for.

### **Additional**

The City of Durham and the state of North Carolina do not have any laws, regulations, statutes, or court orders that require the planting of trees. There are no relevant required actions. The project operator did attest via signature within the project description document, to the validity that the City of Durham and state of North Carolina do not have any laws, regulations, statutes, or court orders that require the planting of trees. This project includes the requirement that the county sign a legally binding contract that they will not change their current efforts and approach to acquiring funding for planting trees. This mitigates the risk of project funding leading to a reduction in baseline funding, which, in turn, would impact trees planted. Keep Durham Beautiful, via their contract with Urban Offsets, agrees that they will not alter their current level or pursuit for tree funding.

Data pertaining to a planting program or urban forest budget was difficult to acquire. Instead, UO requires the City to sign a contract that states explicitly that A) all \$ from the program must go directly to tree plantings and maintenance, thereby directly increasing planting/maintenance resources, B) the City will not change their level or pursuit of tree funds, and C) the City is not legally required to plant additional trees.

Implementation barriers did limit the ability to plant trees beyond current business as usual levels. Funding and staffing barriers exist and prevented the expansion of planting programs. The city of Durham has acknowledged the barriers directly in their contract with Urban Offsets. The project does follow the procedure for “Determining a Baseline” from the DCOI Urban Forestry Protocol in establishing the business-as-usual scenario. We cannot think of a scenario in which the project would have happened without the offset project. We are certain that the project is additional because it demonstrates financial additionality, a plan to minimize leakage and goes beyond the “business as usual” scenario.

## **Verifiable**

### **Project Monitoring**

The project monitoring schedule is in line with the DCOI Urban Forestry Protocol, but during the interview, Alex Johnson stated that he didn’t know about the DCOI.

Project monitoring is being done by Alex Johnson with his own protocol. His maintenance plan is as follows:

- Full inventory of the trees during the first two years
- Inspections then occurring every two years
- Once the trees are older, inspections will occur every seven to ten years

The initial inventory occurred during May of 2017. The annual survey is recorded in the Fulcrum app and include tree species, location (address and GPS coordinates), DBH, and health condition.

The data collected does not include height or estimated age of the trees and there are no explanations as to why the data is missing. The monitoring report exists on the Fulcrum software and on the Open Tree Map software.

### **Sampling**

Sampling was not employed in monitoring; a full measurement was conducted. Sampling would be appropriate for a project of this size.

## **Enforceable**

In the PDD, it is clearly defined that credit ownership will go to Duke University after the termination of the project, but it is not clearly stated who the second buyer is. It can be assumed that

the second buyer is Delta Airlines, but the PDD only references a “Second buyer”. The project has not generated any credits to date.

## **Real**

There are 2607.89 credits unaccounted for in the PDD. We are not sure if that is a result of a miscalculation or if it is not accounted for in order to offset potential tree mortality, in which case we would consider the project credit estimate to be conservative.

The estimation of carbon credits for offset is not accurate because the number of trees per species was miscalculated. The i-Tree calculator was not used in line with the DCOI protocol. The DCOI protocol and the Delta project use the US Forest Service carbon calculator. The source used to estimate growth rate is clearly stated in the PDD. The US Forest Service carbon calculator is in good standing and accepted within academia and professional communities. Transparent methodologies are employed to calculate project impact and are included in the PDD. Per the DCOI protocol, all calculations will use the US Forest Service carbon calculator along with tree species, DBH, and height to total calculate carbon sequestered. This projected data will be made available to all partners.

Input data - tree species, DBH, height ⇒ US Forest Service carbon calculator ⇒ estimate total carbon stored by the tree

Project details are publicly available at:

<https://registry.urbanoffsets.co/project/projectview?projectIdKey=49dc2267-8818-4d9b-8722-691343f1002e>

## **Co-Benefits of Urban Tree Plantings**

Co-Benefits are reasonably assessed by the project. The PDD addresses all five categories of co-benefits.

# Interview Questions for Project Participants

Alex Johnson,  
Urban Forestry Manager at City of Durham,  
[alexander.johnson@durhamnc.gov](mailto:alexander.johnson@durhamnc.gov),  
(919) 560-4197

## Background Information:

Initially, Alex Johnson partnered with Duke University in order to plant around 100 trees in Walltown. Later on, the City of Durham partnered with Keep Durham Beautiful, Urban Offsets and, Delta Airlines to plant over 1000 trees around the City of Durham. Alex Johnson is tasked with purchasing the trees, offloading them at the correct locations and coordinating tree planting events all around Durham. He also assigns specific trees to specific planting sites due to their size and class. Before volunteers show up to a planting, each tree is placed at the location in which it will be planted. Quality control for the tree plantings is provided by volunteers that have shown up to multiple tree planting events, otherwise known as Tree Keepers. Alex Johnson states that there is not 100% accuracy in the tree plantings and each project may be missing upwards of 10% of the trees. After the trees are planted, data points are collected the following week by city staff and put into the Open Tree Map Software. The data points include location of the tree, vigor, diameter at breast height (DBH) and species. Alex Johnson uses his own protocol to monitor, take inventory of and replace the trees. He does not follow the Duke Carbon Offset Initiative (DCOI) protocol for monitoring and caring for the trees. At the end of the whole process, Alex Johnson expects to find a higher than 3-8% tree mortality rate.

## Sampling Methods:

Sampling the trees is an ongoing process with no set yearly checkup plan. Alex Johnson uses his own sampling method separate from the DCOI. His inventory plan is as follows:

1. Full inventory of the trees during the first two years
2. Inspections then occurring every two years
3. Once the trees are older, inspections will occur every seven to ten years

His maintenance plan is as follows:

1. Small trees pruned once a year
2. After a year, staking will be taken off of the trees
3. When the trees are older, tree pruning will be done on an as needed basis and will be assigned to city workers to be completed in the offseason.
4. There is not an irrigation system or plan for the trees
5. Remove and replace dead trees

Steps taken when a tree dies:

1. Alex Johnson is in charge of replacing trees that die



2. When a tree dies, it is recorded in the Open Tree Map Software and a tree planting site is created
3. Tree replacement is included in the city budget
4. Tree issues can be reported by city workers or the public via phone or online form

Barriers:

The main barriers of the project come from lack of quality control and resources rather than a lack of enthusiasm and community support. The issues with quality control seem to be particularly important during the planting phase. From our interviews it is clear that there are many people willing to help plant trees, but the professional knowledge of some of the crew leaders is lacking with respect to appropriate planting techniques for the long-term health of the tree. Furthermore, it is too expensive to hire outside contractors and the crew and machinery provided by the city are not enough to ensure consistent quality. Alex Johnson is willing to work with non-profits and volunteer groups and would consider a citizen science program but would rather work with government staff in order to increase quality. Alex Johnson states that the program is well funded but resources at his disposal mean that he has a hard time meeting the expectations of Carbon Offsets and Keep Durham Beautiful. This suggests a project leakage.

**Tania Dautlick,**  
**Executive Director of Keep Durham Beautiful, Inc.,**  
**tania.dautlick@durhamnc.gov,**  
**919-354-2729**

Background information:

Keep Durham Beautiful is a non-profit organization that works closely with the City of Durham and provides the initial funds for the Delta project. Keep Durham Beautiful is not involved with monitoring or tree data collection. Its main role in the project is to provide initial funds through donations as well as provide volunteers to help with planting the trees.

Barriers to the project are as follows:

1. It takes a lot of work and a lot of time in order to get donations
2. Alex's time is a barrier because it takes a while to select and transport trees
3. The project is not a priority for the higher ups in the city. More could be done to get the trees planted.
4. Maintenance, it is hard to take care of so many trees
5. Volunteers sometimes have to help with pruning

## Site Visit

The number of trees identified during validation (1117) does not match the number of trees described in the PDD and available from data provided to the validators by Urban Offsets. In addition, we identified exceptions for 335 (30%) of trees, of which 242 (21.7% were dead or missing). For some of the missing trees, there was clearly a spot where a tree had been planted but for many of them there was no indication that a tree had ever been at that location. Alex Johnson mentioned that as many as 10% of trees for any project could be missing. It is possible they were planted in locations other than those identified in the Fulcrum app. It is also possible that, because of the size of this planting, the use of numerous volunteers resulted in a loss of centralized control over planting techniques and locations, resulting in far more dead and missing trees than was expected.

In addition to the dead and missing trees, we found 64 misidentified trees (5.7%), and 16 trees (4.8%) that were in the database but which were far too large to have been planted as part of this project. These trees do not provide additionality and must be removed from the database. The rest of the exceptions are trees that were not at the location identified by the app (see Appendix, Table 1). Tree deaths (including missing trees) exceeded the expected range of mortality. We feel that the excessive mortality figure is due to the large scale of this planting and the lack of centralized control and sufficient help from experienced professionals.

## Validation Statement

The validation work, including the site visit, could not verify that 1124 trees were planted for the Delta Airlines and Duke University Urban Forestry project as per the PDD and data provided to us by Urban Offsets. Given the excessive number of dead and missing trees, this project does not currently meet PAVER requirements by providing at least the number of offsets described in the PDD. There are a few discrepancies between the responsibilities of KDB and the City of Durham with regards to planting and maintenance. In reality, the City of Durham is responsible for coordination of planting efforts and ongoing maintenance while KDB is a fund-raising arm of the City for money to go directly to beautification rather than through the regular city budget process. KDB helps find volunteers for plantings and maintenance but it cannot provide the expertise required of it in the PDD.

In addition, the details of the PDD with regards to tree species and number differs from our on-the-ground verification:

- the number of trees listed in the PDD and the tree list we received from UO: the PDD says that 1124 trees were planted but the UO database has 1117 trees
- the numbers of each species that were supposed to be planted and those we could identify on the ground
- the database contains trees in Durham City parks and on streets that are large enough that it is clear that they were not planted in early 2018
- there are trees that appear to have been planted in different sites than were intended. For example Fulcum might indicate 5 trees along a street, but we found 4 and one planted around a corner on another street
- there are planting sites indicated in Fulcrum that are obviously incorrect

The Durham UFMP does not meet the requirements for the frequency of tree maintenance in the DCOI. The purchase agreement (VERPA) signed by Alex Johnson requires that he treat the offset trees as he does all other trees planted in the City of Durham and within his oversight as Urban Forester for the City. The DCOI requires more frequent monitoring and intervention than does the City's plan.

The project impact estimate provided in the PDD appears to be legitimate for the expected tree survivorship numbers but we found that mortality greatly exceeds the expected values.

