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- Preliminary Tree Protection Plan -

FREEMAN LOGISTICS

Freeman Road East
Puyallup, WA

Prepared for: Vector Development Company

Prepared by: Washington Forestry Consultants, Inc.

Report Date: October 14, 2022

Introduction

The project proponent is planning to construct two distribution warehouses on 23.68-acres on Freeman Road East in Puyallup, WA. The proponent has retained WFCI to:

- Evaluate and inventory all trees over 15 inches DBH on the site with the exception of red alder and black cottonwood.
- Make recommendations for retention of significant trees, along with any required protection and cultural measures.

Observations

Methodology

WFCI has evaluated all 'significant' trees 15 inches diameter at breast height (DBH) and larger in the proposed project area and assessed their potential to be incorporated into the new project. Note that red alder (*Alnus rubra*) and black cottonwood (*Populus trichocarpa*) were not evaluated as part of this project.

The tree evaluation phase used methodology developed by Matheny and Clark in their 1998 publication[1] and the International Society of Arboriculture Best management Practices for tree risk assessment[2]

[1] Nelda Matheny and Dr. James Clark. 1998. *Trees and Development: A Technical Guide to Preservation of Trees during Land Development.* International Society of Arboriculture. Champaign, IL.
[2] Smiley, E. Thomas, Nelda Matheny, and Sharon Lilly. 2011. *Best Management Practices: Tree Risk Assessment.* International Society of Arboriculture. Champaign, IL.

Site Description

The project area consists of 15 parcels totaling 23.68 acres. The site is bordered by a single-family home and vacant lot to the north, vacant land and commercial property to the east, 19th Avenue NW to the south and Freeman Road East to the west. The topography of the project area is flat. There are multiple homes located on the parcels. Many homes shown on the air photos have recently been removed. The site was also used as agricultural fields.

Freeman Logistics Parcel List

Parcel	Address	Acres
0420174075	4723 FREEMAN RD E	5.41
0420201040	1817 22ND AVE NW	1.00
0420201039	4801 FREEMAN RD E	1.52
0420201066	4815 FREEMAN RD E	0.36
0420201052	4827 FREEMAN RD E	0.45
0420201034	4823 FREEMAN RD E	0.51
0420205016	1809 22ND AVE NW	1.00
0420205017	1801 22ND AVE NW	1.06
0420201101	1805 19TH AVE NW	4.93
0420201045	4917 FREEMAN RD E	0.66
0420205003	5117 FREEMAN RD E	1.72
0420201027	4923 FREEMAN RD E	1.13
0420201042	1904 22ND AVE NW	1.31
0420205004	5109 FREEMAN RD E	0.71
0420201036	5005 - 5001 FREEMAN RD E	1.91
		23.68

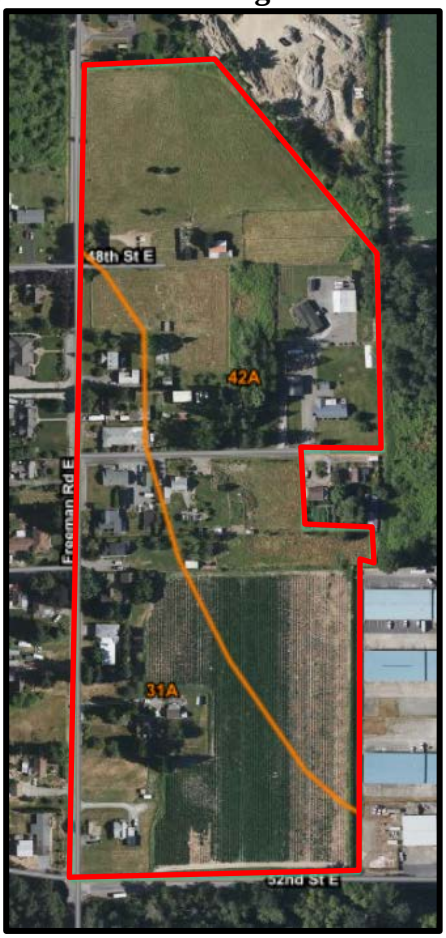
Soil Depth and Productivity

According to the USDA Web Soil Survey, there are two soil types on this site: the Puyallup fine sandy loam and the Sultan silt loam. Descriptions of each soil type are provided below.

