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FORESTRY AND VEGETATION MANAGEMENT SPECIALISTS



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- Level V Tree, Soil, and Native Vegetation Protection and Replacement Plan -

LISTER GLEN

2020 Lister Road NE
Olympia, Washington

Prepared for: Eastside Funding, LLC
Prepared by: Washington Forestry Consultants, Inc.
Date of Report: June 3, 2024

Introduction

The project proponent is planning to construct a new 24 lot single-family project on one parcel totaling 4.77-acres at 2020 Lister Road NE in Olympia. The proponent has retained WFCI to:

- Evaluate all trees on the site pursuant to the requirements of Chapter 16.60 of the Olympia Tree, Soil, and Native Vegetation Protection and Replacement Plan Ordinance.
- Make recommendations for retention of suitable trees in open space or tree tract areas, along with required protection and cultural measures.
- Complete the required minimum stocking and tree replacement calculations.

Observations

Methodology

WFCI has evaluated all trees over 1 inch diameter at breast height (DBH) in the proposed project area and assessed its potential to be incorporated into the new project. Trees ≥ 6 " DBH were inventoried and numbered in the field. A complete tree list can be found in Attachment 3. Numbers of all smaller trees, 1-5 inches DBH, were only tallied. The tree evaluation phase used methodology developed by Matheny and Clark (1998)¹.

¹ Matheny, Nelda and James R. Clark. *Trees and Development: A Technical Guide to Preservation of Trees during Land Development*. International Society of Arboriculture, Champaign, IL 1998

Lister Glen – Final Tree Protection Plan

Site History

The project area consists of one parcel off Lister Road NE in Olympia, WA. The parcel was used as a homesite with the home built in 1964. The house and associated outbuildings have been removed from the site. The parcel is moderately forested with native tree species. The topography is flat in the western portion around the old home site to moderately steep slopes in the eastern side of the parcel. The site is surrounded by single-family homes to the north, east, and south and an undeveloped lot to the west. Access to the site is off Lister Road NE or Beaumont Drive NE.

Soil Depth and Productivity

According to the Natural Resource Conservation Service there are two soil types on the site. They are variants of the Indianola loamy sand.

The soil types are the Indianola loamy sand, very deep, somewhat excessively drained soil. It is formed in sandy glacial outwash on broad uplands. Permeability is rapid. The available water capacity for plants is low to moderate. The effective rooting depth for trees is 60 inches or more. The potential for windthrow of trees is *low* under normal conditions.

Figure 1. Soil Map of the Lister Glen Site.



47 – Indianola loamy sand 5 – 15% slope
48 – Indianola loamy sand 15 - 30% slope

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Existing Tree Conditions

There is one cover type on the site for the purposes of description.

Type I. – This 4.77-acre cover type is a moderately stocked, naturally seeded second-growth forest stand. Introduced species were planted around the old home site. Tree species include apple (*Malus spp.*), bigleaf maple (*Acer macrophyllum*), bird cherry (*Prunus avium*), Douglas-fir (*Pseudotsuga menziesii*), Japanese maple (*Acer palmatum*), mountain ash (*Sorbus americana*), Pacific dogwood (*Cornus nuttallii*), red alder (*Alnus rubra*), sycamore maple (*Acer pseudoplatanus*), western hawthorn (*Crataegus douglasii*), western hemlock (*Tsuga heterophylla*), and western redcedar (*Thuja plicata*). There are 181 trees in the type. Tree size ranges from 6 to 60 inches DBH. Tree condition ranges from ‘Dead’ to ‘Very Good’ with most trees described as being in ‘Good’ condition.

Table 1. Summary of Trees in Type I of the Project Site.

Species	DBH Range (in)	# Healthy Trees	# Unhealthy Trees	Total # of Trees
Apple	7 – 30	5	1	6
Bigleaf Maple	6 – 44	33	1	34
Bird Cherry	6 – 23	9	1	10
Douglas-fir	6 – 60	92	4	96
Japanese Maple	9	1	0	1
Mountain Ash	14 – 16	2	0	2
Pacific Dogwood	8 – 21	8	0	8
Red Alder	7 – 17	15	0	15
Sycamore Maple	14	1	0	1
Western Hawthorn	16	1	0	1
Western Hemlock	12 – 22	2	0	2
Western Redcedar	12 – 33	5	0	5
Sum	6 – 60	174	7	181

The understory plants that do occur are Indian plum (*Oemleria cerasiformis*), Scotch broom (*Cytisus scoparius*), bracken fern (*Pteridium aquilinum*), western hazelnut (*Corylus cornuta*), common snowberry (*Symphoricarpos alba*), sword fern (*Polystichum munitum*), Oregon grape (*Mahonia nervosa*), and Himalayan blackberry (*Rubus armeniacus*).



