MEMORANDUM

To: Planning Commission

From: Deb Powers, Urban Forester
       Constantine Chrisafis, Planning Intern
       Allison Zike, Planner
       Kelly Wilkinson, Development Review Arborist
       Adam Weinstein, AICP, Deputy Planning Director

Date: August 9, 2018

Subject: Internship Project Findings Related to Tree Code Efficacy,
         Kirkland Zoning Code Chapter 95
         File Number CAM18-00408

Staff Recommendation
The Planning Commission should consider these findings as potential code changes,
incentives, changes to procedures and opportunities for public education are developed
with the 2018 Kirkland Zoning Code (KZC) Chapter 95 code amendment project.

Background
In April 2018, the City Manager’s Office awarded funding for a Planning and Building
Department Innovation Internship project proposal to study the efficacy of citywide tree
codes. This is the first opportunity since the City adopted its comprehensive tree
regulations in 2006 to conduct field observations of this kind. The project involved
comparing recorded trees on a site prior to development to present day conditions, long
after initial tree protection efforts were made and the required 5-year Maintenance
Agreements expired. The overarching objective of the project is to better understand
how the City’s tree regulations play out on actual development sites.

Findings from this project may be used by the Planning and Building Department,
Planning Commission, Houghton Community Council, and the City Council to understand
broader trends in tree protection. Field observations may suggest warranted
policy/regulatory changes, show any tree code loopholes that are consistently being
exploited, or indicate if codes are not effective or result in an unnecessary regulatory
burden. Project findings can also be used in conjunction with current tree canopy data
to understand where to focus efforts on increasing tree canopy cover.

Innovation Internship Project
In May 2018, staff discussed the scope, selected specific data that would be collected by
the intern (Attachment 1) and planned a step-by-step approach for the project. The
project largely revolved around KZC Chapter 95 processes and standards to provide for
the protection, preservation, replacement and proper maintenance of significant trees located on developed properties.

The intent and purpose of KZC 95 is to mitigate the consequences of land development through tree preservation and tree replacement, with the goal of enhancing Kirkland’s urban forest to achieve an overall healthy, sustainable 40 percent tree canopy cover citywide over time.

This project looked at short plats developed under both phased and integrated development reviews. The Integrated Development Plan (IDP) review process requires tree retention/removal decisions early in development design, whereas phased reviews allow tree removal with each short plat, subdivision, demolition, grading and building permit as they are submitted/approved. The July 12, 2018 Planning Commission meeting memo discusses the IDP review process in more detail (page 2). The data sets gathered by the intern would help ascertain if existing regulations effectively promote good site planning, building, and development practices that work to avoid unnecessary removal or destruction of trees, that avoid unnecessary disturbance to native vegetation, and provide landscaping to buffer the effects of built and paved areas.

With almost 400 short plat permit applications and a multitude of resulting single family homes developed in accordance with KZC Chapter 95 regulations, staff limited case studies to short plats between the years 2008-2013, well after initial adoption of the code, while still allowing enough time to elapse to study post-development conditions. Following training on the City’s permit database and reviewing archived permits, the intern collected site data from applications/permits required at these development stages:

- Prior to development – based on assessor records, data sometimes established in pre-submittal meetings/applications and with documented tree removal conducted prior to development permit application submittal;
- Short plat permits – documented number of trees and their condition based on arborist reports, surveys and approved retention requirements;
- Land Surface Modification (clearing/grading) permits – tree removal associated with site grading for roads and utilities; and
- Building permits – tree removal and retention required with building permits, development standards and zoning regulations.

To ensure that collected data would be useful, staff considered how current conditions in the field would relate to the following issues: Are the regulations effective, and are there any that are being exploited with tree removal before, during and after development? Are the regulations effective in retaining larger trees in addition to requiring new trees to be planted? Is there a relationship between lot size and tree retention/replanting?

