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WASHINGTON FORESTRY CONSULTANTS, INC.
FORESTRY AND VEGETATION MANAGEMENT SPECIALISTS
W F C I
O: 360/943-1723
C: 360/561-4407
9136 Yelm Hwy SE
Olympia, WA 98513

- Tree Assessment -

SESQUALITCHEW CREEK RESTORATION

1700 Civic Drive
DuPont, WA 98327

Prepared for: Anchor QEA

Prepared by: Washington Forestry Consultants, Inc.

Date of Report: March 6, 2023

The project proponent is planning to replace two fish blockage culverts and regrade a portion of Sequalitchew Creek as part of a watershed restoration project in DuPont, WA. The proponent has retained WFCI to:

- Inventory and evaluate all trees that will be impacted by the Sequalitchew Trail project.
- Make recommendations for retention of significant trees, along with any required protection and cultural measures.

Observations

Methodology

WFCI has evaluated all trees ≥6-inches diameter at breast height (DBH) in the project areas identified on site plans provided by Anchor QEA. The subject trees were identified as being impacted by construction activities associated with the Sequalitchew Trail improvements project. This includes three areas of assessment: the Robison Trail Bridge site, the Dry Reach Restoration site, and the City Hall Culvert Removal/Pedestrian Bridge site.

All trees were numbered in the field with a number painted at its base. Healthy trees were numbered with blue paint and unhealthy trees in orange paint.

In all cases, the overall appearance of the tree was considered relative to its ability to add value to the site and the scale of the tree and its proximity to other developments is considered. The

potential for incorporation into the project design is evaluated, as well as potential site plan modifications that may allow the tree(s) to be protected.

Trees that are preserved 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.

The tree evaluation phase used methodology developed by Nelda Matheny and Dr. James Clark in their 1998 publication Trees and Development: A Technical Guide to Preservation of Trees during Land Development.

Robison Trail Bridge Site

This area of the project is part of an old railroad grade that extends across Edmund Marsh. The rail bed was originally constructed with dirt fill placed over the native vegetation. The planned restoration is to remove a 70-foot section of the grade and replacing it with a bridge to allow more free flowing water through Sequalitchew creek. Minor soil filling will also occur to adequately slope the new bridge approaches.

The trees in this area are all red alder (*Alnus rubra*) growing along the sides of the grade. The tree diameters range in size from 6 to 26 inches in DBH. Tree conditions are mostly 'Fair' with one tree in 'Poor' condition. Tree locations are shown on the site plan in Attachment 1. The growth structure of the trees is stunted because of the poor, wet soils and lots of branches due limited photosynthetic competition from surrounding trees.

The soil removal for the project will damage the root systems of all 8 assessed trees. They will all need to be removed to complete the project. The removed trees will be used to improve fish habitat in Sequalitchew Creek downstream of Edmond Marsh. Branches from overhanging trees approaching the site will need pruning to allow access for the construction equipment.

Table 1. List of Assessed Trees in the Robison Trail Bridge Site.

Tree #	Species	DBH (in.)	Condition	Dripline (ft.)	Project: Save/ Remove	Critical Root Zone (ft.)	Notes
1	Red Alder	12	Fair	12	Remove	7	
2	Red Alder	6,7	Fair	8	Remove	6	
3	Red Alder	26	Fair	20	Remove	16	
4	Red Alder	6	Fair	10	Remove	6	
5	Red Alder	6	Fair	10	Remove	6	
6	Red Alder	7	Fair	10	Remove	6	

Tree #	Species	DBH (in.)	Condition	Dripline (ft.)	Project: Save/ Remove	Critical Root Zone (ft.)	Notes
7	Red Alder	13,16	Poor	30	Remove	12	16" stem is dead
8	Red Alder	12	Fair	15	Remove	7	