Photo 1. View of typical trees in Cover Type I on Lister Glen Site.

Sapling Tree Inventory

There were many small saplings on-site growing in the understory of the stand. The following is a summary of the sapling sized trees on this site:

Table 2. Summary of all saplings across the entire project site.

Species	DBH Range (in)	# Trees
Bigleaf Maple	1 – 5	183
Bird Cherry	1 – 5	120
Douglas-fir	1 – 5	177
Red Alder	1 – 5	154
Sum	1 – 5	634

The saplings are all considered to be in ‘Good’ condition.

Off-Site Impacts

Based on the proposed site plan no off-site trees will be impacted by tree removal or grading on this site.

Landmark and Specimen Trees

No Landmark Trees (Landmark Tree Ordinance) occur. One Pacific dogwood (tree #146) has been identified as a Specimen tree by the City of Olympia. The tree will be retained as part of the project.

Discussion and Recommendations

Potential for Tree Retention

There are 34 trees, representing 140.5 tree units, in the designated SVPAs of the project that will be retained. The proposed SVPAs have healthy soils, native trees, and existing ground cover typical of the site that will continue to be viable after development. The location of the SVPAs on the northern and southern property lines are the best places to retain existing trees on the site based on tree and soil health characteristics of the site. The SVPAs have ample space to plant the required replacement trees and will provide a visual screen between neighboring homes.

Minimum Density Calculations

The City of Olympia's *Tree, Soil and Native Vegetation Protection and Replacement Code* requires a tree density of 30 units per acre in the buildable area of the site.

The following is a summary of the estimated tree density planned.

Parcel Area	4.77 acres
ROW Dedication	<u>0.87 acres</u>
Buildable Area	3.90 acres
Minimum Density Required: (30 units/acre x 3.90-acres)	117.0 Tree Units
Potential Tree Retention: (34 trees)	140.5 Tree Units
Excess of Tree Retention:	+23.5 Tree Units

The city ordinance requires 117.0 tree units to be retained on the site after development. The site plan shows 34 trees worth 140.5 tree units to be retained on site creating an excess of the required minimum tree density. No additional replacement trees are required.

Tree Protection Measures

Trees to be saved must be protected during construction by temporary chain-link fencing on driven posts (Attachment 4), located at the edge of the tree protection zone (TPZ). The individual TPZ's are 1-foot of protection for every 1-inch diameter at DBH or otherwise delineated by WFCI. An on-site meeting with the City of Olympia forester approved a 30% reduction of TPZ for trees along the northern property line. Additional TPZ alterations to tree #'s 3 & 146 were authorized to be established at the driplines of the two save trees.

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 RPZ. 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 RPZ 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

Tree pruning may be required where sidewalks, access roads, or other improvements occur near saved trees. Crown-raising should be done to a height of 8' over sidewalks and 15' over driveways or streets to allow vehicles to pass without damaging branches. All new buildings should have at least 10 feet of clearance to tree branches. Pruning should be completed prior to construction to avoid tree damage by construction contractors cutting or breaking branches for clearance.

Several retention trees in the northwest corner have large, overextended branches that spread beyond the tree protection zones. These branches may be removed by or under the supervision of a Certified Arborist during clearing.

Potential for Tree Transplanting

There are no trees that have the potential to be transplanted.

Conclusions - Timeline for Activity

1. City Forester notifies inspector that the pre-construction meeting may be scheduled.
2. Contact Project Forester to attend pre-construction meeting to discuss tree protection issues.
3. Project forester to mark hazard trees and trees to be removed from within tree save areas. Project forester then shall identify the location for tree protection fencing on site.

4. Heavily flag the tree protection fence location.
5. Logging contractor can then fell hazard trees out of tree save areas.
6. Prior to the start of land clearing, Contractor can install tree protection fencing as per Project Forester's flagging.
7. Project Forester inspects installation of tree fence and sends City of Olympia Urban Forester inspection notice of approval.
8. Maintain all tree protection fences throughout construction.
9. If any unplanned construction activity will affect a save tree, contact Project Forester prior to the impact. Project Forester assesses the proposed impact and recommends cultural care, mitigation, or removal. Project Forester sends email to City of Olympia Forester for final approval.