31A – Puyallup fine sandy loam, a deep, well-drained soil on terraces. It formed in alluvium outwash. Permeability is moderately rapid. Available water capacity is moderate. The effective rooting depth for trees is more than 80 inches. A seasonal high-water table fluctuates between depths of 48 - 79 inches from December to March. Runoff is slow and the hazard to erosion is slight. Windthrow potential is rated as ‘slight’.

42A – Sultan silt loam, a very deep, moderately drained soil on flood plains. It formed in alluvium outwash. Permeability is moderately high. The available water capacity for plants is high. The effective rooting depth for trees is 80 inches or more. Runoff is slow and the hazard of water erosion is slight. The soil is subject to frequent, very brief periods of flooding in winter.

Figure 1. Freeman Logistics Soils Map.



Tree Conditions

There is one forest cover type on this site for purposes of description. A 100% inventory of all trees 15 inches DBH and larger (significant trees) was conducted to determine the composition and health of the forest. Non-significant species and sizes (<15 inches DBH) exist on site as well. The non-significant species are mostly smaller landscape and old fruit trees.

Type I. -- This type convers the entire project area. Trees in the type include landscape trees, old fruit trees, and naturally seeded native trees. The type is mostly old farm fields with scattered trees across the landscape. There are 38 significant trees and many other smaller trees. Tree species in the type include apple (*Malus spp.*), Arizona cypress (*Cupressus arizonica*), bigleaf maple (*Acer macrophyllum*), black locust (*Robinia pseudoacacia),* Colorado blue spruce (*Picea* pungens), cypress (*Cupressus spp.*), Douglas-fir (Pseudotsuga menziesii), English walnut (*Juglans regia*), European birch (*Betula pendula*), grand fir (*Abies grandis*), Japanese maple (*Acer palmatum*), Japanese umbrella pine (*Sciadopitys verticillate*), magnolia (*Magnolia spp.*), monkey puzzle tree (*Araucaria Araucana*), noble fir (*Abies procera*), Oregon ash (*Fraxinus latifolia*), tulip poplar (*Liriodendron tulipifera*), weeping willow (*Salix babylonica*), western redcedar (*Thuja plicata*), and western white pine (*Pinus monticola*).



Photo 1. View of scattered trees and open area in Cover Type I on the Freeman Logistics Site.

A total of 38 significant trees were found in the type, ranging in diameter from 15 to 68 inches DBH. Twenty-five (25) of the trees were classified as sound, healthy, long-term trees mostly in the dominant and co-dominant crown class. The other 13 trees are not long-term trees due to structural defects or poor health (dead, diseased, or hazardous).

Table 1. Summary of Significant Trees in Type I.

Species	DBH Range (in)	Condition Range	# of Healthy Trees	# of Trees in Poor Health*	Total # of Trees
Apple	16 – 18	Fair – Poor	2	1	3
Arizona Cypress	18 – 25	Fair	3	0	3
Bigleaf Maple	68	Very Poor	0	1	1
Black Locust	38	Very Poor	0	1	1
Colorado Blue Spruce	15	Fair	1	0	1
Cypress	29 – 43	Fair	2	0	2
Douglas-fir	18 – 44	Good – Poor	4	5	9
English Walnut	34	Fair	1	0	1

Species	DBH Range (in)	Condition Range	# of Healthy Trees	# of Trees in Poor Health*	Total # of Trees
European Birch	16	Fair	1	0	1
Grand Fir	17 – 44	Fair – Poor	1	2	3
Japanese Maple	18	Good	1	0	1
Japanese Umbrella Pine	23	Fair	1	0	1
Magnolia	15	Fair	1	0	1
Monkey Puzzle	36	Fair	1	0	1
Noble Fir	29	Fair	1	0	1
Oregon Ash	18 – 30	Fair – Very Poor	1	1	2
Tulip Poplar	29	Poor	0	1	1
Weeping Willow	52	Poor	0	1	1
Western Redcedar	43 – 48	Fair	2	0	2
Western White Pine	23 – 42	Fair	2	0	2
Sum	**15 - 68**		**25**	**13**	**38**

**Dead, diseased, or hazardous.*

The understory plants include multiple grasses, forbs, Himalayan blackberry (*Rubus armeniacus*).