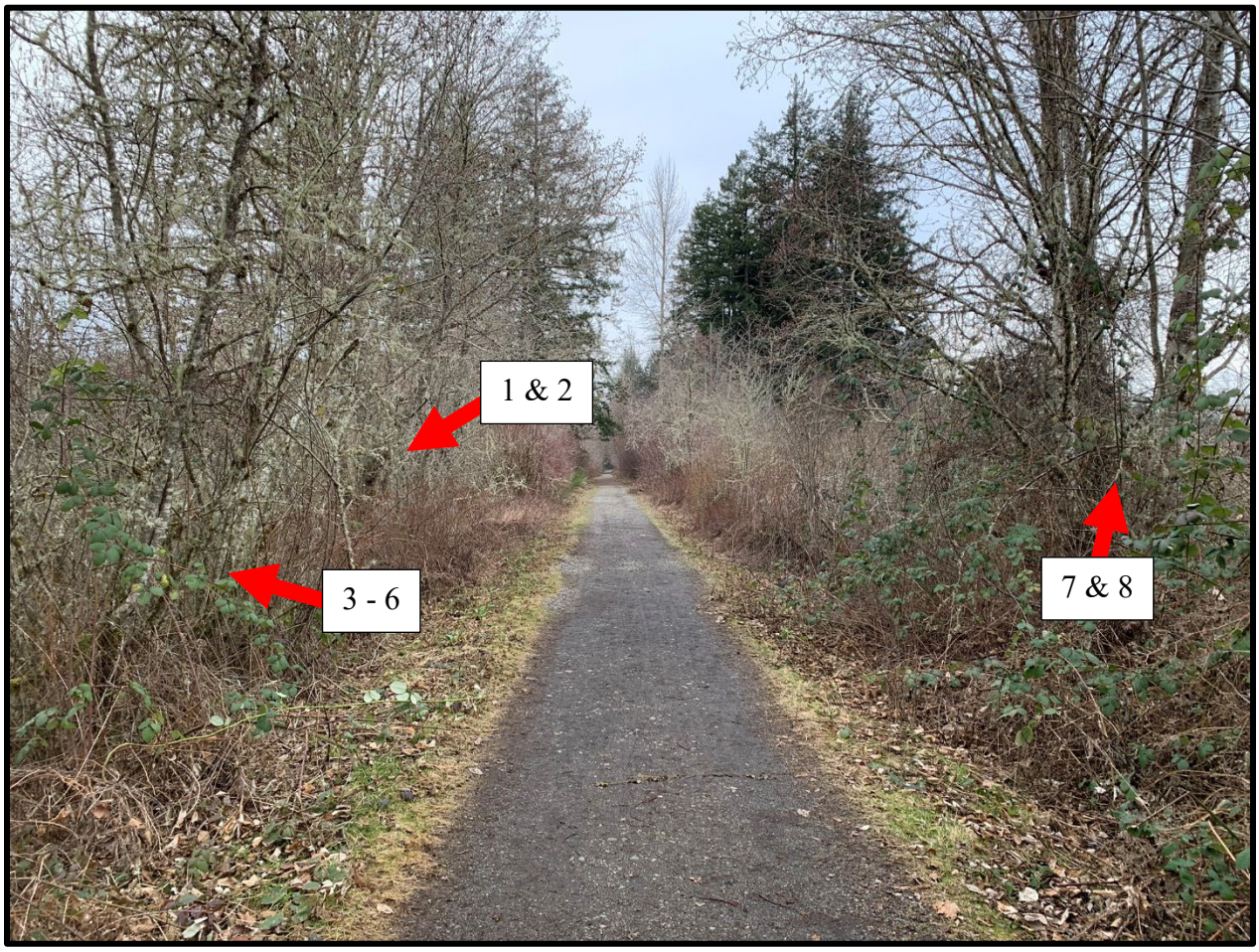


Photo A. View of tree removal trees at Robison Trail Bridge Site.

Dry Reach Restoration Site

The restoration at this site includes clearing and grading the creek bed to provide better water flow through this section of creek. There are three trees in this area of the project that will be impacted. They include one black cottonwood and two Oregon white oaks (*Quercus garryana*) between 7 and 15 inches DBH. The condition of all trees is 'Fair'. Tree locations are shown on the site plan in Attachment 2. The trees are located on the edges of the project boundary and the site plan shows fill grading around the trees. All these trees are young, healthy individuals that should be able to tolerate this small amount of root disturbance and can be retained. The root protection fences should be placed at the distance specified in Table 2.