Summary

The City of Olympia tree protection ordinance requires that a minimum of 117.0 tree units be retained or planted in the project area. Thirty-four trees worth 140.5 tree units are proposed to be retained on site. This exceeds the required tree density by 23.5 tree units. No additional trees will need to be planted on site to meet the density requirements.

Please give us a call if you have any questions.

Respectfully submitted,



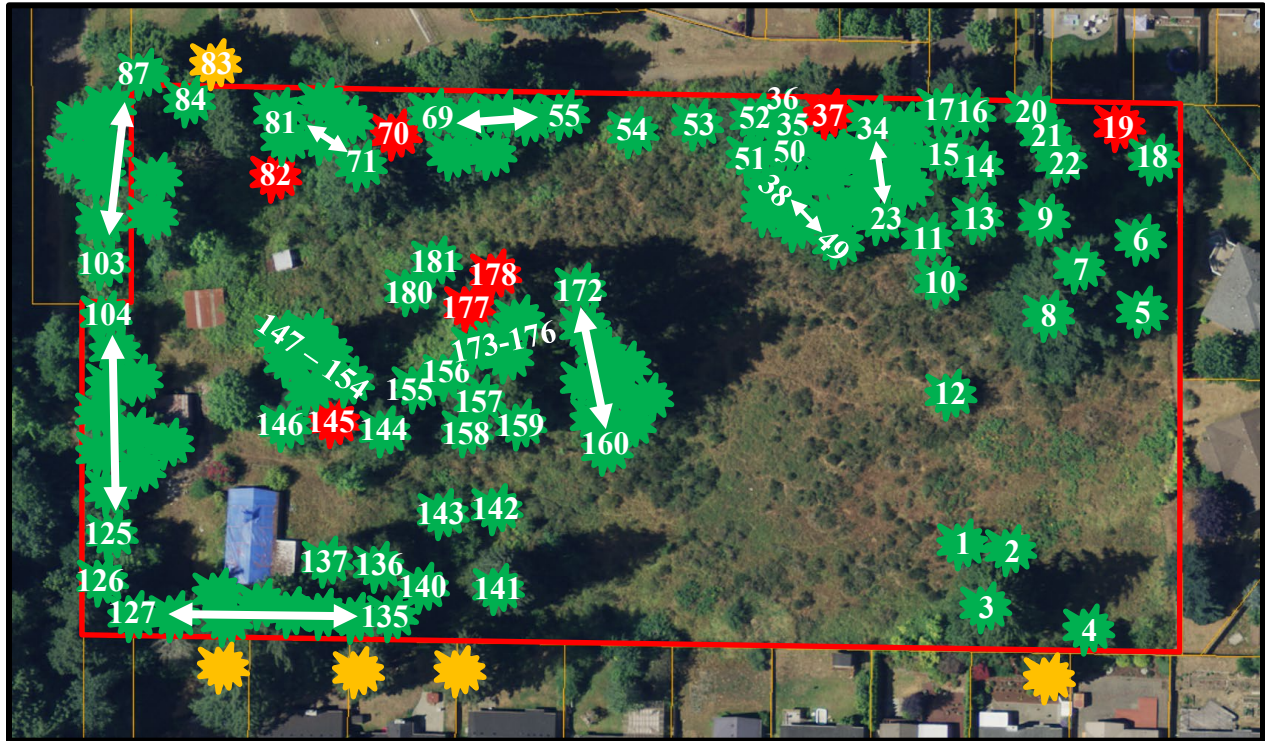
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ISA Tree Risk Assessor Qualified



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ISA Tree Risk Assessor Qualified