Off-Site Impacts

Tree removal on this parcel will not impact any trees on the surrounding parcels.

Recommendations

Tree Retention

The grading and site utilization of the site will require removing all trees on the site. No trees are planned to be retained.

Tree Protection Measures

Trees to be saved must be protected during construction by a six-foot-high chain link fencing (Attachment #7), located at the edge of the critical root zone (CRZ). Placards shall be placed on the fencing every 50 feet indicating the words, "NO TRESPASSING - Protected Trees". The individual CRZ are a radius of one foot for each one inch of DBH (6 feet minimum), unless otherwise delineated by WFCI (see Attachment #3).

Tree protection fences should be placed around the edge of the critical root zone (CRZ). The fence should be erected after logging but prior to the start of clearing. The fences should be maintained until the start of the landscape installation.

There should be no equipment activity (including rototilling) within the critical root zone. No irrigation lines, trenches, or other utilities should be installed within the CRZ. Cuts or fills should impact no more than 20% of a tree's root system. If topsoil is added to the root zone of a protected tree, the depth should not exceed 2 inches of a sandy loam or loamy fine sand topsoil and should not cover more than 20% of the root system.

If roots are encountered outside the CRZ during construction, they should be cut cleanly with a saw and covered immediately with moist soil. Noxious vegetation within the critical root zone should be removed by hand. If a proposed save tree must be impacting by grading or fills, then the tree should be re-evaluated by WFCI to determine if the tree can be saved with mitigating measures, or if the tree should be removed.

Pruning and Thinning

All individual trees to be saved near or within developed areas should have their crowns raised to provide a minimum of 8 feet of ground clearance over sidewalks and landscape areas, 15 feet over parking lots or streets, and at least 10 feet of building clearance.

All pruning should be done according to the ANSI A300 standards for proper pruning, and be completed by an International Society of Arboriculture Certified Arborist®, or be supervised by a Certified Arborist®.

Conclusions and Timeline for Activity

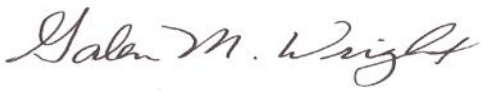
1. The final, approved tree protection plan map should be included in the construction drawings for bid and construction of the project and should be labeled as such.
2. Stake and heavily flag the clearing limits.
3. Contact WFCI to attend pre-job conference and discuss tree protection issues with contractors. WFCI can verify all trees to be saved and/or removed are adequately marked for retention.
4. Complete logging. Complete necessary hazard tree removals from within the tree protection areas along with invasive plant removals from the tree protection areas. No equipment should enter the tree protection areas during logging.
5. Install tree protection fences along the 'limits of construction'. The fences should be located at the limits of construction or 5 feet outside of the dripline of the save tree or as otherwise specified by WFCI. Maintain fences throughout construction.
6. Complete clearing of the project.
7. Do not excavate stumps within 10' of trees to be saved. These should be individually evaluated by WFCI to determine the method of removal.
8. Complete all necessary pruning on save trees or stand edges to provide at least 8' of ground clearance near sidewalks and trails, and 15' above all driveways or access roads.
9. Complete grading and construction of the project.

Summary

Of the 38 significant trees onsite, 13 were in poor condition, leaving 25 healthy significant trees. There are smaller landscape trees among the significant trees. No trees are planned to be retained on the project because of site utilization.

Please give us a call if you have any questions.