The timing of project events appears to be behind schedule. The PDD states a start date of December 2017 but tree planting date is listed as "2018" and, from interview questions, we know it was January 2018. In addition, the annual monitoring and validation are behind schedule.

We find that this project is real and has additionality a that can provide carbon offsets but currently does not meet the standards set in the PDD.

# Appendices

Include any interview transcripts, notes or email correspondence, as well as any supplemental information relevant to the verification report within separate appendices in this template document.

## Addendum 1. 1117 trees listed on a database obtained from Urban Offsets and which were verified in July 2018.

_title	tree_id	db h	health	Notes
Ostrya virginiana (Eastern hophornbeam)	2601361	0.5	dead	changed to birch
Prunus yedoensis (Yoshino flowering cherry)	2751451	0.5	dead	changed to prunus
Ginkgo biloba (Ginkgo)	2751442	0.5	dead	mislocated
Ginkgo biloba (Ginkgo)	2751445	0.5	dead	mislocated
Ginkgo biloba (Ginkgo)	2751443	0.5	dead	mislocated
Acer buergerianum (Trident maple)	2248558	0.5	dead	missing
Quercus macrocarpa (Bur oak)	2639772	0.5	dead	missing
Magnolia (Magnolia)	2639789	1	dead	missing
Celtis (Hackberry)	2639821	0.5	dead	missing
Quercus lyrata (Overcup oak)	2747947	0.5	dead	missing
Quercus lyrata (Overcup oak)	2747948	0.5	dead	missing
Quercus macrocarpa (Bur oak)	2748165	0.5	dead	missing
Quercus macrocarpa (Bur oak)	2748166	0.5	dead	missing
Quercus macrocarpa (Bur oak)	2748190	0.5	dead	missing
Prunus yedoensis (Yoshino flowering cherry)	2748310	0.5	dead	missing
Prunus yedoensis (Yoshino flowering cherry)	2748311	0.5	dead	missing
Prunus yedoensis (Yoshino flowering cherry)	2748315	0.5	dead	missing
Acer buergerianum (Trident maple)	2748338	0.5	dead	missing
Quercus shumardii (Shumard oak)	2748353	0.5	dead	missing
Acer buergerianum (Trident maple)	2748357	0.5	dead	missing
Prunus yedoensis (Yoshino flowering cherry)	2748580	0.5	dead	missing
Prunus yedoensis (Yoshino flowering cherry)	2748581	0.5	dead	missing
Parrotia persica (Persian ironwood)	2748876	0.8	dead	missing
Parrotia persica (Persian ironwood)	2748877	0.8	dead	missing
Parrotia persica (Persian ironwood)	2748878	0.8	dead	missing
Cercis canadensis (Eastern redbud)	2748879	0.5	dead	missing
Cercis canadensis (Eastern redbud)	2748882	0.8	dead	missing
Nyssa sylvatica (Black tupelo)	2748901	0.8	dead	missing
Acer buergerianum (Trident maple)	2748913	0.8	dead	missing
Acer buergerianum (Trident maple)	2748914	0.8	dead	missing
Acer buergerianum (Trident maple)	2748916	0.8	dead	missing
Acer buergerianum (Trident maple)	2747688	0.5	dead	missing
Quercus macrocarpa (Bur oak)	2749192	0.5	dead	missing
Ulmus alata (Winged elm)	2750018	0.5	dead	missing

Cercis canadensis (Eastern redbud)	2750178	0.5	dead	missing
Quercus lyrata (Overcup oak)	2618906	0.5	dead	missing
Ulmus americana (American elm)	2640728	2	dead	missing
Nyssa sylvatica (Black tupelo)	2748894	0.8	dead	Missing
Acer buergerianum (Trident maple)	2748915	0.8	dead	missing
Acer buergerianum (Trident maple)	2748917	0.8	dead	missing
Ulmus parvifolia (Chinese elm)	2749043	0.8	dead	Missing
Ulmus parvifolia (Chinese elm)	2749044	0.8	dead	Missing
Quercus lyrata (Overcup oak)	2749055	0.5	dead	Missing
Quercus lyrata (Overcup oak)	2749056	0.5	dead	Missing
Quercus lyrata (Overcup oak)	2749059	0.5	dead	Missing
Ulmus parvifolia (Chinese elm)	2749061	0.8	dead	Missing
Ulmus parvifolia (Chinese elm)	2749062	0.8	dead	Missing
Ulmus parvifolia (Chinese elm)	2749063	0.8	dead	Missing
Ulmus parvifolia (Chinese elm)	2749064	0.8	dead	Missing
Ulmus parvifolia (Chinese elm)	2749065	0.8	dead	Missing
Ulmus parvifolia (Chinese elm)	2749073	0.8	dead	Missing
Cercis canadensis (Eastern redbud)	2749082	0.5	dead	Missing
Cercis canadensis (Eastern redbud)	2749083	0.5	dead	Missing
Chionanthus retusus (Chinese fringe tree)	2749085	0.5	dead	Missing
Chionanthus retusus (Chinese fringe tree)	2749086	0.5	dead	Missing
Ulmus parvifolia (Elm)	2749088	0.8	dead	Missing
Ulmus parvifolia (Elm)	2749089	0.8	dead	Missing
Ulmus (Elm)	2749091	0.8	dead	Missing
Ulmus (Elm)	2749092	0.8	dead	Missing
Ulmus (Elm)	2749095	0.8	dead	Missing
Ulmus (Elm)	2749096	0.8	dead	Missing
Ulmus (Elm)	2749097	0.8	dead	Missing
Ulmus (Elm)	2749098	0.8	dead	Missing
Ulmus (Elm)	2749100	0.8	dead	Missing
Chionanthus retusus (Chinese fringe tree)	2749128	0.5	Dead	Missing
Ulmus alata (Winged elm)	2750040	0.5	dead	missing
Acer buergerianum (Trident maple)	2750043	0.5	dead	missing
Ulmus alata (Winged elm)	2750173	0.5	dead	missing
Prunus (Cherry)	2750673	0.4	dead	missing
Quercus bicolor (Swamp white oak)	2750682	0.5	dead	missing
Quercus bicolor (Swamp white oak)	2750683	0.5	dead	missing
Acer buergerianum (Trident maple)	2750685	0.5	dead	missing
Acer buergerianum (Trident maple)	2750686	0.5	dead	missing
Quercus lyrata (Overcup oak)	2750687	0.5	dead	missing
Carpinus caroliniana (American hornbeam)	2751034	0.5	dead	missing
Ulmus americana (American elm)	2751151	1.5	dead	Missing
Chionanthus retusus (Chinese fringe tree)	2751160	0.8	dead	missing

Prunus okame (Cherry)	2751438	0.5	dead	Missing
Prunus yedoensis (Yoshino flowering cherry)	2751523	0.5	dead	missing
Cercis canadensis (Eastern redbud)	2784297	2	dead	missing
Parrotia persica (Persian ironwood)	2784298	1.5	dead	missing
Quercus lyrata (Overcup oak)	2784306	0.5	dead	missing
Cladrastis kentukea (Yellowwood)	2784352	0.8	Dead	Missing
Carpinus caroliniana (American hornbeam)	2784663	0.5	dead	Missing
Prunus (Cherry)	2784680	0.5	dead	Missing
Pistacia chinensis (Chinese pistache)	2303794	2	dead	
Gymnocladus dioicus (Kentucky coffeetree)	2305211	2	dead	
Pistacia chinensis (Chinese pistache)	2305698	2	dead	
Carpinus caroliniana (American hornbeam)	2576947	0.5	dead	
Ostrya virginiana (Eastern hophornbeam)	2601013	0.5	dead	
Ostrya virginiana (Eastern hophornbeam)	2601014	0.5	dead	
Quercus macrocarpa (Bur oak)	2639771	0.5	dead	
Quercus lyrata (Overcup oak)	2639786	0.5	dead	
Magnolia (Magnolia)	2639788	1	dead	
Quercus lyrata (Overcup oak)	2639794	0.5	dead	
Carpinus caroliniana (American hornbeam)	2639804	0.5	dead	
Carpinus caroliniana (American hornbeam)	2639806	0.5	dead	
Magnolia (Magnolia)	2639827	0.8	dead	
Betula nigra (River birch)	2747692	0.5	dead	
Betula nigra (River birch)	2747693	0.5	dead	
Quercus macrocarpa (Bur oak)	2747697	0.5	dead	
Acer buergerianum (Trident maple)	2747699	0.5	dead	
Acer buergerianum (Trident maple)	2747700	0.5	dead	
Quercus lyrata (Overcup oak)	2747711	0.5	dead	
Quercus lyrata (Overcup oak)	2747712	0.5	dead	
Nyssa sylvatica (Black tupelo)	2747714	0.5	dead	
Quercus lyrata (Overcup oak)	2747717	0.5	dead	
Nyssa sylvatica (Black tupelo)	2747718	0.5	dead	
Nyssa sylvatica (Black tupelo)	2747719	0.5	dead	
Quercus lyrata (Overcup oak)	2747952	0.5	dead	
Quercus lyrata (Overcup oak)	2747953	0.5	dead	
Quercus macrocarpa (Bur oak)	2747955	0.5	dead	
Quercus macrocarpa (Bur oak)	2747956	0.5	dead	
Acer buergerianum (Trident maple)	2747965	0.5	dead	
Betula nigra (River birch)	2748030	0.5	dead	
Quercus macrocarpa (Bur oak)	2748147	0.5	dead	
Quercus lyrata (Overcup oak)	2748148	0.5	dead	
Quercus lyrata (Overcup oak)	2748152	0.5	dead	
Quercus lyrata (Overcup oak)	2748153	0.5	dead	
Quercus macrocarpa (Bur oak)	2748156	0.5	dead	