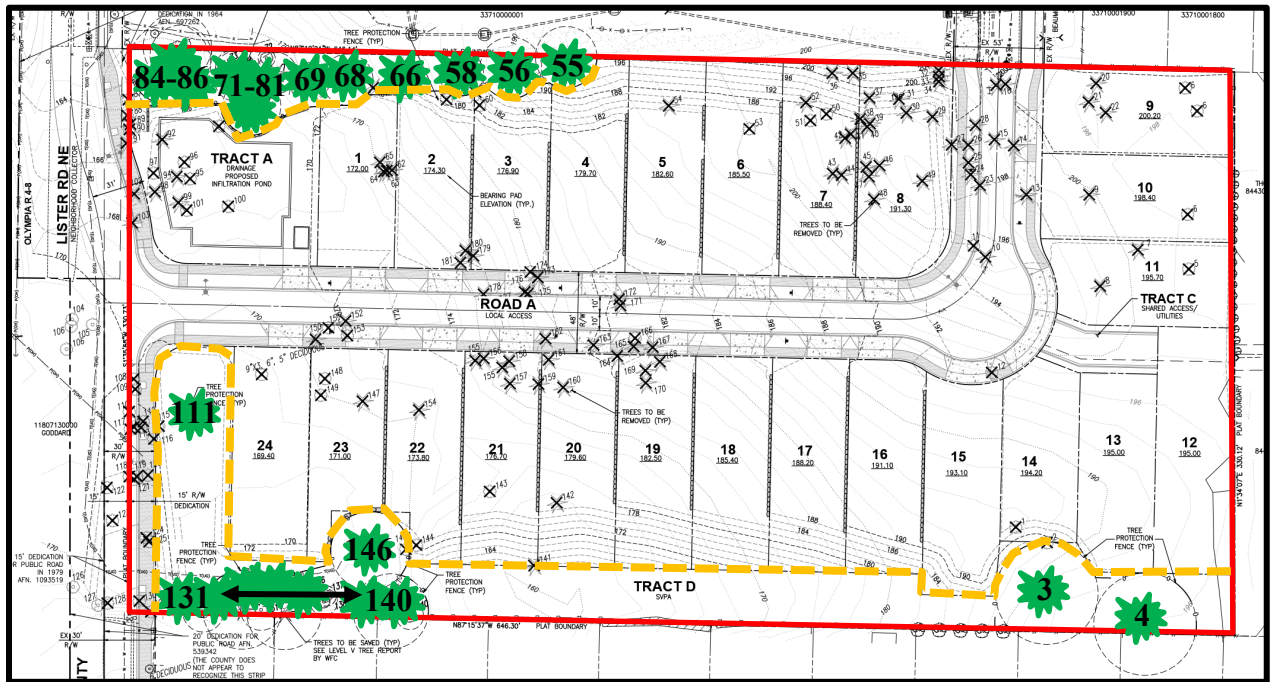
Attachment 1. Lister Glen – Existing Conditions




(Thurston County Geodata – 2018)



- Project Area and Cover Type Boundary
- ★ Healthy Tree
- ★ Unhealthy Tree
- ★ Off-site Tree

Attachment 2. Lister Glen Grading & Tree Protection Plan



-  Project Boundary
-  Potential Save Tree
-  Tree Protection Fence Location

Attachment 3. Lister Glen Tree List

Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
1	Apple	9	Good	Yes	9	1.5	Remove	
2	Apple	7	Fair	Yes	7	1.5	Remove	
3	Douglas-fir	41	Good	Yes	30	15	Save	TPZ at dripline
4	Apple	30	Fair	Yes	30	10	Save	
5	Mountain Ash	6, 6, 7, 8	Fair	Yes	14	2	Remove	
6	Sycamore Maple	8, 12	Good	Yes	14	2	Remove	
7	Douglas-fir	36	Good	Yes	36	13	Remove	
8	Douglas-fir	49	Good	Yes	49	19	Remove	
9	Douglas-fir	50	Fair	Yes	50	20	Remove	
10	Douglas-fir	27	Good	Yes	27	8	Remove	
11	Bigleaf Maple	7	Very Good	Yes	7	1.5	Remove	
12	Mountain Ash	11, 12	Fair	Yes	16	3	Remove	
13	Douglas-fir	37	Very Good	Yes	37	13	Remove	
14	Douglas-fir	23	Good	Yes	23	6	Remove	
15	Douglas-fir	24	Good	Yes	24	7	Remove	
16	Douglas-fir	37	Fair	Yes	37	13	Remove	
17	Douglas-fir	9	Good	Yes	9	1.5	Remove	