Respectfully submitted,



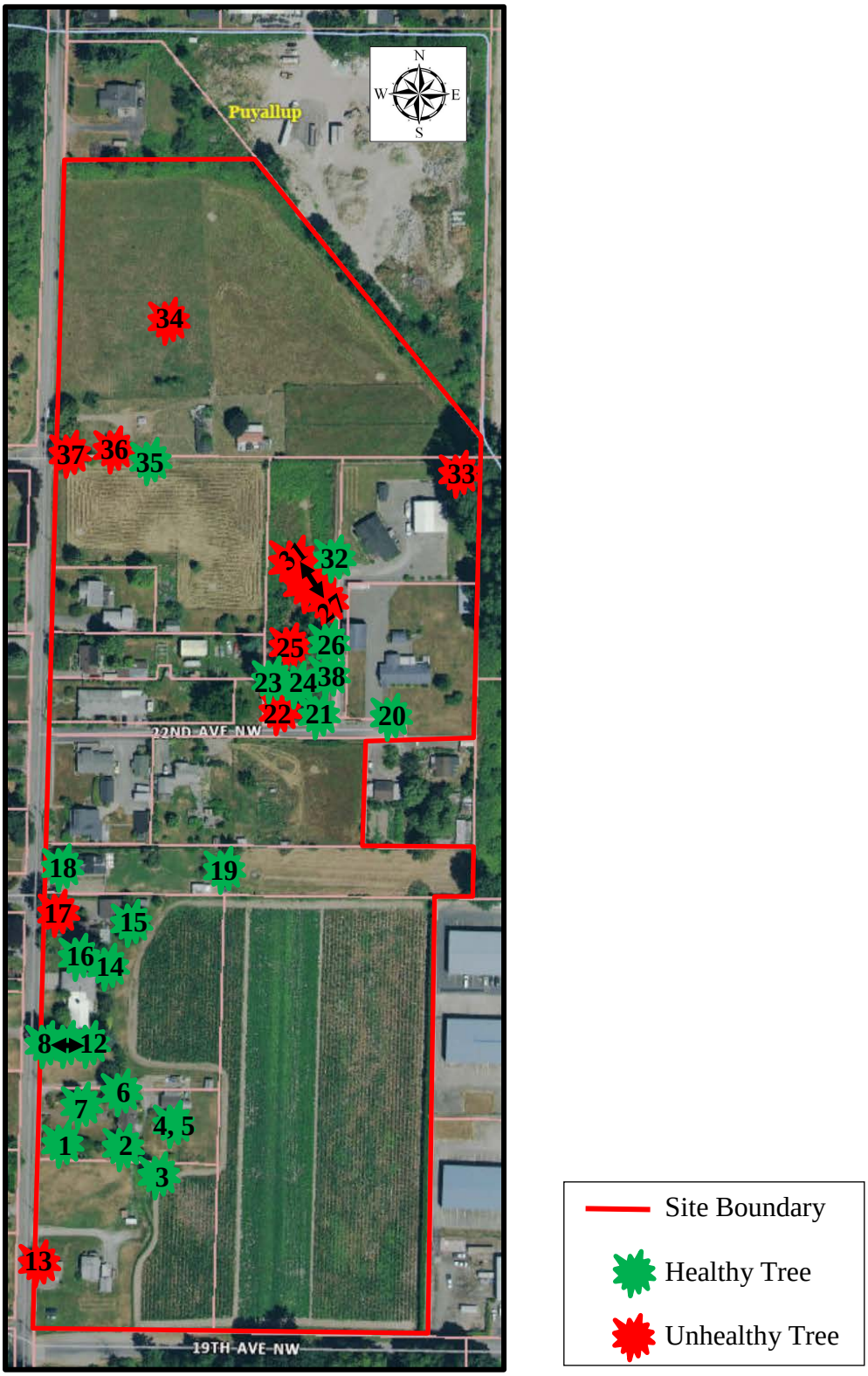


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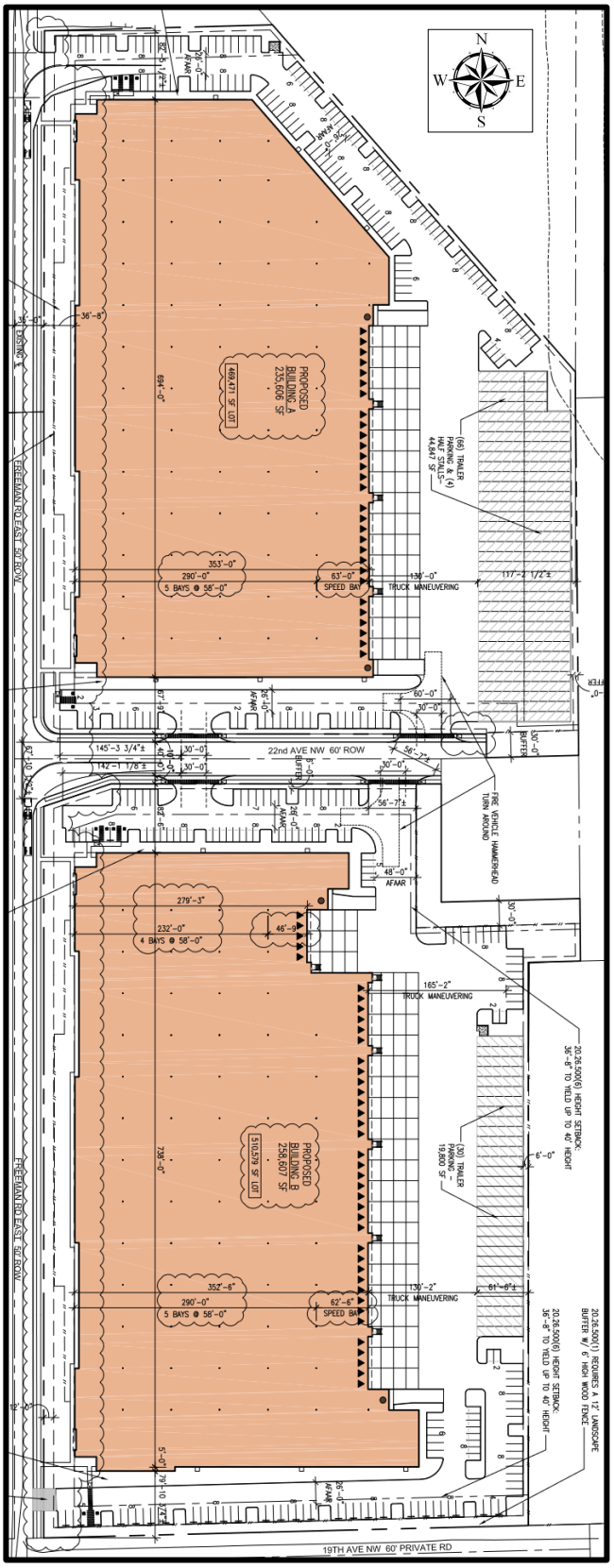
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Attachment #1: Aerial Photo of Freeman Logistics Site with Tree Locations

(Pierce County PublicGIS)



Attachment #2. Freeman Logistics Site Plan



Attachment #3 Freeman Logistics Significant Tree List

Tree #	Species	DBH (in)	Condition	Min. RPZ (ft.)	Potential for Retention based only on Tree condition - Yes or No	Project Plan – Save or Remove	Comment
1	Japanese Maple	18	Good	9	Yes	Remove	
2	Western Redcedar	48	Fair	24	Yes	Remove	
3	Douglas-fir	40	Good	20	Yes	Remove	
4	Magnolia	15	Fair	8	Yes	Remove	
5	Apple	18	Fair	9	Yes	Remove	
6	Cypress	43	Fair	22	Yes	Remove	
7	Cypress	29	Fair	15	Yes	Remove	
8	Western White Pine	42	Fair	21	Yes	Remove	
9	Western White Pine	32	Fair	16	Yes	Remove	
10	Grand Fir	17	Fair	9	Yes	Remove	
11	Japanese Umbrella Pine	23	Fair	12	Yes	Remove	
12	Noble Fir	29	Fair	15	Yes	Remove	
13	Douglas-fir	32	Poor		No	Remove	topped for powerline
14	Douglas-fir	44	Fair	22	Yes	Remove	
15	English Walnut	34	Fair	17	Yes	Remove	
16	Western Redcedar	43	Fair	22	Yes	Remove	
17	Bigleaf Maple	68	Very Poor		No	Remove	overmature, decline
18	Monkey Puzzle	36	Fair	18	Yes	Remove	
19	Apple	18	Fair	9	Yes	Remove	
20	Colorado Blue Spruce	15	Fair	8	Yes	Remove	
21	Grand Fir	36	Poor		No	Remove	decline
22	Grand Fir	44	Poor		No	Remove	decline

