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Aug 26, 2019
UPDATE: Sep 09, 2020

City of Eugene
Eugene, Oregon

RE: EWEB 40th Ave, Arborist Report

Introduction:
This report was prepared for a future development of an EWEB owned parcel of land, Map 18031720, Tax Lot 01000. The property is located in the Southeast neighborhood of Eugene. It is nestled within and surrounded by a residential neighborhood. The site can be best accessed at the end of Patterson Street, off of 40th Ave.

Tree Felling Criteria for this project are presented below. Tree diameters in the reports are the diameter at 4.5 feet above grade (DBH) and for trees larger than 6-inches in DBH within private property and 2-inch in DBH within the public right of way. Tree diameters for multi-stemmed trees are the sum of the 3 largest stems at 4.5 feet above grade. Limbs counted are identified before the DBH measurement in parentheses. For example, a double stemmed tree that has a total DBH of 10-inches would be noted as (2) 10". A triple stemmed 10" DBH tree would be noted as (3) 10". Please see the Tree Inventory Plan, Diagram A, for the Tree's corresponding identification number and Tables A-F (UPDATE) with additional notes pertaining to each individual tree. Tree species, diameter size, and health/condition are identified in those attached tables.

The study for this report evaluated the health of trees within the private property.

Observations:
A variety of trees are present on site. Most of the trees are either natives or naturalized species. Tree species on the site include the following trees: Western Service Berry (*Amelanchier alnifolia*), Pacific Madrone (*Arbutus menziesii*), Single Seed Hawthorn (*Crataegus monogyna*), Oregon Ash (*Fraxinus latifolia*), Ponderosa Pine (*Pinus ponderosa*), Cherry (Prunus sp.), Douglas Fir (*Pseudotsuga menziesii*), Pear (*Pyrus sp.*), Oregon White Oak (*Quercus garryana*), and California Black Oak (*Quercus kelloggii*).

UPDATE: Species also include Bigleaf Maple (*Acer macrophyllum*).

The site is currently an undeveloped natural area comprised of woodlands along the ridgeline and meadows on the northeast and southwest corners of the property. It appears some maintenance and care has been given to the site. Few noxious species were seen. Evidence suggests that occasional mowing occurs which helps keeps the noxious species that were seen at bay. Walkers frequent the pedestrian trails winding along the ridgeline in the middle of the woodland. There are two distinct woodlands on the site: a Douglas fir woodland and an Oak woodland. Overlap of the two occurs. Both types of forests are very indicative of this area in the Pacific Northwest and this site has both. Prior to European settlement, the Oak woodland was the predominant type of woodland in the Willamette Valley. Since then, without the historic burning of the Willamette Valley, a natural succession to Douglas Fir woodlands has prevailed.

Douglas Fir Woodland

Oak Woodland

The Douglas fir woodland is a healthy mix of young trees and old trees, dead trees, and openings. While predominately Douglas fir, a few different species were also seen. There are several areas in the forest where trees are thick and compete for light, nutrients, soil, and water. Very thin canopies with vegetation only at the tops are the result of this. Thinning of the forest in several locations would benefit some of the younger trees and could help to create a stronger forest. Trees to consider thinning would be those with damaged tops, those with multiple tops, those that are competing heavily with their neighbors for space/sunlight, those with disease or pest, those physically resting on others, and those with any sort of health defect that renders them of less value than another.

Co-dominant leaders

Open understory: bramble

Canopies: some opening & some overcrowding

UPDATE: The relatively open understory of the Douglas fir woodland is teeming with *Toxicodendron diversilobum* (Poison Oak), *Hedera helix* (English Ivy) and blackberry species, in addition to the usual innocuous natives. In addition to Poison Oak and English Ivy, Wisteria and Honeysuckle vines were also noted as climbing several of the trees. English Ivy in particular causes bark damage when allowed to climb unchecked, and removal is difficult without causing more harm to the tree. There were several cases of extreme ivy infestation. This noxious species should be brought under control to avoid spread and damage to the woodland over time.

The Oak woodland has some open canopy spaces with the help of maintenance and storm damage. Without maintenance, the Douglas fir woodland could and would take over. Some thinning has occurred either by restoration efforts or due to storm damage. Opening up the canopy and allowing for more horizontal growth can benefit an Oak woodland. Most of the dieback on the Oaks is due to the Douglas firs outcompeting the Oaks for available sunlight, nutrients, and space. To help strengthen the Oak woodland, it is recommended to remove the Douglas firs that are outcompeting the oaks, meaning, any Douglas Fir that is within 10 ft of an Oak's canopy, should be removed if it is deemed a priority to keep the Oaks. The understory under the Oaks has been maintained as well, more so than within the Douglas fir forest.


Oak woodland with grass understory

The majority of the oaks had skeletonized leaves which is indicative of pests. As the trees are more mature, the trees did not seem to be significantly affected by the pest damage. In addition, the majority of the Oaks had galls caused by oak apple gall wasps. Galls usually occur on leaves and stems, but also may occur on flowers, fruits, twigs, branches, trunks, and roots. Gall-making insects are generally not considered pests as they do not damage the oak tree host but may cause earlier defoliation. Although there are some insecticides registered for use against gall-making insects, their use is generally unwarranted, and not recommended here. Furthermore, pesticides may kill beneficial insects that help control gall-making insects and could damage the health of the woodland's ecosystem.