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Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
18	Hawthorne	9, 13	Fair	Yes	16	3	Remove	
19	Apple	20	Dead	No	20	5	Remove	
20	Douglas-fir	39	Very Good	Yes	39	14	Remove	
21	Douglas-fir	24	Very Good	Yes	24	7	Remove	
22	Douglas-fir	36	Good	Yes	36	13	Remove	
23	Douglas-fir	32	Good	Yes	32	11	Remove	
24	Douglas-fir	18	Good	Yes	18	4	Remove	
25	Douglas-fir	8	Fair	Yes	8	1.5	Remove	
26	Douglas-fir	15	Good	Yes	15	2	Remove	
27	Douglas-fir	21	Good	Yes	21	5	Remove	
28	Douglas-fir	16	Good	Yes	16	3	Remove	
29	Douglas-fir	22	Good	Yes	22	6	Remove	
30	Douglas-fir	9	Fair	Yes	9	1.5	Remove	
31	Douglas-fir	13	Fair	Yes	13	1.5	Remove	
32	Douglas-fir	13	Fair	Yes	13	1.5	Remove	
33	Douglas-fir	11	Fair	Yes	11	1.5	Remove	
34	Douglas-fir	10	Fair	Yes	10	1.5	Remove	
35	Douglas-fir	20	Fair	Yes	20	5	Remove	
36	Douglas-fir	15	Fair	Yes	15	2	Remove	
37	Douglas-fir	33	Very Poor	No	33	11	Remove	red ring rot on lower stem

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Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
38	Douglas-fir	14	Fair	Yes	14	2	Remove	
39	Douglas-fir	10	Fair	Yes	10	1.5	Remove	
40	Douglas-fir	10	Fair	Yes	10	1.5	Remove	
41	Douglas-fir	10	Fair	Yes	10	1.5	Remove	
42	Douglas-fir	23	Good	Yes	23	6	Remove	
43	Douglas-fir	43	Good	Yes	43	16	Remove	
44	Douglas-fir	13	Fair	Yes	13	1.5	Remove	
45	Douglas-fir	13	Fair	Yes	13	1.5	Remove	
46	Douglas-fir	14	Fair	Yes	14	2	Remove	
47	Douglas-fir	20	Good	Yes	20	5	Remove	
48	Douglas-fir	40	Good	Yes	40	15	Remove	
49	Douglas-fir	22, 33	Good	Yes	40	15	Remove	
50	Pacific Dogwood	10	Good	Yes	10	1.5	Remove	
51	Pacific Dogwood	12	Fair	Yes	12	1.5	Remove	
52	Douglas-fir	37	Good	Yes	37	13	Remove	
53	Apple	13	Good	Yes	13	1.5	Remove	
54	Douglas-fir	7	Good	Yes	7	1.5	Remove	
55	Bigleaf Maple	26	Good	Yes	18	8	Save	30% TPZ reduction
56	Bigleaf Maple	26	Good	Yes	18	8	Save	30% TPZ reduction

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Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
57	Douglas-fir	32	Good	Yes	32	11	Remove	
58	Bigleaf Maple	19	Good	Yes	13	4	Save	30% TPZ reduction
59	Douglas-fir	9	Fair	Yes	9	1.5	Remove	
60	Bigleaf Maple	40	Fair	Yes	40	15	Remove	
61	Bigleaf Maple	44	Good	Yes	44	17	Remove	
62	Douglas-fir	40	Good	Yes	40	15	Remove	
63	Douglas-fir	28	Good	Yes	28	9	Remove	
64	Douglas-fir	26	Good	Yes	26	8	Remove	
65	Douglas-fir	14	Good	Yes	14	2	Remove	
66	Western Hemlock	12	Fair	Yes	8	1.5	Save	30% TPZ reduction
67	Douglas-fir	45	Good	Yes	45	17	Remove	
68	Western Hemlock	22	Good	Yes	15	6	Save	30% TPZ reduction
69	Douglas-fir	15	Good	Yes	11	2	Save	30% TPZ reduction
70	Douglas-fir	34	Poor	No	34	12	Remove	previous top failure
71	Douglas-fir	17	Good	Yes	12	3	Save	30% TPZ reduction
72	Red Alder	7	Fair	Yes	5	1.5	Save	30% TPZ reduction

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Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
73	Douglas-fir	14	Fair	Yes	10	2	Save	30% TPZ reduction
74	Red Alder	17	Fair	Yes	12	3	Save	30% TPZ reduction
75	Douglas-fir	18	Fair	Yes	13	4	Save	30% TPZ reduction
76	Douglas-fir	12	Fair	Yes	8	1.5	Save	30% TPZ reduction
77	Douglas-fir	17	Good	Yes	12	3	Save	30% TPZ reduction
78	Douglas-fir	24	Good	Yes	17	7	Save	30% TPZ reduction
79	Bigleaf Maple	7	Good	Yes	5	1.5	Save	30% TPZ reduction
80	Bigleaf Maple	7	Good	Yes	5	1.5	Save	30% TPZ reduction
81	Bigleaf Maple	7	Good	Yes	5	1.5	Save	30% TPZ reduction
82	Bigleaf Maple	12	Poor	No	12	1.5	Remove	previous stem failure
83	Bigleaf Maple	20	Fair	Yes	14	5	Save	30% TPZ reduction, off-site
84	Douglas-fir	26	Good	Yes	18	8	Save	30% TPZ reduction