Quercus macrocarpa (Bur oak)	2748157	0.5	dead	
Betula nigra Dura Heat' (River birch)	2748159	0.5	dead	
Betula nigra Dura Heat' (River birch)	2748163	0.5	dead	
Quercus macrocarpa (Bur oak)	2748167	0.5	dead	
Quercus macrocarpa (Bur oak)	2748168	0.5	dead	
Betula nigra Dura Heat' (River birch)	2748171	0.5	dead	
Betula nigra Dura Heat' (River birch)	2748172	0.5	dead	
Betula nigra (River birch)	2748173	0.5	dead	
Betula nigra (River birch)	2748174	0.5	dead	
Betula nigra (River birch)	2748175	0.5	dead	
Quercus macrocarpa (Bur oak)	2748178	0.5	dead	
Quercus macrocarpa (Bur oak)	2748179	0.5	dead	
Prunus (Cherry)	2748181	0.5	dead	
Prunus (Cherry)	2748184	0.5	dead	
Prunus (Cherry)	2748185	0.5	dead	
Quercus bicolor (Swamp white oak)	2748187	0.5	dead	
Quercus macrocarpa (Bur oak)	2748189	0.5	dead	
Quercus macrocarpa (Bur oak)	2748191	0.5	dead	
Quercus macrocarpa (Bur oak)	2748192	0.5	dead	
Quercus macrocarpa (Bur oak)	2748193	0.5	dead	
Quercus macrocarpa (Bur oak)	2748195	0.5	dead	
Prunus (Cherry)	2748197	0.5	dead	
Prunus (Cherry)	2748199	0.5	dead	
Quercus shumardii (Shumard oak)	2748267	0.5	dead	
Quercus shumardii (Shumard oak)	2748303	0.5	dead	
Quercus shumardii (Shumard oak)	2748304	0.5	dead	
Quercus shumardii (Shumard oak)	2748307	0.5	dead	
Quercus shumardii (Shumard oak)	2748308	0.5	dead	
Quercus macrocarpa (Bur oak)	2748319	0.5	dead	
Prunus yedoensis (Yoshino flowering cherry)	2748320	0.5	dead	
Quercus macrocarpa (Bur oak)	2748327	0.5	dead	
Quercus macrocarpa (Bur oak)	2748332	0.5	dead	
Quercus macrocarpa (Bur oak)	2748333	0.5	dead	
Acer buergerianum (Trident maple)	2748339	0.5	dead	
Quercus shumardii (Shumard oak)	2748352	0.5	dead	
Quercus shumardii (Shumard oak)	2748354	0.5	dead	
Quercus shumardii (Shumard oak)	2748358	0.5	dead	
Quercus shumardii (Shumard oak)	2748359	0.5	dead	
Quercus shumardii (Shumard oak)	2748461	0.5	dead	
Prunus (Cherry)	2748469	0.5	dead	
Quercus shumardii (Shumard oak)	2748474	0.5	dead	
Quercus shumardii (Shumard oak)	2748475	0.5	dead	
Quercus shumardii (Shumard oak)	2748479	0.5	dead	

Prunus (Cherry)	2748486	0.5	dead	
Magnolia (Magnolia)	2748489	0.5	dead	
Quercus shumardii (Shumard oak)	2748518	0.5	dead	
Quercus lyrata (Overcup oak)	2748525	0.5	dead	
Ulmus parvifolia (Chinese elm)	2749048	0.8	dead	
Ulmus parvifolia (Chinese elm)	2749050	0.8	dead	
Ulmus parvifolia (Chinese elm)	2749051	0.8	dead	
Ulmus parvifolia (Chinese elm)	2749052	0.8	dead	
Ulmus parvifolia (Chinese elm)	2749076	0.8	dead	
Ulmus parvifolia (Chinese elm)	2749077	0.8	dead	
Ulmus parvifolia (Chinese elm)	2749078	0.8	dead	
Ulmus (Elm)	2749099	0.8	dead	
Cladrastis kentukea (Yellowwood)	2749180	0.5	Dead	
Quercus macrocarpa (Bur oak)	2749191	0.5	Dead	
Quercus macrocarpa (Bur oak)	2749193	0.5	Dead	
Quercus macrocarpa (Bur oak)	2749194	0.5	Dead	
Quercus lyrata (Overcup oak)	2749195	0.5	Dead	
Quercus macrocarpa (Bur oak)	2749196	0.5	Dead	
Quercus lyrata (Overcup oak)	2749197	0.5	Dead	
Quercus macrocarpa (Bur oak)	2749198	0.5	Dead	
Ulmus alata (Winged elm)	2750026	0.5	Dead	
Quercus macrocarpa (Bur oak)	2750044	0.5	dead	
Quercus macrocarpa (Bur oak)	2750150	0.5	dead	
Quercus bicolor (Swamp white oak)	2750169	0.5	dead	
Cercis canadensis (Eastern redbud)	2750174	0.5	dead	
Cercis canadensis (Eastern redbud)	2750176	0.5	dead	
Quercus bicolor (Swamp white oak)	2750190	0.5	dead	
Quercus bicolor (Swamp white oak)	2750191	0.5	dead	
Quercus lyrata (Overcup oak)	2750373	0.5	dead	
Quercus lyrata (Overcup oak)	2750374	0.5	dead	
Prunus (Cherry)	17	0.5	dead	
Quercus lyrata (Overcup oak)	2750391	0.5	dead	
Cladrastis kentukea (Yellowwood)	2750677	0.5	dead	
Quercus bicolor (Swamp white oak)	2751025	0.5	dead	
Quercus lyrata (Overcup oak)	2751035	0.5	dead	
Cladrastis kentukea (Yellowwood)	2751037	0.5	dead	
Quercus bicolor (Swamp white oak)	2751044	0.5	dead	
Quercus bicolor (Swamp white oak)	2751046	0.5	dead	
Quercus bicolor (Swamp white oak)	2751048	0.5	dead	
Cladrastis kentukea (Yellowwood)	2751051	0.5	dead	
Ulmus alata (Winged elm)	2751148	0.5	dead	
Cladrastis kentukea (Yellowwood)	2751167	0.5	dead	
Quercus bicolor (Swamp white oak)	2751418	0.5	dead	



Quercus bicolor (Swamp white oak)	2751426	0.5	dead	
Prunus okame (Cherry)	2751428	0.5	dead	
Prunus okame (Cherry)	2751431	0.5	dead	
Prunus okame (Cherry)	2751432	0.5	dead	
Prunus okame (Cherry)	2751434	0.5	dead	
Prunus okame (Cherry)	2751435	0.5	dead	
Prunus okame (Cherry)	2751436	0.5	dead	
Prunus okame (Cherry)	2751437	0.5	dead	
Prunus okame (Cherry)	2751439	0.5	dead	
Prunus okame (Cherry)	2751440	0.5	dead	
Prunus okame (Cherry)	2751441	0.5	dead	
Quercus bicolor (Swamp white oak)	2751461	0.5	dead	
Cercis canadensis (Eastern redbud)	2751462	0.5	dead	
Chionanthus retusus (Chinese fringe tree)	2751499	0.8	dead	
Quercus bicolor (Swamp white oak)	2751500	0.5	dead	
Chionanthus retusus (Chinese fringe tree)	2751504	0.8	dead	
Quercus bicolor (Swamp white oak)	2751505	0.5	dead	
Prunus yedoensis (Yoshino flowering cherry)	2751515	0.5	dead	
Prunus yedoensis (Yoshino flowering cherry)	2751516	0.5	dead	
Prunus yedoensis (Yoshino flowering cherry)	2751519	0.5	dead	
Quercus macrocarpa (Bur oak)	2753148	0.5	dead	
Quercus macrocarpa (Bur oak)	2784300	0.5	dead	
Quercus macrocarpa (Bur oak)	2784301	0.5	dead	
Quercus shumardii (Shumard oak)	2784307	0.5	dead	
Quercus bicolor (Swamp white oak)	2784309	0.5	dead	
Quercus macrocarpa (Bur oak)	2784311	0.5	dead	
Pistacia chinensis (Chinese pistache)	2784317	2	dead	
Pistacia chinensis (Chinese pistache)	2784329	2	dead	
Celtis (Hackberry)	2784667	0.5	dead	
Acer buergerianum (Trident maple)	2784676	0.5	dead	
Prunus (Cherry)	2784683	0.5	dead	
Ostrya virginiana (Eastern hophornbeam)	2784684	0.5	dead	
Ostrya virginiana (Eastern hophornbeam)	2784685	0.5	dead	
Ostrya virginiana (Eastern hophornbeam)	2784686	0.5	dead	
Ostrya virginiana (Eastern hophornbeam)	2784687	0.5	dead	
Zelkova serrata (Japanese zelkova)	2784723	0.5	dead	
Quercus nigra (Water oak)	2248714	18		No additionality
Fraxinus pennsylvanica (Green ash)	2268993	23		No additionality
Fraxinus pennsylvanica (Green ash)	2269015	22		No additionality
Fraxinus pennsylvanica (Green ash)	2269321	25		No additionality
Fraxinus pennsylvanica (Green ash)	2269413	26		No additionality
Fraxinus pennsylvanica (Green ash)	2269452	25		No additionality
Fraxinus pennsylvanica (Green ash)	2269620	18		No additionality

Fraxinus pennsylvanica (Green ash)	2269623	20		No additionality
Fraxinus pennsylvanica (Green ash)	2269625	31		No additionality
Fraxinus pennsylvanica (Green ash)	2269811	31		No additionality
Fraxinus pennsylvanica (Green ash)	2270000	26		No additionality
Fraxinus pennsylvanica (Green ash)	2270153	36		No additionality
Fraxinus pennsylvanica (Green ash)	2753159	24		No additionality
Fraxinus pennsylvanica (Green ash)	2753160	16		No additionality
Fraxinus pennsylvanica (Green ash)	2753161	24		No additionality
Fraxinus pennsylvanica (Green ash)	2753162	24		No additionality
Ostrya virginiana (Eastern hophornbeam)	2601362	0.5	Excellent	changed to birch
Pistacia chinensis (Chinese pistache)	2748622	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748624	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748625	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748626	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748627	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748628	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748629	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748630	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748631	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748632	0.5	Excellent	changed to chionanthus
Acer buergerianum (Trident maple)	2748633	0.5	Excellent	changed to chionanthus
Quercus lyrata (Overcup oak)	2601357	0.5	Excellent	changed to elm
Nyssa sylvatica (Black tupelo)	2748955	1	Excellent	changed to elm
Nyssa sylvatica (Black tupelo)	2748959	1	Excellent	changed to elm
Nyssa sylvatica (Black tupelo)	2748964	1	Excellent	changed to elm
Lagerstroemia (Common crapemyrtle)	2748966	1	Excellent	changed to elm
Lagerstroemia (Common crapemyrtle)	2748968	1	Excellent	changed to elm
Nyssa sylvatica (Black tupelo)	2748971	1	Excellent	changed to elm
Nyssa sylvatica (Black tupelo)	2748972	1	Excellent	changed to elm
Quercus bicolor (Swamp white oak)	2784668	0.5	Excellent	changed to elm
Quercus bicolor (Swamp white oak)	2784669	0.5	Excellent	changed to elm
Ginkgo biloba (Ginkgo)	2748325	0.5	Excellent	changed to ginkgo
Ginkgo biloba (Ginkgo)	2751455	0.5	Excellent	changed to ginkgo
Ginkgo biloba (Ginkgo)	2751456	0.5	Excellent	changed to ginkgo
prunus okame (okame cherry)	2601021	1	Excellent	changed to hornwood
Parrotia persica (Persian ironwood)	2601023	1	Excellent	changed to hornwood
Acer buergerianum (Trident maple)	2601350	0.5	Excellent	changed to hornwood
Magnolia (Magnolia)	2784712	0.5	Excellent	changed to ironwood
Magnolia (Magnolia)	2784713	0.5	Excellent	changed to ironwood
Carpinus caroliniana (American hornbeam)	2750125	0.5	Excellent	changed to maple
Carpinus caroliniana (American hornbeam)	2750126	0.5	Excellent	changed to maple
Carpinus caroliniana (American hornbeam)	2750128	0.5	Excellent	changed to maple
Carpinus caroliniana (American hornbeam)	2753150	0.5	Excellent	changed to maple