Table 2. List of Assessed Trees in the Dry Reach Restoration Site.

Tree #	Species	DBH (in.)	Condition	Dripline (ft.)	Project: Save/ Remove	Critical Root Zone (ft.)	Notes
9	Black Cottonwood	15	Fair	15	Save	9	
10	Oregon White Oak	8	Fair	10	Save	15	
11	Oregon White Oak	7	Fair	8	Save	12	

City Hall Culvert Removal/Pedestrian Bridge Site

The proposed restoration at this site is to replace a failing culvert with a new 60-foot bridge to allow fish passage in Sequalitchew Creek. There will be tree and fill removal and the construction of new bridge abutments. Additional grading will occur along the sides of the creek up to Center Drive.

There were 37 trees identified as being impacted by the proposed work. Tree species in this area are Douglas-fir (*Pseudotsuga menziesii*), black cottonwood, Oregon white oak, bigleaf maple (*Acer macrophyllum*), Oregon ash (*Fraxinus latifolia*), and red oak (*Quercus rubra*) growing along the sides and in the streambed of Sequalitchew Creek. The tree diameters range in size from 8 to 55 inches in DBH. All but five trees are suitable for retention based on tree health. There are four Oregon white oak trees that will be removed for the project. Two of the white oak trees are considered a 'Significant' tree, over 12" DBH. The other two trees are 10" DBH. Tree locations are shown on the site plan in Attachment 3.

The soil removal and grading for the project will damage the root systems of up to 35 assessed trees and will require removal to complete the project. Removed trees will be used to improve fish habitat in this reach of Sequalitchew Creek. Two trees outside of the project boundaries will be impacted but can be retained.

Table 3. List of Assessed Trees in the City Hall Culvert Removal/Pedestrian Bridge Site.

Tree #	Species	DBH (in.)	Condition	Dripline (ft.)	Project: Save/ Remove	Critical Root Zone (ft.)	Notes
12	Red Oak	23	Fair	24	Save	14	Will be saved if possible

Tree #	Species	DBH (in.)	Condition	Dripline (ft.)	Project: Save/ Remove	Critical Root Zone (ft.)	Notes
13	Red Oak	22	Good	25	Save	13	Will be saved if possible
14	Black Cottonwood	26	Fair	26	Remove	16	
15	Douglas-fir	51	Fair	25	Remove	31	
16	Douglas-fir	22	Fair	23	Save	13	Will be saved if possible
17	Douglas-fir	41	Fair	28	Save	25	Will be saved if possible
18	Douglas-fir	44	Fair	28	Save	26	impact on north side of tree
19	Oregon White Oak	14	Fair	32	Save	8	no dripline to north
20	Douglas-fir	14	Poor	15	Save	8	Will be saved if possible
21	Douglas-fir	8	Poor	15	Save	5	Will be saved if possible
22	Douglas-fir	55	Fair	30	Save	33	Will be saved if possible
23	Douglas-fir	13	Fair	16	Save	8	Will be saved if possible
24	Douglas-fir	15	Fair	16	Save	9	Will be saved if possible
25	Douglas-fir	18	Dead	0	Remove	11	
26	Douglas-fir	24	Poor	15	Remove	14	
27	Bigleaf Maple	12	Fair	20	Remove	7	
28	Oregon Ash	22	Fair	22	Remove	13	
29	Douglas-fir	45	Fair	30	Save	27	Will be saved if possible
30	Douglas-fir	14	Fair	15	Save	8	Will be saved if possible
31	Douglas-fir	12	Fair	10	Remove	7	
32	Douglas-fir	13	Fair	10	Remove	8	
33	Douglas-fir	11	Fair	10	Remove	7	
34	Douglas-fir	15	Fair	12	Remove	9	
35	Oregon Ash	15	Poor	15	Remove	9	
36	Douglas-fir	35	Fair	25	Remove	21	
37	Douglas-fir	24	Fair	11	Remove	14	
38	Douglas-fir	24	Fair	15	Remove	14	
39	Douglas-fir	13	Fair	15	Remove	8	