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Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
85	Douglas-fir	34	Good	Yes	24	12	Save	30% TPZ reduction
86	Bigleaf Maple	10	Fair	Yes	7	1.5	Save	30% TPZ reduction
87	Bigleaf Maple	12	Fair	Yes	12	1.5	Remove	
88	Bigleaf Maple	15	Fair	Yes	15	2	Remove	
89	Douglas-fir	60	Good	Yes	60	25	Remove	
90	Bigleaf Maple	20	Fair	Yes	20	5	Remove	
91	Douglas-fir	24	Good	Yes	24	7	Remove	
92	Western Redcedar	24	Very Good	Yes	24	7	Remove	
93	Bigleaf Maple	9	Good	Yes	9	1.5	Remove	
94	Douglas-fir	29	Very Good	Yes	29	9	Remove	
95	Douglas-fir	6	Very Good	Yes	6	1.5	Remove	
96	Bigleaf Maple	7	Very Good	Yes	7	1.5	Remove	
97	Red Alder	16	Fair	Yes	16	3	Remove	
98	Western Redcedar	12	Very Good	Yes	12	1.5	Remove	
99	Western Redcedar	32	Good	Yes	32	11	Remove	
100	Bigleaf Maple	8	Fair	Yes	8	1.5	Remove	

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Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
101	Bigleaf Maple	6, 6	Fair	Yes	8	1.5	Remove	
102	Western Redcedar	18	Good	Yes	18	4	Remove	
103	Western Redcedar	8, 32	Good	Yes	33	11	Remove	
104	Red Alder	12	Good	Yes	12	1.5	Remove	
105	Red Alder	10	Good	Yes	10	1.5	Remove	
106	Bird Cherry	7	Good	Yes	7	1.5	Remove	
107	Red Alder	9, 10	Good	Yes	13	1.5	Remove	
108	Red Alder	9	Good	Yes	9	1.5	Remove	
109	Red Alder	8	Good	Yes	8	1.5	Remove	
110	Apple	8	Good	Yes	8	1.5	Remove	
111	Bigleaf Maple	6, 6	Fair	Yes	8	1.5	Save	
112	Red Alder	8	Good	Yes	8	1.5	Remove	
113	Red Alder	7	Good	Yes	7	1.5	Remove	
114	Red Alder	11	Good	Yes	11	1.5	Remove	
115	Bird Cherry	6	Good	Yes	6	1.5	Remove	
116	Red Alder	6, 6, 6	Good	Yes	10	1.5	Remove	
117	Red Alder	9	Good	Yes	9	1.5	Remove	
118	Bigleaf Maple	15	Fair	Yes	15	2	Remove	6 stems 6 - 8" DBH
119	Bigleaf Maple	7	Very Good	Yes	7	1.5	Remove	

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Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
120	Japanese Maple	9	Good	Yes	9	1.5	Remove	
121	Bird Cherry	6	Good	Yes	6	1.5	Remove	
122	Red Alder	10	Good	Yes	10	1.5	Remove	
123	Bird Cherry	6	Fair	Yes	6	1.5	Remove	
124	Red Alder	7	Good	Yes	7	1.5	Remove	
125	Pacific Dogwood	10, 14	Fair	Yes	17	3	Remove	
126	Bigleaf Maple	10	Good	Yes	10	1.5	Remove	
127	Douglas-fir	27	Good	Yes	27	8	Remove	
128	Bigleaf Maple	19	Good	Yes	19	4	Remove	
129	Bird Cherry	7	Good	Yes	7	1.5	Remove	
130	Bigleaf Maple	32	Fair	Yes	32	11	Remove	6 stems 12 - 15" DBH
131	Bigleaf Maple	12	Good	Yes	12	1.5	Save	
132	Douglas-fir	23	Good	Yes	23	6	Save	
133	Bigleaf Maple	12	Fair	Yes	12	1.5	Save	
134	Pacific Dogwood	6, 6	Fair	Yes	8	1.5	Save	
135	Douglas-fir	22	Good	Yes	22	6	Save	
136	Bigleaf Maple	6, 7	Good	Yes	9	1.5	Save	
137	Bigleaf Maple	6	Fair	Yes	6	1.5	Save	
138	Bigleaf Maple	8	Fair	Yes	8	1.5	Save	