prunus okame (okame cherry)	2784719	0.5	Excellent	changed to maple
prunus okame (okame cherry)	2784720	0.5	Excellent	changed to maple
Betula nigra (River birch)	2784708	0.5	Excellent	changed to ostrya
Betula nigra (River birch)	2784709	0.5	Excellent	changed to ostrya
Quercus bicolor (Swamp white oak)	2784671	0.5	Excellent	changed to ostrya
Acer buergerianum (Trident maple)	2748634	0.5	Excellent	changed to pistacia
Acer buergerianum (Trident maple)	2748635	0.5	Excellent	changed to pistacia
Acer buergerianum (Trident maple)	2748636	0.5	Excellent	changed to pistacia
Acer buergerianum (Trident maple)	2748637	0.5	Excellent	changed to pistacia
Acer buergerianum (Trident maple)	2748638	0.5	Excellent	changed to pistacia
Acer buergerianum (Trident maple)	2748639	0.5	Excellent	changed to pistacia
Acer buergerianum (Trident maple)	2748640	0.5	Excellent	changed to pistacia
Acer buergerianum (Trident maple)	2748641	0.5	Excellent	changed to pistacia
Lagerstroemia (Common crapemyrtle)	2751420	0.5	Excellent	Changed to prunus
Lagerstroemia (Common crapemyrtle)	2751422	0.5	Excellent	Changed to prunus
Prunus yedoensis (Yoshino flowering cherry)	2748330	0.8	Excellent	Changed to prunus
Prunus (Cherry)	2750697	0.8	Excellent	Changed to prunus
Prunus yedoensis (Yoshino flowering cherry)	2751447	0.5	Excellent	Changed to prunus
Prunus yedoensis (Yoshino flowering cherry)	2751458	0.5	Excellent	Changed to prunus
Prunus yedoensis (Yoshino flowering cherry)	2751459	0.5	Excellent	Changed to prunus
Carpinus caroliniana (American hornbeam)	2639798	0.5	Excellent	changed to river birch
Ostrya virginiana (Eastern hophornbeam)	2784672	0.5	Excellent	changed to river birch
Ostrya virginiana (Eastern hophornbeam)	2784673	0.5	Excellent	changed to river birch
Acer buergerianum (Trident maple)	2748462	0.5	Excellent	Changed to trident maple
Acer buergerianum (Trident maple)	2748463	0.5	Excellent	Changed to trident maple
Acer buergerianum (Trident maple)	2748496	0.5	Excellent	Changed to trident maple
Acer buergerianum (Trident maple)	2748523	0.5	Excellent	Changed to trident maple
Acer buergerianum (Trident maple)	2748536	0.5	Excellent	Changed to trident maple
Acer buergerianum (Trident maple)	2750689	0.5	Excellent	Changed to trident maple
willow oak	2751518	0.5	Excellent	Changed to willow oak
Cladrastis kentukea (Yellowwood)	2749199	0.8	Excellent	Marked on wrong side of the street
Cladrastis kentukea (Yellowwood)	2749200	0.8	Excellent	Marked on wrong side of the street
Parrotia persica (Persian ironwood)	2748869	0.8	Excellent	mislocated
Parrotia persica (Persian ironwood)	2748870	0.8	Excellent	mislocated
Parrotia persica (Persian ironwood)	2748871	0.8	Excellent	mislocated
Parrotia persica (Persian ironwood)	2748872	0.8	Excellent	mislocated
Ginkgo biloba (Ginkgo)	2748874	0.8	Excellent	mislocated
Ginkgo biloba (Ginkgo)	2748875	0.8	Excellent	mislocated
Ostrya virginiana (Eastern hophornbeam)	2784717	0.5	Excellent	mislocated
	2750198	0.5	Excellent	Possibly persian ironwood
Lagerstroemia (Common crapemyrtle)	2747970	0.5	Excellent	Should be on south side of the street
Lagerstroemia (Common crapemyrtle)	2747971	0.5	Excellent	Should be on south side of the street
Lagerstroemia (Common crapemyrtle)	2747972	0.5	Excellent	Should be on south side of the street

Acer buergerianum (Trident maple)	2248555	0.5	Excellent
Lagerstroemia (Common crapemyrtle)	2270391	1	Excellent
Ulmus americana (American elm)	2270491	1.5	Excellent
Taxodium ascendens (Pondcypress)	2303798	2	Excellent
Taxodium ascendens (Pondcypress)	2303974	2	Excellent
Taxodium ascendens (Pondcypress)	2304062	2	Excellent
Gymnocladus dioicus (Kentucky coffeetree)	2304117	2	Excellent
Gymnocladus dioicus (Kentucky coffeetree)	2304512	2	Excellent
Gymnocladus dioicus (Kentucky coffeetree)	2305471	2	Excellent
Taxodium ascendens (Pondcypress)	2305477	2	Excellent
Maclura pomifera (Osage orange)	2305484	2	Excellent
Gymnocladus dioicus (Kentucky coffeetree)	2305527	2	Excellent
Maclura pomifera (Osage orange)	2305603	2	Excellent
Gymnocladus dioicus (Kentucky coffeetree)	2305675	2	Excellent
Celtis (Hackberry)	2600554	0.5	Excellent
Betula nigra (River birch)	2600555	0.5	Excellent
Celtis (Hackberry)	2600556	0.5	Excellent
Celtis (Hackberry)	2600558	0.5	Excellent
Celtis (Hackberry)	2600559	0.5	Excellent
Celtis (Hackberry)	2600563	0.5	Excellent
Quercus bicolor (Swamp white oak)	2601016	0.5	Excellent
Quercus bicolor (Swamp white oak)	2601017	0.5	Excellent
Acer buergerianum (Trident maple)	2601351	0.5	Excellent
Acer buergerianum (Trident maple)	2601352	0.5	Excellent
Quercus lyrata (Overcup oak)	2601356	0.5	Excellent
Acer buergerianum (Trident maple)	2618895	0.5	Excellent
Acer buergerianum (Trident maple)	2618896	0.5	Excellent
Acer buergerianum (Trident maple)	2618897	0.5	Excellent
Acer buergerianum (Trident maple)	2618898	0.5	Excellent
Acer buergerianum (Trident maple)	2618900	0.5	Excellent
Acer buergerianum (Trident maple)	2618903	0.5	Excellent
Quercus lyrata (Overcup oak)	2618909	0.5	Excellent
Betula Nigra (River birch)	2635090	0.5	Excellent
Betula Nigra (River birch)	2635092	0.5	Excellent
Betula Nigra (River birch)	2635094	0.5	Excellent
Celtis (Hackberry)	2639815	0.5	Excellent
Celtis (Hackberry)	2639817	0.5	Excellent
Celtis (Hackberry)	2639818	0.5	Excellent
Zelkova serrata (Japanese zelkova)	2639841	0.8	Excellent
Zelkova serrata (Japanese zelkova)	2639847	0.8	Excellent
	2639851	0.8	Excellent
Celtis (Hackberry)	2640749	2.5	Excellent
Prunus yedoensis (Yoshino flowering cherry)	2747686	0.5	Excellent

Prunus (Cherry)	2747944	0.5	Excellent	
Betula nigra (River birch)	2747945	0.5	Excellent	
Betula nigra (River birch)	2747946	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2747961	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2747962	0.5	Excellent	
Acer buergerianum (Trident maple)	2747963	0.5	Excellent	
Acer buergerianum (Trident maple)	2747964	0.5	Excellent	
Lagerstroemia (Common crapemyrtle)	2747966	0.5	Excellent	
Lagerstroemia (Common crapemyrtle)	2747967	0.5	Excellent	
Lagerstroemia (Common crapemyrtle)	2747968	0.5	Excellent	
Lagerstroemia (Common crapemyrtle)	2747969	0.5	Excellent	
Betula nigra (River birch)	2748031	0.5	Excellent	
Betula nigra (River birch)	2748034	0.5	Excellent	
Betula nigra (River birch)	2748035	0.5	Excellent	
Betula nigra (River birch)	2748036	0.5	Excellent	
Betula nigra (River birch)	2748037	0.5	Excellent	
Acer buergerianum (Trident maple)	2748038	1	Excellent	
Acer buergerianum (Trident maple)	2748039	1	Excellent	
Acer buergerianum (Trident maple)	2748040	1	Excellent	
Acer buergerianum (Trident maple)	2748041	1	Excellent	
Quercus lyrata (Overcup oak)	2748042	0.5	Excellent	
Quercus lyrata (Overcup oak)	2748043	0.5	Excellent	
Quercus lyrata (Overcup oak)	2748044	0.5	Excellent	
Ginkgo biloba Magyar' (Ginkgo)	2748149	0.5	Excellent	
Ginkgo biloba Magyar' (Ginkgo)	2748150	0.5	Excellent	
Ginkgo biloba Magyar' (Ginkgo)	2748151	0.5	Excellent	
Carpinus caroliniana (American hornbeam)	2748154	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748155	0.5	Excellent	
Betula nigra Dura Heat' (River birch)	2748158	0.5	Excellent	
Betula nigra Dura Heat' (River birch)	2748160	0.5	Excellent	
Betula nigra Dura Heat' (River birch)	2748161	0.5	Excellent	
Betula nigra Dura Heat' (River birch)	2748162	0.5	Excellent	
Magnolia Butterflies' (Magnolia)	2748164	0.5	Excellent	
Acer buergerianum (Trident maple)	2748169	0.5	Excellent	
Acer buergerianum (Trident maple)	2748170	0.5	Excellent	
Magnolia Butterflies' (Magnolia)	2748176	0.5	Excellent	
Magnolia Butterflies' (Magnolia)	2748177	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748180	0.5	Excellent	
Prunus (Cherry)	2748183	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2748186	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2748188	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2748194	0.5	Excellent	
Prunus (Cherry)	2748196	0.5	Excellent	