Tree #	Species	DBH (in)	Condition	Min. RPZ (ft.)	Potential for Retention based only on Tree condition - Yes or No	Project Plan – Save or Remove	Comment
23	Arizona Cypress	20	Fair	10	Yes	Remove	
24	Arizona Cypress	18	Fair	9	Yes	Remove	
25	Tulip Poplar	29	Poor		No	Remove	previous top failure
26	Douglas-fir	19	Fair	10	Yes	Remove	
27	Douglas-fir	30	Poor		No	Remove	root damage, decline
28	Douglas-fir	18	Poor		No	Remove	root damage, decline
29	Douglas-fir	19	Poor		No	Remove	root damage, decline
30	Douglas-fir	19	Poor		No	Remove	root damage, decline
31	Douglas-fir	22	Fair	11	Yes	Remove	
32	Oregon Ash	18	Fair	9	Yes	Remove	
33	Oregon Ash	30	Very Poor		No	Remove	animal damage, stem decay
34	Apple	16	Poor		No	Remove	
35	European Birch	16	Fair	8	Yes	Remove	
36	Weeping Willow	52	Poor		No	Remove	stem decay
37	Black Locust	38	Poor		No	Remove	stem decay
38	Arizona Cypress	25	Fair	13	Yes	Remove	

Attachment #4: Individual Tree Rating Key for Tree Condition

RATING	SYMBOL	DEFINITION
Very Good	**VG**	• Balanced crown that is characteristic of the species • Normal lateral and terminal branch growth rates for the species and soil type • Stem sound, normal bark vigor • No root problems • No insect or disease problems • Long-term, attractive tree
Good	**G**	• Crown lacking symmetry but nearly balanced • Normal lateral and terminal branch growth rates for the species and soil type • Minor twig dieback O.K. • Stem sound, normal bark vigor • No root problems • No or minor insect or disease problems – insignificant • Long-term tree
Fair	**F**	• Crown lacking symmetry due to branch loss • Slow lateral and terminal branch growth rates for the species and soil type • Minor and major twig dieback – starting to decline • Stem partly unsound, slow diameter growth and low bark vigor • Minor root problems • Minor insect or disease problems • Short-term tree 10-30 years
Poor	**P**	• Major branch loss – unsymmetrical crown • Greatly reduced growth • Several structurally import dead or branch scaffold branches • Stem has bark loss and significant decay with poor bark vigor • Root damage • Insect or disease problems – remedy required • Short-term tree 1-10 years
Very Poor	**VP**	• Lacking adequate live crown for survival and growth • Severe decline • Minor and major twig dieback • Stem unsound, bark sloughing, previous stem or large branch failures, very poor bark vigor • Severe root problems or disease • No or minor insect or disease problems • Mortality expected within the next few years
Dead	**DEAD**	• Dead

Cultural Care Needs:

ABBRV.	ACTIVITY	DESCRIPTION
CC	**Crown Cleaning**	Pruning of dead, dying, diseased, damaged, or defective branches over 1/2 inch in diameter –includes removal of dead tops
CT	**Crown Thinning**	Pruning of branches described in crown cleaning, plus thinning of up to 20% of the live branches over ½ inch diameter. Branch should be 1/3 to ½ the diameter of the lateral branch. Thinning should be well distributed throughout crown of tree, and should release healthy, long-term branches.
RC	**Crown Reduction**	Reduction of the crown of a tree by pruning to lateral branches. Generally used to remove declining branches or to lighten end weight on long branches.
CR	**Crown Raising**	Pruning of lower branches to remove deadwood or to provide ground or building clearances.
RMV	**Remove**	Remove tree due to decline or hazardous conditions that cannot be mitigated by pruning.
RS	**Remove Sprouts**	Remove basal sprouts from stem of tree.
Rep	**Replace**	Tree is small – is in decline or dead. Replace with suitable tree species.
HT	**Hazard Tree**	Tree is hazardous and cannot be mitigated by pruning. Recommendation is to remove tree.
None	**No Work**	No work necessary at this time.