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139	Bird Cherry	22	Fair	Yes	22	6	Save	
140	Bird Cherry	8	Fair	Yes	8	1.5	Save	
141	Douglas-fir	37	Good	Yes	37	13	Remove	
142	Douglas-fir	6	Very Good	Yes	6	1.5	Remove	
143	Bird Cherry	6	Good	Yes	6	1.5	Remove	
144	Bird Cherry	23	Fair	Yes	23	6	Remove	
145	Bird Cherry	18	Very Poor	No	18	4	Remove	stem decay
146	Pacific Dogwood	21	Good	Yes	23	5	Save	TPZ at dripline
147	Douglas-fir	24	Very Good	Yes	24	7	Remove	
148	Pacific Dogwood	8	Good	Yes	8	1.5	Remove	
149	Pacific Dogwood	11, 12	Good	Yes	16	3	Remove	
150	Douglas-fir	22	Fair	Yes	22	6	Remove	
151	Pacific Dogwood	9	Good	Yes	9	1.5	Remove	
152	Douglas-fir	22	Very Good	Yes	22	6	Remove	
153	Bigleaf Maple	20	Good	Yes	20	5	Remove	6 stems 6 - 8" DBH

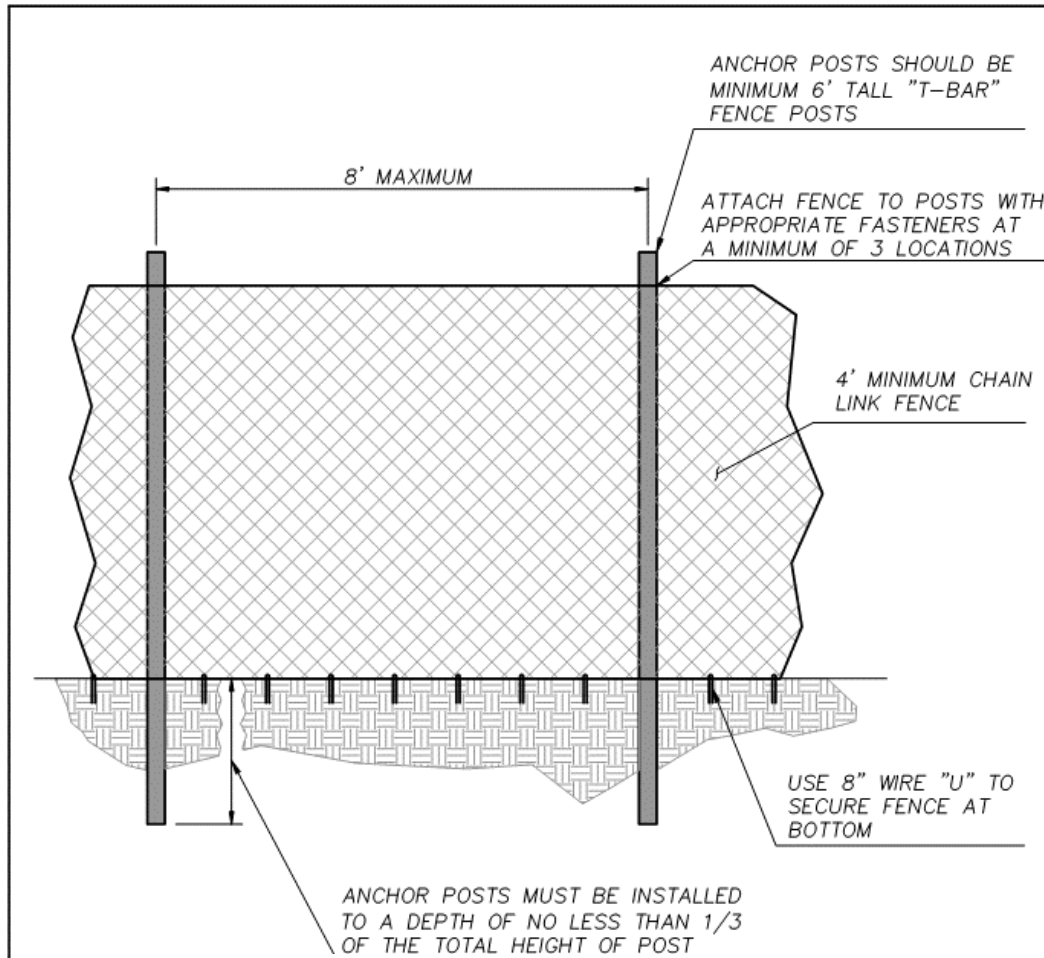
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Tree #	Species	DBH (in.)	Condition	Tree Potential to Save Based only on Tree Condition? Yes or No	Tree Protection Zone (ft. Radius)	Tree Units	Tree Potential to Save Based on Site Plan? Save/ Remove	Notes
154	Douglas-fir	26	Very Good	Yes	26	8	Remove	
155	Douglas-fir	7	Good	Yes	7	1.5	Remove	
156	Douglas-fir	16	Good	Yes	16	3	Remove	
157	Douglas-fir	39	Good	Yes	39	14	Remove	
158	Douglas-fir	34	Good	Yes	34	12	Remove	
159	Douglas-fir	30	Fair	Yes	30	10	Remove	
160	Bigleaf Maple	11	Very Good	Yes	11	1.5	Remove	
161	Douglas-fir	6	Good	Yes	6	1.5	Remove	
162	Douglas-fir	27	Good	Yes	27	8	Remove	
163	Douglas-fir	7	Good	Yes	7	1.5	Remove	
164	Douglas-fir	16	Very Good	Yes	16	3	Remove	
165	Douglas-fir	16	Good	Yes	16	3	Remove	
166	Bigleaf Maple	7	Good	Yes	7	1.5	Remove	
167	Douglas-fir	41	Very Good	Yes	41	15	Remove	
168	Douglas-fir	28	Good	Yes	28	9	Remove	
169	Douglas-fir	36	Good	Yes	36	13	Remove	
170	Douglas-fir	6	Fair	Yes	6	1.5	Remove	
171	Douglas-fir	42	Very Good	Yes	42	16	Remove	