Tree #	Species	DBH (in.)	Condition	Dripline (ft.)	Project: Save/ Remove	Critical Root Zone (ft.)	Notes
40	Douglas-fir	40	Fair	19	Remove	24	
41	Oregon White Oak	12	Fair	30	Remove	7	
42	Oregon White Oak	10	Fair	20	Remove	6	
43	Oregon White Oak	10	Fair	20	Remove	6	
44	Douglas-fir	13	Fair	17	Remove	8	
45	Douglas-fir	20	Fair	19	Remove	12	
46	Douglas-fir	11	Fair	10	Save	7	Will be saved if possible
47	Douglas-fir	25	Fair	19	Remove	15	
48	Douglas-fir	15	Fair	15	Remove	9	

Photo B. View trees to be removed at the City Hall Culvert Removal/Pedestrian Bridge Site.

Tree Protection Measures

Trees to be saved must be protected during construction by four-foot-high orange mesh fencing (Attachment 3), located at the edge of the critical root zones (CRZ) described in the tables.

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 CRZ. 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 impacted 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

For healthy individual trees that are to be saved near buildings, access roads and parking lots, the trees 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®.

Summary

Three sites on Sequalitchew Creek will be restored to enhance salmon habitat. Forty-eight trees will be impacted from proposed restoration. Thirty-one of the trees will need to be removed to complete the proposed project. Seventeen trees have the potential to be retained and will need tree protection fences placed at the distance specified in associated tables for each site.

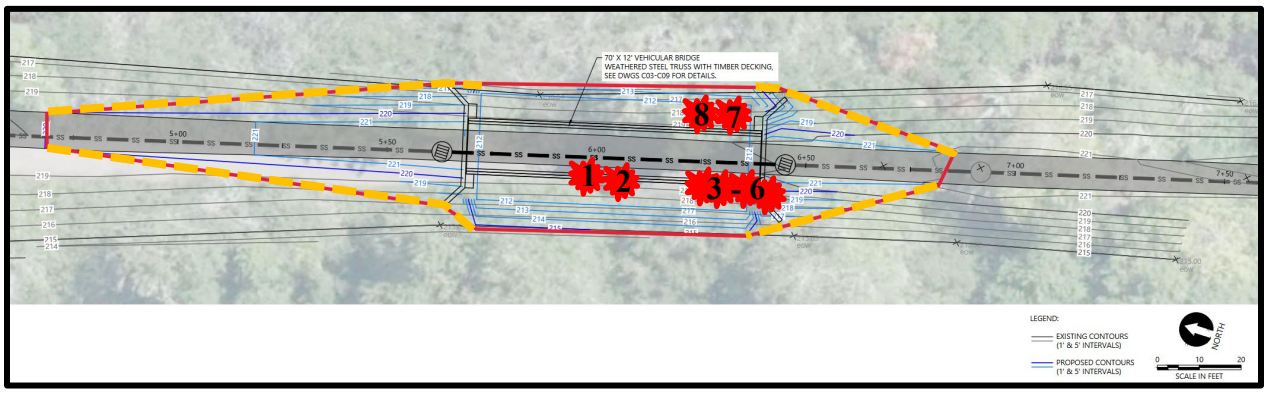
Please give us a call if you have any questions.

Respectfully submitted,

Galen M. Wright, ACF, ASCA
ISA Bd. Certified Master Arborist PN-129BU
Certified Forester No. 44
ISA Tree Risk Assessor Qualified

Joshua Sharpes
Professional Forester
ISA Certified Arborist
Municipal Specialist, PN-5939AM
ISA Tree Risk Assessor Qualified