Prunus (Cherry)	2748198	0.5	Excellent	
Acer platanoides (Norway maple)	2748200	0.5	Excellent	
Acer buergerianum (Trident maple)	2748201	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748202	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748203	0.5	Excellent	
Quercus shumardii (Shumard oak)	2748261	0.5	Excellent	
Quercus shumardii (Shumard oak)	2748262	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2748265	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748266	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748268	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748269	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748270	0.8	Excellent	
Quercus shumardii (Shumard oak)	2748305	0.5	Excellent	
Quercus shumardii (Shumard oak)	2748306	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748309	0.5	Excellent	
Quercus shumardii (Shumard oak)	2748312	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748313	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748314	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748316	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748317	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748318	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748321	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748322	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748323	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2748324	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748326	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2748328	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748329	0.8	Excellent	
Quercus macrocarpa (Bur oak)	2748331	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748334	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748335	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748336	0.5	Excellent	
Quercus lyrata (Overcup oak)	2748337	0.5	Excellent	
Acer buergerianum (Trident maple)	2748340	0.5	Excellent	
Acer buergerianum (Trident maple)	2748341	0.5	Excellent	
Acer buergerianum (Trident maple)	2748342	0.5	Excellent	
Acer buergerianum (Trident maple)	2748343	0.5	Excellent	
Acer buergerianum (Trident maple)	2748346	0.5	Excellent	
Acer buergerianum (Trident maple)	2748347	0.5	Excellent	
Acer buergerianum (Trident maple)	2748348	0.5	Excellent	
Acer buergerianum (Trident maple)	2748349	0.5	Excellent	
Acer buergerianum (Trident maple)	2748350	0.5	Excellent	
Acer buergerianum (Trident maple)	2748351	0.5	Excellent	

Acer buergerianum (Trident maple)	2748355	0.5	Excellent	
Acer buergerianum (Trident maple)	2748356	0.5	Excellent	
Acer buergerianum (Trident maple)	2748360	0.5	Excellent	
Quercus shumardii (Shumard oak)	2748361	0.5	Excellent	
Lagerstroemia (Common crapemyrtle)	2748362	0.5	Excellent	
Lagerstroemia (Common crapemyrtle)	2748363	0.5	Excellent	
Magnolia (Magnolia)	2748464	0.5	Excellent	
Magnolia (Magnolia)	2748465	0.5	Excellent	
Magnolia (Magnolia)	2748466	0.5	Excellent	
Magnolia (Magnolia)	2748467	0.5	Excellent	
Magnolia (Magnolia)	2748468	0.5	Excellent	
Prunus (Cherry)	2748470	0.5	Excellent	
Prunus (Cherry)	2748471	0.5	Excellent	
Prunus (Cherry)	2748472	0.5	Excellent	
Prunus (Cherry)	2748473	0.5	Excellent	
Prunus (Cherry)	2748476	0.5	Excellent	
Prunus (Cherry)	2748477	0.5	Excellent	
Prunus (Cherry)	2748478	0.5	Excellent	
Prunus (Cherry)	2748480	0.5	Excellent	
Prunus (Cherry)	2748481	0.5	Excellent	
Prunus (Cherry)	2748482	0.5	Excellent	
Prunus (Cherry)	2748483	0.5	Excellent	
Prunus (Cherry)	2748484	0.5	Excellent	
Prunus (Cherry)	2748485	0.5	Excellent	
Magnolia (Magnolia)	2748487	0.5	Excellent	
Magnolia (Magnolia)	2748488	0.5	Excellent	
Magnolia (Magnolia)	2748490	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2748491	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2748492	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2748493	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2748494	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2748495	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748497	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748498	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748499	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748500	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748501	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748502	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748503	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748504	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748505	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748506	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2748507	0.5	Excellent	

Prunus yedoensis (Yoshino flowering cherry)	2748508	0.5	Excellent
Magnolia (Magnolia)	2748510	0.5	Excellent
Acer buergerianum (Trident maple)	2748511	0.5	Excellent
Magnolia (Magnolia)	2748513	0.5	Excellent
Magnolia (Magnolia)	2748514	0.5	Excellent
Magnolia (Magnolia)	2748515	0.5	Excellent
Magnolia (Magnolia)	2748516	0.5	Excellent
Quercus shumardii (Shumard oak)	2748517	0.5	Excellent
Quercus shumardii (Shumard oak)	2748519	0.5	Excellent
Magnolia (Magnolia)	2748520	0.5	Excellent
Magnolia (Magnolia)	2748521	0.5	Excellent
Magnolia (Magnolia)	2748522	0.5	Excellent
Quercus lyrata (Overcup oak)	2748524	0.5	Excellent
Acer buergerianum (Trident maple)	2748529	0.5	Excellent
Acer buergerianum (Trident maple)	2748530	0.5	Excellent
Acer buergerianum (Trident maple)	2748531	0.5	Excellent
Acer buergerianum (Trident maple)	2748532	0.5	Excellent
Quercus lyrata (Overcup oak)	2748534	0.5	Excellent
Magnolia (Magnolia)	2748535	0.5	Excellent
Lagerstroemia (Common crapemyrtle)	2748540	0.5	Excellent
Lagerstroemia (Common crapemyrtle)	2748541	0.5	Excellent
Lagerstroemia (Common crapemyrtle)	2748542	0.5	Excellent
Quercus lyrata (Overcup oak)	2748544	0.5	Excellent
Cercis canadensis (Eastern redbud)	2748582	0.5	Excellent
Cercis canadensis (Eastern redbud)	2748583	0.5	Excellent
Cercis canadensis (Eastern redbud)	2748584	0.5	Excellent
Cercis canadensis (Eastern redbud)	2748585	0.5	Excellent
Cercis canadensis (Eastern redbud)	2748586	0.5	Excellent
Pistacia chinensis (Chinese pistache)	2748587	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2748588	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2748589	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2748590	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2748591	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2748592	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2748593	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2748594	0.8	Excellent
Acer buergerianum (Trident maple)	2748595	0.5	Excellent
Acer buergerianum (Trident maple)	2748596	0.5	Excellent
Acer buergerianum (Trident maple)	2748597	0.5	Excellent
Acer buergerianum (Trident maple)	2748598	0.5	Excellent
Acer buergerianum (Trident maple)	2748599	0.5	Excellent
Ginkgo biloba (Ginkgo)	2748600	0.8	Excellent
Ginkgo biloba (Ginkgo)	2748601	0.8	Excellent



Ginkgo biloba (Ginkgo)	2748602	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748603	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748604	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748605	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748606	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748607	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748608	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748609	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748610	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748611	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748612	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748613	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748614	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748615	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748616	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748617	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748618	0.8	Excellent	
Chionanthus retusus (Chinese fringe tree)	2748621	0.5	Excellent	
Pistacia chinensis (Chinese pistache)	2748643	0.5	Excellent	
Pistacia chinensis (Chinese pistache)	2748644	0.5	Excellent	
Pistacia chinensis (Chinese pistache)	2748645	0.5	Excellent	
Pistacia chinensis (Chinese pistache)	2748646	0.5	Excellent	
Pistacia chinensis (Chinese pistache)	2748647	0.5	Excellent	
Acer buergerianum (Trident maple)	2748648	0.5	Excellent	
Acer buergerianum (Trident maple)	2748649	0.5	Excellent	
Acer buergerianum (Trident maple)	2748650	0.5	Excellent	
Acer buergerianum (Trident maple)	2748651	0.5	Excellent	
Acer buergerianum (Trident maple)	2748653	0.5	Excellent	
Acer buergerianum (Trident maple)	2748654	0.5	Excellent	
Acer buergerianum (Trident maple)	2748655	0.5	Excellent	
Acer buergerianum (Trident maple)	2748656	0.5	Excellent	
Acer buergerianum (Trident maple)	2748657	0.5	Excellent	
Acer buergerianum (Trident maple)	2748658	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2748861	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748862	0.5	Excellent	
Quercus virginiana (Live oak)	2748863	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748864	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748865	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2748866	0.8	Excellent	
Ginkgo biloba (Ginkgo)	2748867	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2748868	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2748873	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2748880	0.5	Excellent	

Cercis canadensis (Eastern redbud)	2748881	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2748883	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748884	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748885	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748886	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748887	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748888	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748889	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748890	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748891	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748892	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748893	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748895	0.8	Excellent	
Parrotia persica (Persian ironwood)	2748896	0.8	Excellent	
Parrotia persica (Persian ironwood)	2748897	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748898	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748899	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748900	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748903	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748904	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748905	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2748906	0.8	Excellent	
Acer buergerianum (Trident maple)	2748907	0.8	Excellent	
Acer buergerianum (Trident maple)	2748908	0.8	Excellent	
Cladrastis kentukea (Yellowwood)	2748909	0.8	Excellent	
Acer buergerianum (Trident maple)	2748910	0.8	Excellent	
Acer buergerianum (Trident maple)	2748911	0.8	Excellent	
Acer buergerianum (Trident maple)	2748912	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748918	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2748919	0.8	Excellent	
Quercus lyrata (Overcup oak)	2748920	1	Excellent	
Quercus lyrata (Overcup oak)	2748921	1	Excellent	
Pistacia chinensis (Chinese pistache)	2748922	1	Excellent	
Pistacia chinensis (Chinese pistache)	2748923	1	Excellent	
Pistacia chinensis (Chinese pistache)	2748924	1	Excellent	
Quercus lyrata (Overcup oak)	2748925	1	Excellent	
Acer truncatum (Purple blow maple)	2748926	1	Excellent	
Acer truncatum (Purple blow maple)	2748928	1	Excellent	
Acer truncatum (Purple blow maple)	2748929	1	Excellent	
Acer truncatum (Purple blow maple)	2748930	1	Excellent	
Acer truncatum (Purple blow maple)	2748931	1	Excellent	
Acer truncatum (Purple blow maple)	2748932	1	Excellent	
Acer truncatum (Purple blow maple)	2748933	1	Excellent	