Attachment #5: Description of Tree Evaluation Methodology

The evaluation of the tree condition on this site included the visual assessment of:

1. Live-crown ratio,
2. Lateral and terminal branch growth rates,
3. Presence of dieback in minor and major scaffold branches and twigs,
4. Foliage color,
5. Stem soundness and other structural defects,
6. Visual root collar examination,
7. Presence of insect or disease problems.
8. Windfirmness if tree removal will expose this tree to failure.

In cases where signs of internal defect or disease were suspected, a core sample was taken to look for stain, decay, and diameter growth rates. Also, root collars were exposed to look for the presence of root disease.

In all cases, the overall appearance of the tree was considered relative to its ability to add value to either an individual lot or the entire subdivision. Also, the scale of the tree and its proximity to both proposed and existing houses was considered.

Lastly, the potential for incorporation into the project design is evaluated, as well as potential site plan modifications that may allow otherwise removed tree(s) to be both saved and protected in the development.

Trees that are preserved in a development must be carefully selected to make sure that they can survive construction impacts, adapt to a new environment, and perform well in the landscape. Healthy, vigorous trees are better able to tolerate impacts such as root injury, changes in soils moisture regimes, and soil compaction than are low vigor trees.

Structural characteristics are also important in assessing suitability. Trees with significant decay and other structural defects that cannot be treated are likely to fail. Such trees should not be preserved in areas where damage to people or property could occur.

Trees that have developed in a forest stand are adapted to the close, dense conditions found in such stands. When surrounding trees are removed during clearing and grading, the remaining trees are exposed to extremes in wind, temperature, solar radiation, which causes sunscald, and other influences. Young, vigorous trees with well-developed crowns are best able to adapt to these changing site conditions.

Attachment #6: Glossary of Forestry and Arboricultural Terminology

DBH: Diameter at Breast Height (measured 4.5 ft. above the ground line on the high side of the tree).

Caliper: In Issaquah - Caliper is referring to diameter measurement at DBH.

Live Crown Ratio: Ratio of live foliage on the stem of the tree. Example: A 100' tall tree with 40 feet of live crown would have a 40% live crown ratio. Conifers with less than 30% live crown ratio are generally not considered to be long-term trees in forestry.

Crown: Portion of a trees stem covered by live foliage.

Crown Position: Position of the crown with respect to other trees in the stand.

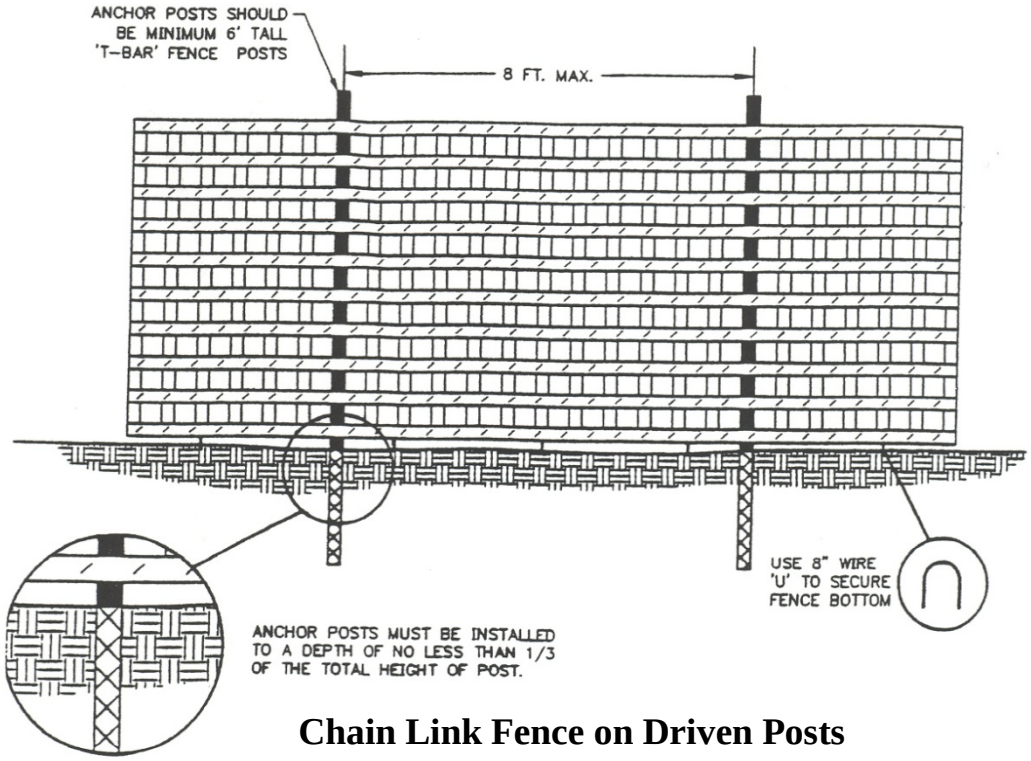
Dominant Crown Position: Receives light from above and from the sides.