Oakleaf Galls

Insects

Skeletonized leaves

The understory is thin, with a mix of native understory and noxious species, comprised of *Rubus ursinus*, the native blackberry and *Rubus armeniacus*, Himalayan blackberry. In addition and much to my dismay, a healthy amount of *Toxicodendron diversilobum*, Poison Oak is scattered around. Mowing has helped keep the understory controlled, but there are still areas of thick poision oak which made it difficult to take some tree measurements. Honeysuckle vines were also seen climbing on at least a dozen of the Oaks. Noxious species with the ability to do tree damage include *Hedera helix*, English Ivy. For a forest of this size, little ivy was seen but it's location was tracked and can be seen more precisely within the individual tree data tables. Without proper maintenance, English Ivy has the ability to take over and can damage the full woodland of trees. Currently, it has a scattered existence throughout the woodland.

Possible Nest in Oak

Inosculation

English Ivy beginning to climb

Poison Oak vines climbing trunk

English Ivy climbing trunk

Fir outcompeting Oaks

With a couple of exceptions, the trees themselves are only in decent health. It's typical of these trees to have uneven, high arching, narrow, and thin canopies. This type of canopy forms as such in response to the sunlight condition available for growth. With limited space, trees can only get so wide. On the contrary to only decent individual tree health, the health of the woodland is good. Together, the trees form a very large mature canopy. Deadwood on the trees is what would be typical for a forest as opposed to the safety and maintenance requirements of an urban environment. Dead snags are throughout which provide good habitat.

The trees at the edge of the woodland are quite possibly the most important. They provide support and protection to the interior stand of trees. They provide wind cover for the tall, spindly, less structurally sound trees that could bend or blow over in storms. If a portion of the site is cut for development, the new edge of the woodland would be subject to failures of individual trees as they are not adapted to be perimeter trees. Significant limbs could fail as their existing windbreak would be missing. As with many things biological, the impacts could be immediate or delayed for years. Frequently, tree decline due to construction is on a delayed time table. As with all trees, adequate health and safety monitoring of the trees is the only way to reduce risk. To mitigate the impacts of the inner woodland becoming a perimeter tree, it is recommended to plant new trees along the perimeter.

Natural Areas:
This site is a natural area surrounded by a neighborhood that is home to many bird species. Many bird nests and woodpecker homes were seen.

Erosion considerations:
This site is on slopes greater than 10 percent along the south side of the ridgeline. Development is being considered with this in mind. Soils should be evaluated to determine if soils are more prone to erosion. Tree removal in these areas could have implications on surface runoff. Erosion control measures will be required to prevent erosion. The design team, the Contractor, and the City will need to work together to ensure proper erosion control measures are put into place immediately following the removal of any of the trees along these slopes.

Recommendations:
Care shall be taken during construction around existing trees to remain. The location of significant roots can be determined during the planning phase and creative designs can be implemented to accommodate the expansion of these major roots. The goal to reduce impacts to the soil and root system can be achieved through various methods. Fencing will reduce impacts to the soil and root systems during construction. Excavation options to reduce root damage to the trees being preserved include hydraulic or air spading, horizontal boring, and hand digging for soil removal without cutting or damaging roots of 1-1/2-inches or larger. Horizontal boring at a depth of at least 24-inches is optimal. A thick layer of mulch should be applied to the zone of protection to feed the tree and keep moisture levels intact during the construction period.

Cut and Fill in and around existing tree roots can affect the overall health of the tree. While cut is most intrusive, as it directly eliminates an energy (food and water) source, fill can also impact feeder roots in trees. Trees are better equipped to adapt to fill than cut. If fill is required, it is recommended to keep fill materials at least 10-ft from the base of the tree and to infill either by hand or with use of heavy equipment where only the bucket enters the protected area, and the weight of the machinery stays

outside the tree protection area to avoid soil compaction. No more than 30% of the tree's root zone should be impacted with cut or fill for optimal health of the tree.

Tree protection measures and construction access accommodations shall be fine-tuned after the site design has been refined. Coordination between the arborist, planners/designers, and the contractor is critical to protecting the trees to remain to the greatest extent practicable. Respect for the designated protection zone is critical to ensure the long-term health of the tree. All too often I'll see the designated protection zone impacted for 'just a day' or 'just one time'. Impact using heavy equipment can severely impact the soils and can be all it takes to kill the tree 5 to 10 years down the road.

Living limbs shall be pruned for construction late in the dormant season or very early in spring before leaves form. Growth is maximized during these seasonal times and wounds will have the ability to close at a faster rate, meaning there will be less available time for pathogens to get established which cause more harm to the tree. Flowering trees should be pruned after blooming. Routine maintenance pruning of dead or dying branches can be done at any time.

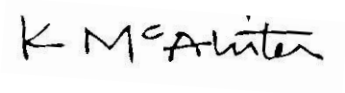
Tree removal is recommended if more than 30% of their critical root zones will be impacted to accommodate construction. The design team will identify trees to be removed.

To mitigate tree removal, the landscape plan should replace trees per jurisdictional requirement to restore the urban forest. Strategic planting of new trees could help windproof the remaining stand of trees.

Assumptions and Limiting Conditions:

- The data given in this report reflects an opinion of the conditions present on-site at the time of inspection. The inspection was limited to visual examination only without excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees on the property may not arise in the future.
- Care has been taken to obtain all information from reliable sources. The consultant can neither guarantee nor be responsible for the accuracy and completeness of the information provided by others.
- Consultant shall not be required to give testimony or to attend court by reason of any report unless subsequent contractual arrangements are made, including payment of additional fees.
- Missing pages or alteration of any report invalidates entire report.
- Possession of a report does not imply a right of publication without the written consent of the consultant.
- Neither all nor any part of the contents of this report, nor a copy thereof, shall be conveyed to the public through advertising, public relations, news, sales or other media, or for a larger database without the expressed written consent of the consultant.

Regards,



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UPDATE:

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