Acer truncatum (Purple blow maple)	2748934	0.5	Excellent
Pistacia chinensis (Chinese pistache)	2748935	1	Excellent
Pistacia chinensis (Chinese pistache)	2748936	1	Excellent
Quercus lyrata (Overcup oak)	2748937	1	Excellent
Pistacia chinensis (Chinese pistache)	2748938	1	Excellent
Pistacia chinensis (Chinese pistache)	2748939	1	Excellent
Pistacia chinensis (Chinese pistache)	2748940	1	Excellent
Pistacia chinensis (Chinese pistache)	2748941	1	Excellent
Pistacia chinensis (Chinese pistache)	2748942	1	Excellent
Pistacia chinensis (Chinese pistache)	2748943	1	Excellent
Quercus lyrata (Overcup oak)	2748944	1	Excellent
Quercus lyrata (Overcup oak)	2748945	1	Excellent
Quercus lyrata (Overcup oak)	2748946	1	Excellent
Quercus lyrata (Overcup oak)	2748948	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748949	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748950	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748956	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748962	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748963	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748965	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748967	1	Excellent
Nyssa sylvatica (Black tupelo)	2748969	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748975	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748976	1	Excellent
Chionanthus retusus (Chinese fringe tree)	2748980	1	Excellent
Chionanthus retusus (Chinese fringe tree)	2748981	1	Excellent
Chionanthus retusus (Chinese fringe tree)	2748982	1	Excellent
Lagerstroemia (Common crapemyrtle)	2748985	1	Excellent
Ulmus parvifolia (Chinese elm)	2749040	0.8	Excellent
Ulmus parvifolia (Chinese elm)	2749041	0.8	Excellent
Ulmus parvifolia (Chinese elm)	2749042	0.8	Excellent
Ulmus parvifolia (Chinese elm)	2749045	0.8	Excellent
Ulmus parvifolia (Chinese elm)	2749046	0.8	Excellent
Ulmus parvifolia (Chinese elm)	2749047	0.8	Excellent
Ulmus parvifolia (Chinese elm)	2749049	0.8	Excellent
Quercus lyrata (Overcup oak)	2749053	0.5	Excellent
Quercus lyrata (Overcup oak)	2749054	0.5	Excellent
Quercus lyrata (Overcup oak)	2749057	0.5	Excellent
Quercus lyrata (Overcup oak)	2749058	0.5	Excellent
Ulmus parvifolia (Chinese elm)	2749060	0.8	Excellent
Ulmus parvifolia (Chinese elm)	2749066	0.8	Excellent
Ulmus parvifolia (Chinese elm)	2749067	0.8	Excellent
Cladrastis kentukea (Yellowwood)	2749068	0.8	Excellent

Cladrastis kentukea (Yellowwood)	2749069	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749070	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749071	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749072	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749074	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749075	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2749079	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2749080	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2749081	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749084	0.5	Excellent	
Ulmus parvifolia (Elm)	2749087	0.8	Excellent	
Ulmus (Elm)	2749090	0.8	Excellent	
Ulmus (Elm)	2749093	0.8	Excellent	
Ulmus (Elm)	2749094	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749101	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749102	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749103	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749104	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749105	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749106	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749107	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749108	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749109	0.8	Excellent	
Ulmus parvifolia (Chinese elm)	2749110	0.8	Excellent	
Cercis canadensis (Eastern redbud)	2749112	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2749113	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749114	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749115	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749116	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749117	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749118	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749119	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749120	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749121	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749122	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749123	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749124	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749125	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749126	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2749127	0.5	Excellent	
Acer truncatum (Purple blow maple)	2749164	0.5	Excellent	
Acer truncatum (Purple blow maple)	2749165	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2749166	0.5	Excellent	

Cercis canadensis (Eastern redbud)	2749167	0.5	Excellent
Cladrastis kentukea (Yellowwood)	2749168	0.5	Excellent
Cladrastis kentukea (Yellowwood)	2749169	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749170	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749171	0.5	Excellent
Cladrastis kentukea (Yellowwood)	2749172	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749173	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749174	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749175	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749176	0.5	Excellent
Cladrastis kentukea (Yellowwood)	2749177	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749178	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749179	0.5	Excellent
Cercis canadensis (Eastern redbud)	2749181	0.5	Excellent
Cladrastis kentukea (Yellowwood)	2749182	0.5	Excellent
Cladrastis kentukea (Yellowwood)	2749183	0.5	Excellent
Cladrastis kentukea (Yellowwood)	2749184	0.5	Excellent
Cladrastis kentukea (Yellowwood)	2749185	0.5	Excellent
Pistacia chinensis (Chinese pistache)	2749186	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2749187	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2749188	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2749189	0.8	Excellent
Pistacia chinensis (Chinese pistache)	2749190	0.8	Excellent
Carpinus caroliniana (American hornbeam)	2749201	0.5	Excellent
Carpinus caroliniana (American hornbeam)	2749202	0.5	Excellent
Carpinus caroliniana (American hornbeam)	2749204	0.5	Excellent
Carpinus caroliniana (American hornbeam)	2749205	0.5	Excellent
Carpinus caroliniana (American hornbeam)	2749206	0.5	Excellent
Carpinus caroliniana (American hornbeam)	2749207	0.5	Excellent
Carpinus caroliniana (American hornbeam)	2749208	0.5	Excellent
Carpinus caroliniana (American hornbeam)	2749209	0.5	Excellent
Carpinus caroliniana (American hornbeam)	2749210	0.5	Excellent
Chionanthus retusus (Chinese fringe tree)	2749212	0.5	Excellent
Chionanthus retusus (Chinese fringe tree)	2749213	0.5	Excellent
Chionanthus retusus (Chinese fringe tree)	2749214	0.5	Excellent
Acer truncatum (Purple blow maple)	2749216	0.5	Excellent
Acer truncatum (Purple blow maple)	2749217	0.5	Excellent
Acer truncatum (Purple blow maple)	2749220	0.5	Excellent
Pistacia chinensis (Chinese pistache)	2749223	0.5	Excellent
Pistacia chinensis (Chinese pistache)	2749225	0.5	Excellent
Pistacia chinensis (Chinese pistache)	2749227	0.5	Excellent
Pistacia chinensis (Chinese pistache)	2749228	0.5	Excellent
Pistacia chinensis (Chinese pistache)	2749231	0.8	Excellent

Pistacia chinensis (Chinese pistache)	2749233	0.8	Excellent	
Pistacia chinensis (Chinese pistache)	2749235	0.8	Excellent	
Pistacia chinensis (Chinese pistache)	2749236	0.8	Excellent	
Pistacia chinensis (Chinese pistache)	2749237	0.8	Excellent	
Pistacia chinensis (Chinese pistache)	2749244	0.8	Excellent	
Pistacia chinensis (Chinese pistache)	2749245	0.8	Excellent	
Nyssa sylvatica (Black tupelo)	2749246	0.5	Excellent	
Nyssa sylvatica (Black tupelo)	2749247	0.5	Excellent	
Nyssa sylvatica (Black tupelo)	2749248	0.5	Excellent	
Ulmus alata (Winged elm)	2750017	0.5	Excellent	
Parrotia persica (Persian ironwood)	2750020	0.8	Excellent	
Carpinus caroliniana (American hornbeam)	2750021	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2750022	0.5	Excellent	
Carpinus caroliniana (American hornbeam)	2750023	0.5	Excellent	
Magnolia (Magnolia)	2750024	0.5	Excellent	
Ulmus alata (Winged elm)	2750025	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2750027	0.5	Excellent	
Carpinus caroliniana (American hornbeam)	2750028	0.5	Excellent	
Carpinus caroliniana (American hornbeam)	2750029	0.5	Excellent	
Magnolia (Magnolia)	2750032	0.5	Excellent	
Magnolia (Magnolia)	2750033	0.5	Excellent	
Acer buergerianum (Trident maple)	2750034	0.5	Excellent	
Carpinus caroliniana (American hornbeam)	2750035	0.5	Excellent	
Carpinus caroliniana (American hornbeam)	2750037	0.5	Excellent	
Acer buergerianum (Trident maple)	2750039	0.5	Excellent	
Ulmus alata (Winged elm)	2750041	0.5	Excellent	
Acer buergerianum (Trident maple)	2750042	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2750119	0.5	Excellent	
Acer buergerianum (Trident maple)	2750121	0.5	Excellent	
Ulmus alata (Winged elm)	2750123	0.5	Excellent	
Ulmus alata (Winged elm)	2750130	0.5	Excellent	
Ulmus alata (Winged elm)	2750132	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2750134	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2750135	0.5	Excellent	
Acer buergerianum (Trident maple)	2750138	0.5	Excellent	
Acer buergerianum (Trident maple)	2750139	0.5	Excellent	
Acer buergerianum (Trident maple)	2750141	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2750151	0.5	Excellent	
Acer buergerianum (Trident maple)	2750155	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2750157	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2750159	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2750170	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2750171	0.5	Excellent	

Quercus bicolor (Swamp white oak)	2750172	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2750175	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2750177	0.5	Excellent	
Ulmus alata (Winged elm)	2750179	0.5	Excellent	
Ulmus alata (Winged elm)	2750180	0.5	Excellent	
Ulmus alata (Winged elm)	2750181	0.5	Excellent	
Acer buergerianum (Trident maple)	2750182	0.5	Excellent	
Ulmus alata (Winged elm)	2750183	0.5	Excellent	
Ulmus alata (Winged elm)	2750184	0.5	Excellent	
Acer buergerianum (Trident maple)	2750185	0.5	Excellent	
Quercus virginiana (Live oak)	2750186	0.5	Excellent	
Acer buergerianum (Trident maple)	2750187	0.5	Excellent	
Acer buergerianum (Trident maple)	2750188	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2750189	0.5	Excellent	
Acer buergerianum (Trident maple)	2750192	0.5	Excellent	
Acer buergerianum (Trident maple)	2750193	0.5	Excellent	
Acer buergerianum (Trident maple)	2750194	0.5	Excellent	
Taxodium distichum (Baldcypress)	2750195	0.5	Excellent	
Taxodium distichum (Baldcypress)	2750196	0.5	Excellent	
Taxodium distichum (Baldcypress)	2750197	0.5	Excellent	
Quercus lyrata (Overcup oak)	2750376	0.5	Excellent	
Ulmus alata (Winged elm)	2750377	0.5	Excellent	
Ulmus alata (Winged elm)	2750378	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2750381	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2750382	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2750383	0.5	Excellent	
Acer buergerianum (Trident maple)	2750384	0.5	Excellent	
Acer buergerianum (Trident maple)	2750385	0.5	Excellent	
Acer buergerianum (Trident maple)	2750386	0.5	Excellent	
Acer buergerianum (Trident maple)	2750387	0.5	Excellent	
Acer buergerianum (Trident maple)	2750388	0.5	Excellent	
Acer buergerianum (Trident maple)	2750389	0.5	Excellent	
Acer buergerianum (Trident maple)	2750390	0.5	Excellent	
Magnolia (Magnolia)	2750392	0.5	Excellent	
Magnolia (Magnolia)	2750393	0.5	Excellent	
Acer buergerianum (Trident maple)	2750394	0.5	Excellent	
Magnolia (Magnolia)	2750396	0.5	Excellent	
Magnolia (Magnolia)	2750397	0.5	Excellent	
Quercus shumardii (Shumard oak)	2750668	0.5	Excellent	
Acer buergerianum (Trident maple)	2750669	0.5	Excellent	
Acer buergerianum (Trident maple)	2750670	0.5	Excellent	
Acer buergerianum (Trident maple)	2750671	0.5	Excellent	
Acer buergerianum (Trident maple)	2750672	0.5	Excellent	