Codominant Crown Position: Receives light from above and some from the sides.

Intermediate Crown Position: Receives little light from above and none from the sides. Trees tend to be slender with poor live crown ratios.

Suppressed Crown Position: Receives no light from above and none from the sides. Trees tend to be slender with poor live crown ratios.

Attachment #7: Tree Protection Fence Detail



Chain Link Fence on Driven Posts

THE TREE PROTECTION FENCE SHOULD BE MAINTAINED THROUGHOUT THE CONSTRUCTION AND GRADING, AND NOT TO BE REMOVED UNTIL FINAL LANDSCAPING IS IN PROGRESS. AT NO TIME SHALL EQUIPMENT ENTER INTO THE ROOT PROTECTION ZONE (RPZ). ALL BRUSH CLEANUP WITHIN THE RPZ SHOULD BE COMPLETED BY HAND TO PREVENT DISTURBANCE OF NATIVE GROUND COVERS NO CUTS OR FILLS, UTILITY TRENCHING, MODIFICATIONS TO DRAINAGE, OR CONCRETE RISE WATER SHOULD IMPACT THE RPZ. NO WIRES, CABLES, OR OTHER DEVICES SHOULD BE ATTACHED TO PROTECTED TREES DURING CONSTRUCTION.

IF IMPACTS MUST OCCUR WITHIN THE RPZ, CONTACT WFCI PRIOR TO THE OPERATIONS TO DETERMINE THE PROPER PROCEDURE TO PROTECT THE TREE'S HEALTH.

Attachment #8: Assumptions and Limiting Conditions

1) Any legal description provided to the Washington Forestry Consultants, Inc. is assumed to be correct. Any titles and ownership's to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.

2) It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations, unless otherwise stated.

3) Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, Washington Forestry Consultants, Inc. can neither guarantee nor be responsible for the accuracy of information.

4) Washington Forestry Consultants, Inc. shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

5) Loss or alteration of any part of this report invalidated the entire report.

6) Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of Washington Forestry Consultants, Inc.

7) Neither all or any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of Washington Forestry Consultants, Inc. -- particularly as to value conclusions, identity of Washington Forestry Consultants, Inc., or any reference to any professional society or to any initialed designation conferred upon Washington Forestry Consultants, Inc. as stated in its qualifications.

8) This report and any values expressed herein represent the opinion of Washington Forestry Consultants, Inc., and the fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence neither of a subsequent event, nor upon any finding in to reported.

9) Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.

10) Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree or other plant or property in question may not arise in the future.

Note: Even healthy trees can fail under normal or storm conditions. The only way to eliminate all risk is to remove all trees within reach of all targets. Annual monitoring by an ISA Certified Arborist or Certified Forester will reduce the potential of tree failures. It is impossible to predict with certainty that a tree will stand or fail, or the timing of the failure. It is considered an 'Act of God' when a tree fails, unless it is directly felled or pushed over by man's actions.