**Analysis**

The project documented the removed and retained trees on 159 lots created from 54 short plats. Ten weeks were spent collecting and analyzing data, using the multi-step methodology described below.
**Methodology**

Initial data was collected from subdivision and short plat permit applications. The data included noting zoning designations/neighborhoods, if unique requirements were involved (Holmes Point Overlay), and whether the short plat utilized an integrated development or phased review plan. Important dates were noted such as permit submittal, final inspection and the King County recording date. Data collected from records also included the number of lots that were created, the total number of viable trees surveyed on the site when the application was submitted, and any prior tree removal permits and parcel numbers/addresses.

Proceeding into the field, existing trees on the property were counted and categorized by size using trunk diameter at 4.5 feet from grade, or diameter at breast height (DBH). Staff established the following tree size groups: new plantings, small trees, medium trees, and large trees. New plantings are trees under 6 inches DBH that were required to be planted with development. Small trees are those currently larger than 6 inches up to 12 inches DBH. Medium trees are defined as greater than 12 inches DBH up to the large tree category, which are trees over 22 inches DBH. The small, medium and large trees were original to the site prior to development and were required to be retained.

Returning to the office, the data collected in the field was recorded and analyzed to understand any emerging trends and to identify sites to return to for further analysis. Three key trends related to tree planting and protection were identified as part of this project:

**Excessive Planting of Arborvitae**

Arborvitae (Thuja occidentalis), sometimes called “pyramidalis,” is a very columnar, slow-growing cedar tree that is frequently planted on development sites to meet tree credit requirements. About 30% of the total number of short plats revealed an excess of arborvitae. On most of those sites, little other vegetation is present (i.e., no trees that existed prior to development and few new plants/landscaping), resulting in limited species diversity on post-development sites. The benefit of greater species diversity is a healthy, resilient and sustainable urban forest. Low species diversity can lead to substantial impacts or widespread loss from pests or disease such as Dutch elm disease.

Arborvitae has a high mortality rate when newly planted, which was commonly noted in the field particularly when used in excess on development sites. The prevalence of Arborvitae could be attributed to its low cost compared to planting other trees and its common availability. The City’s tree code doesn’t distinguish smaller scaled, slow-growing or very narrow/upright forms from other replacement trees, allowing what has become a code “loophole” contrary to the intent of the code. and are discouraged or prohibited.

**Poor Location of New Trees**

Of the over 1,000 trees required to be planted with development, about 150 of those were observed to be dying or dead when field observations were conducted. Many of the dying or dead trees were planted in inappropriate locations such as next to a fence,
very close to foundations or in very close proximity to other trees/vegetation. A 
contributing factor to this condition is that the code does not prescribe where 
supplemental trees must be planted so that during final inspections, Planners are 
typically counting the number of trees on site, not examining tree locations. This could 
prove to be a problem in the long run in terms of establishing a healthy canopy.

Preservation of Mature Trees
By modifying the environment, trees improve air and water quality and contribute to 
human health and community character. The practice of clearing and removing trees on 
development sites and planting new, small trees results in an excessively even-aged tree 
population and poorly distributed mature trees. By protecting mature trees in addition to 
planting new trees, the significantly higher proportion of environmental benefits that 
larger trees provide are optimized and a healthier, more resilient and sustainable urban 
forest results. The current tree code does an adequate job at preserving mature trees 
with a large DBH. Out of 159 total lots examined, 32 properties retained large trees that 
existed prior to development. The intern noted that on many sites, it was very evident 
how modifications to development standards were made to protect mature trees.

Next Steps
This information can be used to shape Chapter 95 as we undertake revisions. Further 
examination could yield additional information such as common locations where 
successful tree retention occurs, including in setbacks, groves, or protected natural 
areas. Additional findings may suggest potential policy/regulatory changes based on the 
specific variables.

The August 9, 2018 Planning Commission meeting will provide the opportunity to 
discuss follow-up steps/meetings, including resolution of unresolved items, and any 
direction on the Chapter 95 update resulting from the intern project.

Attachments:
1. Data Collection Sheet

cc: Allison Zike
    Kelly Wilkinson
    File Number CAM18-00408
## SHORT PLAT DATA

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## TREE REMOVAL DATA

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## CURRENT CONDITIONS DATA

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