Acer buergerianum (Trident maple)	2750674	0.5	Excellent	
Acer buergerianum (Trident maple)	2750675	0.5	Excellent	
Acer buergerianum (Trident maple)	2750676	0.5	Excellent	
Quercus shumardii (Shumard oak)	2750678	0.5	Excellent	
Acer buergerianum (Trident maple)	2750679	0.5	Excellent	
Acer buergerianum (Trident maple)	2750680	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2750681	0.5	Excellent	
Quercus lyrata (Overcup oak)	2750684	0.5	Excellent	
Acer buergerianum (Trident maple)	2750688	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2750690	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2750691	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2750692	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2750693	0.5	Excellent	
Acer buergerianum (Trident maple)	2750695	0.5	Excellent	
Ulmus alata (Winged elm)	2750696	0.8	Excellent	
Quercus bicolor (Swamp white oak)	2750698	0.5	Excellent	
Quercus lyrata (Overcup oak)	2750699	0.5	Excellent	
Acer buergerianum (Trident maple)	2751015	1	Excellent	
Acer buergerianum (Trident maple)	2751016	1	Excellent	
Acer buergerianum (Trident maple)	2751017	1	Excellent	
	2751018	1	Excellent	
	2751019	1	Excellent	
	2751020	1	Excellent	
Quercus bicolor (Swamp white oak)	2751021	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751022	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751023	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751024	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751026	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751029	0.5	Excellent	
Carpinus caroliniana (American hornbeam)	2751031	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2751036	0.8	Excellent	
Acer buergerianum (Trident maple)	2751039	0.5	Excellent	
Acer buergerianum (Trident maple)	2751040	0.5	Excellent	
Acer buergerianum (Trident maple)	2751041	0.5	Excellent	
Acer buergerianum (Trident maple)	2751042	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751043	0.5	Excellent	
Acer buergerianum (Trident maple)	2751045	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751047	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2751049	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2751050	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751052	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751053	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751054	0.5	Excellent	



Quercus bicolor (Swamp white oak)	2751055	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751056	0.5	Excellent	
Ulmus alata (Winged elm)	2751145	0.5	Excellent	
Ulmus alata (Winged elm)	2751146	0.5	Excellent	
Ulmus alata (Winged elm)	2751147	0.5	Excellent	
Ulmus americana (American elm)	2751150	1.5	Excellent	
Ulmus americana (American elm)	2751152	1.5	Excellent	
Ulmus americana (American elm)	2751153	1.5	Excellent	
Ulmus americana (American elm)	2751154	1.5	Excellent	
Ulmus americana (American elm)	2751155	1.5	Excellent	
Ulmus americana (American elm)	2751156	1.5	Excellent	
Ulmus americana (American elm)	2751157	1.5	Excellent	
Ulmus americana Princeton' (American elm)	2751158	1.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2751159	0.8	Excellent	
Ulmus americana Princeton' (American elm)	2751161	1.5	Excellent	
Ulmus americana Princeton' (American elm)	2751162	1.5	Excellent	
Ulmus americana Princeton' (American elm)	2751163	1.5	Excellent	
Ulmus americana Princeton' (American elm)	2751164	1.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2751165	0.8	Excellent	
Cladrastis kentukea (Yellowwood)	2751166	0.5	Excellent	
Lagerstroemia Biloxi' (Common crapemyrtle)	2751168	0.8	Excellent	
Lagerstroemia (Common crapemyrtle)	2751169	0.8	Excellent	
Quercus bicolor (Swamp white oak)	2751415	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751416	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751417	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751419	0.5	Excellent	
Lagerstroemia (Common crapemyrtle)	2751421	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751423	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751424	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751425	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751427	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2751446	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751448	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751449	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751450	0.5	Excellent	
Ulmus alata (Winged elm)	2751452	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2751453	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2751454	0.5	Excellent	
Ginkgo biloba (Ginkgo)	2751457	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751460	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2751463	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2751464	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2751466	0.5	Excellent	

Quercus lyrata (Overcup oak)	2751501	0.5	Excellent	
Quercus lyrata (Overcup oak)	2751502	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2751503	0.8	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751506	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751507	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751508	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751509	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751510	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751511	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751512	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751513	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751514	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751517	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751520	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751521	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2751522	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751524	0.5	Excellent	
Prunus yedoensis (Yoshino flowering cherry)	2751525	0.5	Excellent	
Prunus (Cherry)	2753144	0.5	Excellent	
Prunus (Cherry)	2753145	0.5	Excellent	
Prunus (Cherry)	2753146	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2753147	0.5	Excellent	
Ulmus americana (American elm)	2753149	1.5	Excellent	
Magnolia (Magnolia)	2753152	0.5	Excellent	
Magnolia (Magnolia)	2753153		Excellent	
Magnolia (Magnolia)	2753154	0.5	Excellent	
Magnolia (Magnolia)	2753155	0.5	Excellent	
Acer buergerianum (Trident maple)	2753156	0.5	Excellent	
Quercus lyrata (Overcup oak)	2784299	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2784302	0.5	Excellent	
Quercus macrocarpa (Bur oak)	2784303	0.5	Excellent	
Magnolia (Magnolia)	2784304	0.5	Excellent	
Quercus lyrata (Overcup oak)	2784305	0.5	Excellent	
Maclura pomifera (Osage orange)	2784314	2	Excellent	
Pistacia chinensis (Chinese pistache)	2784315	2	Excellent	
Gymnocladus dioica (Kentucky coffeetree)	2784316	2	Excellent	
Taxodium ascendens (Pondcypress)	2784318	2	Excellent	
Taxodium ascendens (Pondcypress)	2784320	2	Excellent	
Taxodium ascendens (Pondcypress)	2784321	2	Excellent	
Taxodium ascendens (Pondcypress)	2784322	2	Excellent	
Taxodium distichum (Pondcypress)	2784323	2	Excellent	
Taxodium ascendens (Pondcypress)	2784324	2	Excellent	
Taxodium ascendens (Pondcypress)	2784325	2	Excellent	

Taxodium ascendens (Pondcypress)	2784326	2	Excellent	
Taxodium distichum (Pondcypress)	2784327	2	Excellent	
Taxodium ascendens (Pondcypress)	2784328	2	Excellent	
Cercis canadensis (Eastern redbud)	2784336	0.5	Excellent	
Cercis canadensis (Eastern redbud)	2784337	0.5	Excellent	
Ulmus americana (American elm)	2784338	1.5	Excellent	
Ulmus americana (American elm)	2784339	1.5	Excellent	
Cladrastis kentukea (Yellowwood)	2784340	0.8	Excellent	
Cladrastis kentukea (Yellowwood)	2784341	0.8	Excellent	
Ulmus americana (American elm)	2784342	0.8	Excellent	
Ulmus americana (American elm)	2784343	0.8	Excellent	
Magnolia (Magnolia)	2784344	0.5	Excellent	
Magnolia (Magnolia)	2784345	0.5	Excellent	
Cladrastis kentukea (Yellowwood)	2784346	0.8	Excellent	
Cladrastis kentukea (Yellowwood)	2784347	0.8	Excellent	
Acer buergerianum (Trident maple)	2784348	0.5	Excellent	
Acer buergerianum (Trident maple)	2784349	0.5	Excellent	
Acer buergerianum (Trident maple)	2784350	0.5	Excellent	
Platanus acerifolia (London planetree)	2784353	0.5	Excellent	
Platanus acerifolia (London planetree)	2784354	0.5	Excellent	
Platanus acerifolia (London planetree)	2784355	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784356	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784357	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784358	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784359	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784360	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784361	0.5	Excellent	
Taxodium distichum (Baldcypress)	2784362	0.8	Excellent	
Taxodium distichum (Baldcypress)	2784363	0.8	Excellent	
Taxodium distichum (Baldcypress)	2784364	0.8	Excellent	
Taxodium distichum (Baldcypress)	2784365	0.8	Excellent	
Taxodium distichum (Baldcypress)	2784366	0.8	Excellent	
Taxodium distichum (Baldcypress)	2784367	0.8	Excellent	
Taxodium distichum (Baldcypress)	2784368	0.8	Excellent	
Taxodium distichum (Baldcypress)	2784369	0.8	Excellent	
Taxodium distichum (Baldcypress)	2784370	0.8	Excellent	
Ulmus americana (American elm)	2784371	0.8	Excellent	
Ulmus americana (American elm)	2784372	0.8	Excellent	
Pistacia chinensis (Chinese pistache)	2784373	1	Excellent	
Pistacia chinensis (Chinese pistache)	2784374	1	Excellent	
Pistacia chinensis (Chinese pistache)	2784375	1	Excellent	
Pistacia chinensis (Chinese pistache)	2784376	1	Excellent	
Ulmus (Elm)	2784377	1	Excellent	

