

OCTOBER 26, 2015

# City of Kirkland, WA Washington Department of Natural Resources Urban and Community Forestry Inventory Summary

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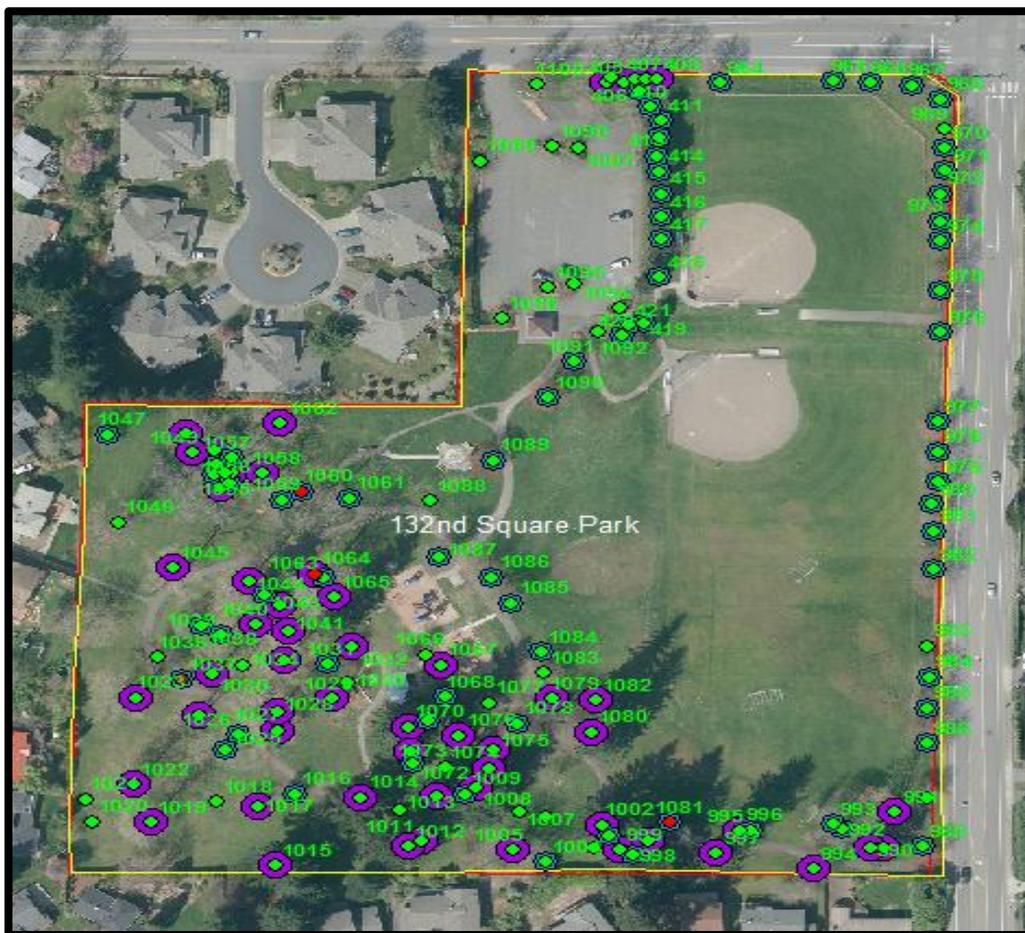


## SUMMARY

The City of Kirkland tree inventory was funded by a grant from the Washington Department of Natural Resources (WADNR) Urban and Community Forestry Program (UCF) and United States Forest Service (USFS). The data was collected by International Society of Arboriculture (ISA) certified arborists employed by Community Forestry Consultants, Inc. (CFC). The data was collected using TreeWorks™, an ArcGIS™ tree management software and Trimble™ field units. CFC conducted a limited visual tree assessment for each tree in the inventory.

### Inventory Sites

The data was collected in the maintained areas of city parks designated by city staff. Parks were scattered throughout the city (Figure 1). Tree inventory data was collected in Houghton Beach, Marsh, Marina, Heritage, Waverly, Peter Kirk, 132<sup>nd</sup>, McAuliffe, Juanita Beach, O.O. Denny, Crestwood, Mark Twain, Everest, Rose Hill Meadows, Forbes Creek, Terrace, North Rose Hill Woodlands, Cedar View, Spinney, Highlands, Reservoir, Van Aalst, and Tot Lot parks. Tree inventory data was also collected at the Kirkland Cemetery and North Kirkland Community Center (Figure 1).



**Figure 1 – Aerial map showing 132<sup>nd</sup> Square Park. Green and purple dots represent trees of different trunk diameters. Red dots are stumps.**

### Species Characteristics

The inventory collected data for 2,400 trees. The most common tree species is Douglas fir. Douglas fir accounted for 480 of the trees inventoried. Douglas fir represents 19% of the tree population inventoried. Maples (457) represented 18% of the trees inventoried. Douglas fir is the dominant species in most parks particularly those parks still containing remnant woodland stands. There are more than 140 species represented in the inventory (Figure 2). No other genus or species represented more than 10% of the trees inventoried. Beyond Douglas fir and maples, Kirkland has a diverse tree population in their city parks. Pinus (pines), Thuja (cedar), and Populus (cottonwoods) are the next most common genera but each represents less than 10% of the trees inventoried.