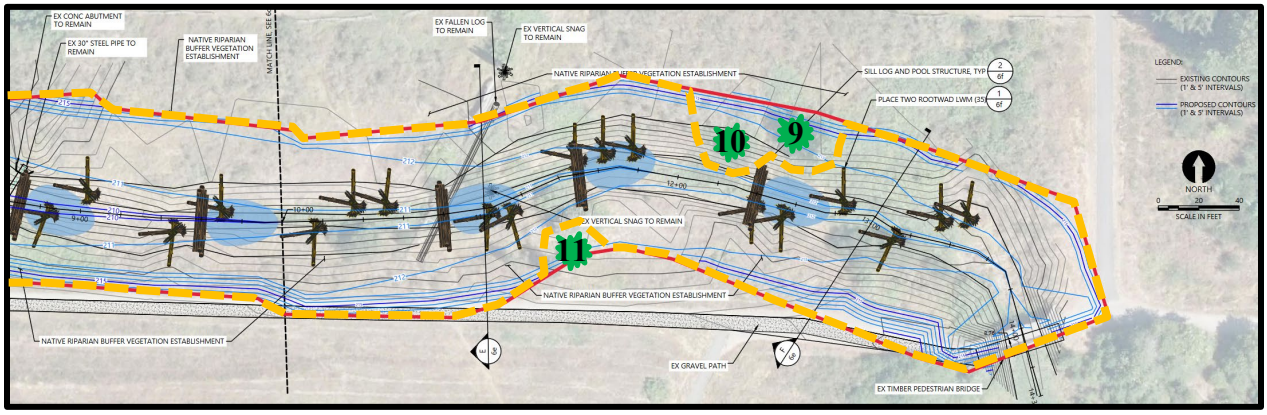
Attachment 1. Robison Trail Bridge Site with Assessed Tree Locations.



Tree to Remove for Project

Tree Protection Fence Location

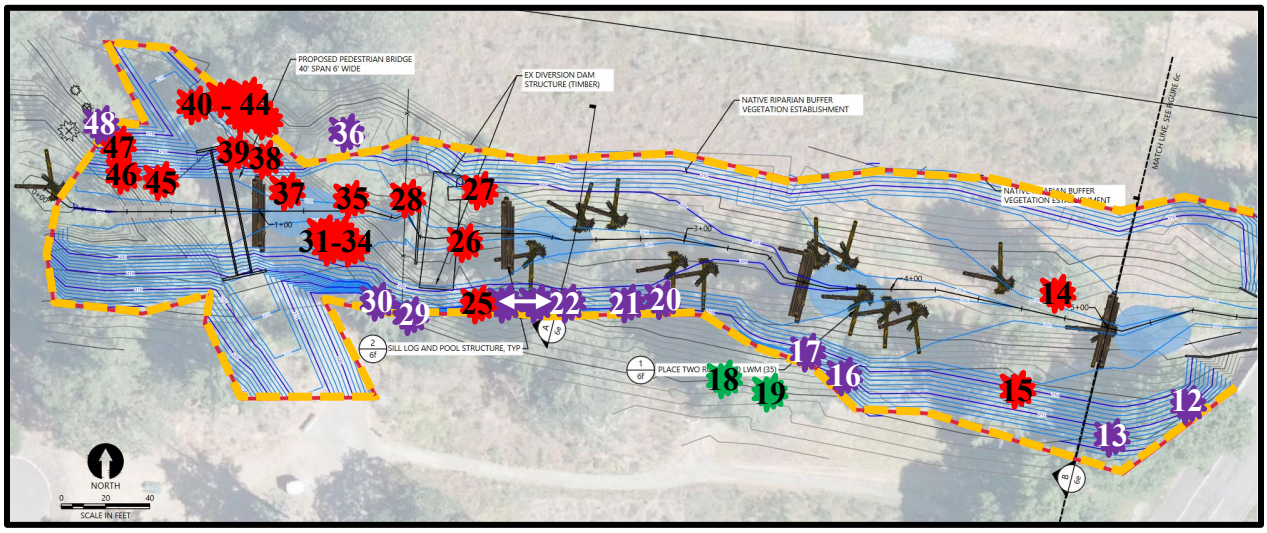
Attachment 2. Dry Reach Restoration Site with Assessed Tree Locations



Tree to Save for Project

Tree Protection Fence Location

Attachment 3. City Hall Culvert Removal/Pedestrian Bridge Site with Assessed Tree Locations