Ulmus (Elm)	2784378	1	Excellent	
Ulmus (Elm)	2784379	1	Excellent	
Ulmus (Elm)	2784380	1	Excellent	
Quercus lyrata (Overcup oak)	2784381	0.8	Excellent	
Quercus lyrata (Overcup oak)	2784382	0.8	Excellent	
Magnolia (Magnolia)	2784664	0.5	Excellent	
Magnolia (Magnolia)	2784665	0.5	Excellent	
Celtis (Hackberry)	2784666	0.5	Excellent	
Quercus bicolor (Swamp white oak)	2784670	0.5	Excellent	
Acer buergerianum (Trident maple)	2784674	0.5	Excellent	
Acer buergerianum (Trident maple)	2784675	0.5	Excellent	
Acer buergerianum (Trident maple)	2784677	0.5	Excellent	
Acer buergerianum (Trident maple)	2784678	0.5	Excellent	
Acer buergerianum (Trident maple)	2784679	0.5	Excellent	
Prunus (Cherry)	2784681	0.5	Excellent	
Prunus (Cherry)	2784682	0.5	Excellent	
Ostrya virginiana (Eastern hophornbeam)	2784688	0.5	Excellent	
Ostrya virginiana (Eastern hophornbeam)	2784689	0.5	Excellent	
Ostrya virginiana (Eastern hophornbeam)	2784690	0.5	Excellent	
Ostrya virginiana (Eastern hophornbeam)	2784691	0.5	Excellent	
Ostrya virginiana (Eastern hophornbeam)	2784692	0.5	Excellent	
Betula nigra (River birch)	2784707	0.5	Excellent	
Magnolia (Magnolia)	2784710	0.5	Excellent	
Magnolia (Magnolia)	2784711	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784714	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784715	0.5	Excellent	
Chionanthus retusus (Chinese fringe tree)	2784716	0.5	Excellent	
Celtis (Hackberry)	2784718	0.5	Excellent	
prunus okame (okame cherry)	2784721	0.5	Excellent	
Ulmus alata (Winged elm)	2784722	0.5	Excellent	
Betula nigra Dura Heat' (River Birch)	2784724	0.5	Excellent	
Betula nigra Dura Heat' (River Birch)	2784725	0.5	Excellent	
Betula nigra Dura Heat' (River Birch)	2784726	0.5	Excellent	
Taxodium ascendens (Pondcypress)	2303972	2	Good	
Carpinus caroliniana (American hornbeam)	2750030	0.5	Good	
Carpinus caroliniana (American hornbeam)	2750031	0.5	Good	
Quercus macrocarpa (Bur oak)	2639773	0.5		
Quercus macrocarpa (Bur oak)	2639774			
Acer buergerianum (Trident maple)	2639776	0.5		
Acer buergerianum (Trident maple)	2639777	0.5		
Carpinus caroliniana (American hornbeam)	2639795	0.5		
Quercus lyrata (Overcup oak)	2639796	0.5		
Carpinus caroliniana (American hornbeam)	2639801			

Carpinus caroliniana (American hornbeam)	2639803	0.5		
Carpinus caroliniana (American hornbeam)	2639805	0.5		
Carpinus caroliniana (American hornbeam)	2639810	0.5		
Carpinus caroliniana (American hornbeam)	2639814	0.5		
Magnolia (Magnolia)	2639829	0.5		
	2639852	0.8		
	2639854	0.8		
Prunus yedoensis (Yoshino flowering cherry)	2747687	0.5		
Acer buergerianum (Trident maple)	2747689	0.5		
Acer buergerianum (Trident maple)	2747690	0.5		
Acer buergerianum (Trident maple)	2747691	0.5		
Acer buergerianum (Trident maple)	2747694	0.5		
Acer buergerianum (Trident maple)	2747695	0.5		
Acer buergerianum (Trident maple)	2747696	0.5		
Acer buergerianum (Trident maple)	2747698	0.5		
Lagerstroemia (Common crapemyrtle)	2747701	0.5		
Betula nigra (River birch)	2747703	0.5		
Betula nigra (River birch)	2747704	0.5		
Magnolia (Magnolia)	2747705	0.5		
Magnolia (Magnolia)	2747706	0.5		
Magnolia (Magnolia)	2747707			
Magnolia (Magnolia)	2747708	0.5		
Magnolia (Magnolia)	2747709	0.5		
Quercus macrocarpa (Bur oak)	2747710	0.5		
Quercus macrocarpa (Bur oak)	2747713	0.5		
Magnolia (Magnolia)	2747715	0.5		
Magnolia (Magnolia)	2747716	0.5		
Prunus (Cherry)	2747720	0.5		
Prunus (Cherry)	2747721	0.5		
Prunus (Cherry)	2747942	0.5		
Prunus (Cherry)	2747943	0.5		
Quercus lyrata (Overcup oak)	2747949	0.5		
Quercus lyrata (Overcup oak)	2747950	0.5		
Quercus lyrata (Overcup oak)	2747951	0.5		
Quercus lyrata (Overcup oak)	2747954	0.5		
Quercus macrocarpa (Bur oak)	2747957	0.5		
Prunus yedoensis (Yoshino flowering cherry)	2747958	0.5		
Prunus yedoensis (Yoshino flowering cherry)	2747959	0.5		
Prunus yedoensis (Yoshino flowering cherry)	2747960	0.5		
Prunus (Cherry)	2748182	0.5		
Ginkgo biloba (Ginkgo)	2748263	0.8		
Ginkgo biloba (Ginkgo)	2748264	0.8		
Cercis canadensis (Eastern redbud)	2748902	0.8		

Quercus lyrata (Overcup oak)	2750395	0.5		
Cladrastis kentukea (Yellowwood)	2751038	0.5		
Ulmus americana (American elm)	2751149	1.5		
Quercus shumardii (Shumard oak)	2784308	0.5		
Quercus bicolor (Swamp white oak)	2784310	0.5		
Maclura pomifera (Osage orange)	2784312	2		
Maclura pomifera (Osage orange)	2784313	2		
Quercus lyrata (Overcup oak)	2784706	0.5		

## Addendum 2: Responses to Interview questions

Alex Johnson- Durham division of urban forestry

Urban Forestry manager:

Working 11 years

Forestry degree at Nc state

Involved: DCOI contact was Charles dare. Worked with duke university for several years. Initial plantings were in walltown and they were large trees and hard to plant. They used duke's money. Then partnered with tani to increase trees from 100 to 1000. 3rd party urban offsets came into process. Duck was paying but didn't offer enough money so delta was brought in.

Urban offsets has done no verification, no planting, no community outreach but takes 50% of the profit. Brought it in as a non-profit partner so keep Durham beautiful could get the outside money right away and didn't have to go through the bureaucracy.

"There is not 100% accuracy in the planting"

"Each project is missing upwards of 10% of trees"

May not have been recorded

Alex buys, offloads, distributes to keep Durham beautiful. Coordinate planting events of 100 trees at a time. Assigns specific trees to specific planting sites due to size class

Before volunteers show up, each tree was already placed at the location. Quality control provided by tree keepers, volunteers that have shown up to multiple tree planting events.

Data points were then collected the following week by the city staff and put into the open tree map software

January and February were big planting seasons

Alex uses his own monitoring system. Inventory and replacement protocol for trees not sponsored by DCOI. Alex does the replacement himself

A higher than 3-8% mortality rate is expect by Alex

Sampling methods:

- Carbon offset trees have specific tags
- Small trees pruned once a year.
- After a year take staking off of tree
- Replacing old trees
- Ongoing process no set yearly checkup plan
- Work with other nonprofit and volunteer agencies to monitor but would rather work with government staff to monitor
- Willing to use citizen science

DOES NOT KNOW ABOUT OR USE DCOI TO CHECK THE TREES

Full inventory during first two years and inspections then occurring every two years

Once the trees are older, inspections occur every 7-10 years after that, don't really have to look at them any longer

Tree pruning plan is on an as needed basis until the tree is grown enough that it doesn't need pruning anymore. Assign pruning to a crew in the offseason and broken into blocks

No irrigation system

Steps taken when tree dies:

- Open tree map app... delete the tree and create a tree planting site
- It is in the budget to replace trees
- Tress issues reported by phone or crew or public can fill out a form online to request trees

Barriers:

• Too expensive to hire contractors so he has to do it all himself. Has crew and machines but not enough

- 5 years' worth of pruning- who can do that
  - Support is not a barrier, he is well funded but he doesn't have enough resources because
1. Ppl are asking too much
  2. Quality control with volunteers
  3. Has a hard time meeting the expectations of carbon offset and keep Durham beautiful
  4. Keep Durham beautiful hasn't done well with making time for rainy days, low turnout for volunteer groups
  5. Alex was offered money but he wasn't sure what they wanted him to do with it
  6. Keep Durham beautiful would pick specific days and locations when they wanted to come and work and didn't want other volunteer groups out there that day

Keep Durham beautiful assumed ownership after the fact and higher ups didn't seem to value when Alex would bring in additional resources. A lot of ppl wanted to take credit for the tree planting

Tania D- Works for keep Durham beautiful

Urban offsets brought in as a third-party verifier

DOCI is initiator and brought Delta into the project. Doci is the head

Keep Durham beautiful is a non-profit and works closely with city of Durham

City of Durham owns the property

Contract between the city and urban offsets

Keep Durham beautiful have the funding and once the trees are verified, Duke will pay KDB

Delta plantings are sending their money through urban offsets

Tania provides funds through donations and coordinated volunteers for work days

Not involved in monitoring the trees and not involved in tree data collection

Not aware of any modifications to the contract

Barriers:

- Lots of work to get donations
- Alex's time is a barrier, takes him a while to select trees
- Not a priority from the higher ups in the city. Higher ups could do more to get more trees planted
- Maintenance may be hard to care for trees that are in the ground Volunteers aka tree keepers sometimes help with pruning

### **Addendum 3: Urban Offsets' Shawn Gagne's comments on the validation report (provided 11/15/2018)**

Overall peer verification structural comments:

- Reports could use a section at the beginning that identifies all names mentioned in the report along with their organization and title.
- Reports could use a summary table of actions at the end of each report. The table could include items that should be reviewed/fixed before next verification and items that should be checked at next verification. For example, items that keep the project out of compliance should be in this table to help others act to correct those errors.
- All changes made to PDD's, contracts, inventories, etc.. should be reported on a changelog that stays with the verification report.
- It might benefit verifiers if a single dedicated GPS device was made available for all regional verification events. This would control for errors created using multiple platforms.
- DCOI - How flexible do you want to be wrt city tree management being out of step with the DCOI protocol requirements? It seems this was a common issue (minor) throughout all 4 reports.

Comments specific to this project:

- 7 trees are missing (identified in the PDD, not found on site by verifiers)
- Revise the PDD by removing mention of a second buyer.
- There are too many dead trees (242 or 21.7% of project)
- More than 300 species were re-identified as different species by the verifier. I am concerned: Alex gave us original species based on tree order forms. All sequestration rates are based on original species, as such the rates quoted by verifiers of living (species adjusted) trees could fall below the acceptable rate of return for this project.
  - Perhaps Alex can replace these dead trees with another future planting or a previous planting conducted in 2018?