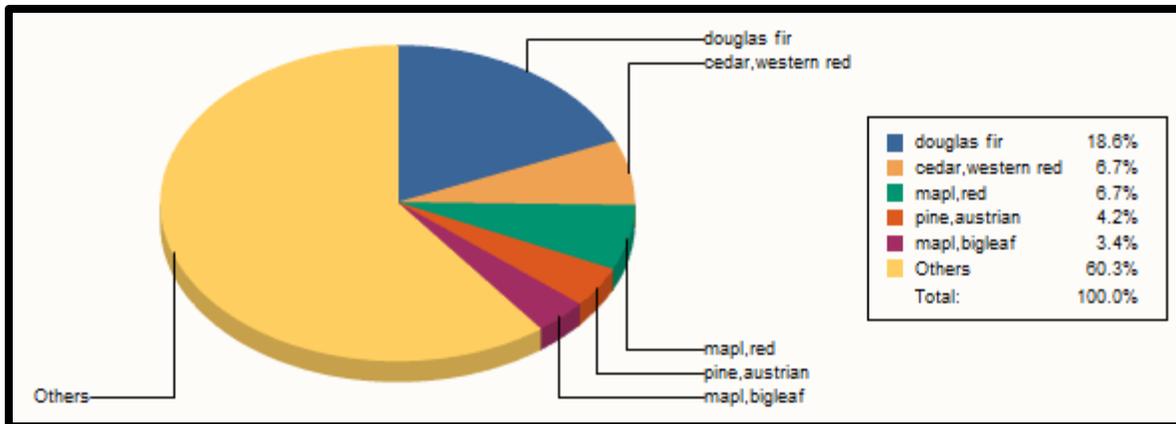


Figure 2 – Chart depicts the most common species.

### Appraisal Value

The value of trees is calculated based on appraisal factors of species, size, condition of tree, and the location of the tree. The appraised value for the 2,400 trees inventoried is estimated at 17.6 million dollars. Appraisal values are determined using the Guide for Plant Appraisal 9th edition, 2000 and an installed tree cost of \$480.00. The guide is written by the Council of Tree & Landscape Appraisers and provides the processes used to generate appraised values of trees.

The appraised value is significant and represents a valuable asset for the City of Kirkland. Many of the trees are in fair condition. If maintained the condition ratings will improve resulting in an even higher appraised value. The appraised value will increase as the trees grow in diameter and add more value if properly maintained.

### Maintenance Requirements

The majority of the trees (1,700) inventoried require pruning maintenance treatments. The primary maintenance tasks are crown cleaning and subordination (Table 1). **Crown cleaning** is removal of dead branches from the crown of the tree. **Subordination** pruning mitigates branch junctions with co-dominant stems and co-dominant stems with included bark. **Co-dominant stems** (or branches) are stems or branches growing at about the same rate, and with nearly the same diameter, as another stem (or branch) originating from the same union. Co-dominant stems are the most common structural defect in urban trees and often lead to branch failure if not treated early in the life cycle of the tree (Figure 3).



**Figure 3 – Codominant stem (or branch) with included bark. The codominant stem has failed.**

All tree maintenance practices should follow American National Standards Institute (ANSI) A 300, Part 1, Pruning and the ISA Best Management Practices for tree pruning. Industry terms and definitions mentioned in this report and recommended practices can be found in these documents.

About 3% of the trees inventoried (81 trees) require removal. More than half (48) of the removals are small trees less than 12 inch trunk diameter. These smaller trees are dead or have major structural defects that warrant removal. Larger trees such as the Lombardy poplars in Kirkland Cemetery, black locust in 132<sup>nd</sup> Avenue Park and black cottonwoods in various parks account for a small percentage of the removals. The larger diameter trees should be removed first. These three species should be monitored annually in all parks.

The majority of the trees are in **fair condition** (1,650). Fair condition trees account for 65% of the population. Trees in fair condition have well defined issues (dead branches; co-dominant stems) that warrant some corrective pruning or maintenance within the next pruning cycle. More than 30% of the tree population (770) is in **good condition**. Trees in good condition have minor issues or defects that do not require immediate attention and maintenance could occur later in the city pruning cycle.

Maintenance Task Details	
Task	Trees
crowns clean	900
remove	81
subordinate	778

**Table 1 – Maintenance tasks found in the inventory. Some trees have multiple tasks assigned.**

### Recommendations

CFC recommends the following maintenance.

- The City of Kirkland should institute a 3 year cyclical pruning rotation to mitigate the large quantity of dead branches in park trees.
- Develop a structural pruning plan to correct co-dominant stems.
- Develop pruning specifications as part of the tree maintenance contract bidding process.
- Initiate a program to mitigate removals beginning with larger trees inventoried for removal.
- Incorporate new inventory data into existing tree management program and utilize the tree management system on a regular basis.

The data available from this inventory will provide City of Kirkland tree managers the ability to manage the tree population proactively. It will provide advice on the best direction to manage the tree program; anticipate needs and problems; assist with prioritization and scheduling; and allow for execution on maintenance programs based on data analysis. The inventory information can be used to project program costs and justify program budgets and develop an efficient urban forestry management plan.