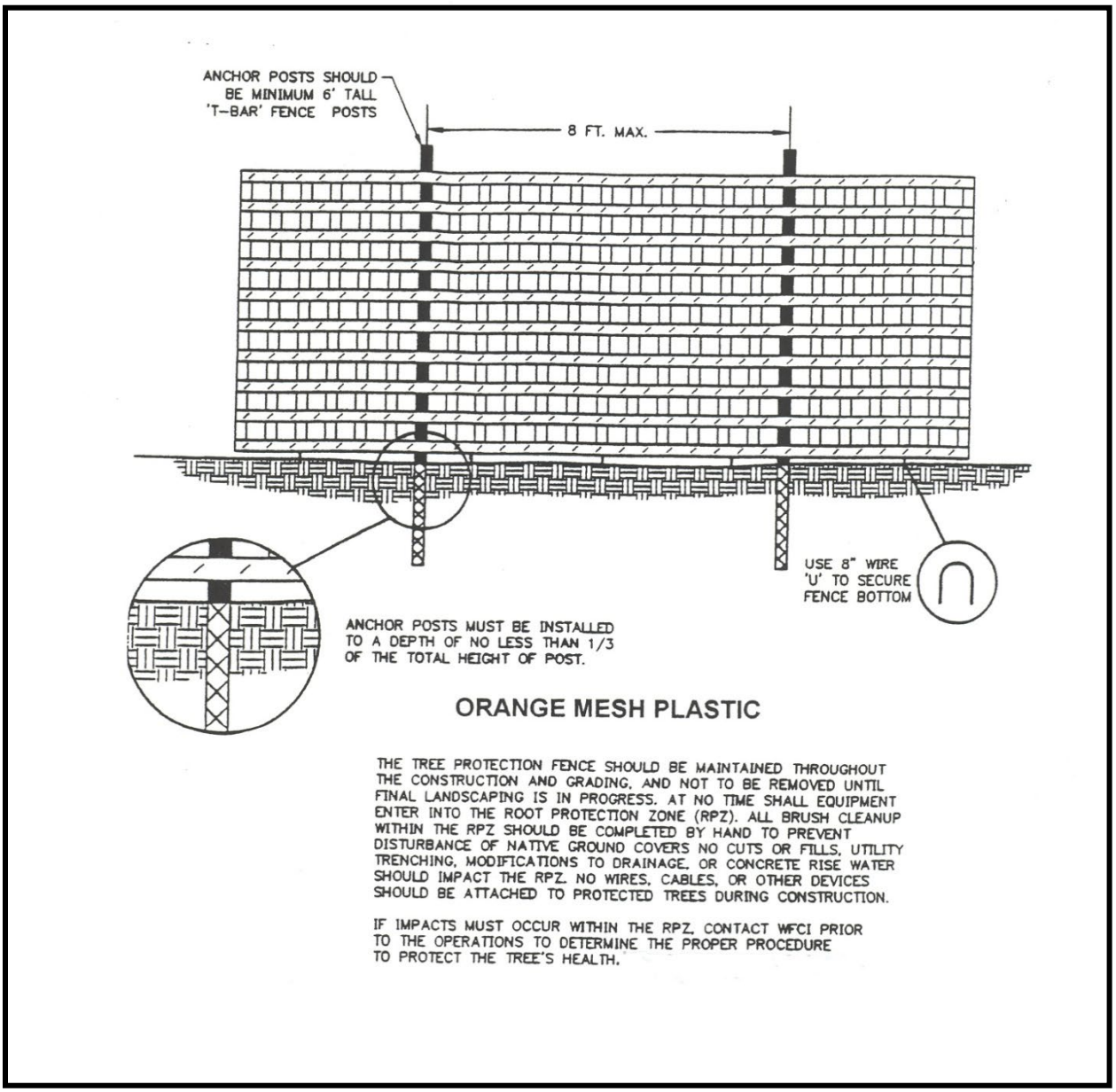
Tree to Save for Project

Tree to Remove for Project

Potential Save Tree – Future design development will focus on avoiding and minimizing impacts to trees to the extent practicable.

Tree Protection Fence Location

Attachment 4. Tree Protection Fence Detail



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. 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.