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172	Douglas-fir	40	Very Good	Yes	40	15	Remove	
173	Douglas-fir	41	Good	Yes	41	15	Remove	
174	Bigleaf Maple	7	Good	Yes	7	1.5	Remove	
175	Douglas-fir	18	Good	Yes	18	4	Remove	
176	Douglas-fir	20	Good	Yes	20	5	Remove	
177	Douglas-fir	16	Very Poor	No	16	3	Remove	sunscald on stem
178	Douglas-fir	12	Poor	No	12	1.5	Remove	sunscald on stem
179	Douglas-fir	15	Fair	Yes	15	2	Remove	
180	Douglas-fir	22	Good	Yes	22	6	Remove	
181	Douglas-fir	15	Good	Yes	15	2	Remove	

Attachment 4. Tree Protection Fence Detail



Temporary Chain-Link on Driven Posts

NOTES:

1. THE TREE, SOIL AND VEGETATION PROTECTION FENCE SHOULD BE MAINTAINED THROUGHOUT THE CONSTRUCTION AND GRADING, AND NOT TO BE REMOVED UNTIL FINAL LANDSCAPING IS IN PROGRESS AND WITH APPROVAL BE PROJECT FORESTER.
2. AT NO TIME SHALL EQUIPMENT ENTER INTO THE CRITICAL ROOT ZONE (CRZ).
3. ALL BRUSH CLEANUP WITHIN THE CRZ SHOULD BE COMPLETED BY HAND TO PREVENT DISTURBANCE OF NATIVE GROUND COVERS.
4. NO CUTS OR FILLS, UTILITY TRENCHING, MODIFICATIONS TO DRAINAGE, OR CONCRETE RINSE WATER SHOULD IMPACT THE CRZ.
5. NO WIRES, CABLES, OR OTHER DEVICES SHOULD BE ATTACHED TO PROTECTED TREES DURING CONSTRUCTION.
6. IF IMPACTS MUST OCCUR WITHIN THE CRZ, CONTACT PROJECT FORESTER PRIOR TO THE OPERATIONS TO DETERMINE THE PROPER PROCEDURE TO PROTECT THE TREE'S HEALTH.

APPROVED BY	REVISED DATE	CITY OF OLYMPIA	STD. DWG. NO.
FRAN R. EIDE, PE	12/08/2017	TREE PROTECTION FENCE	5-20
CITY ENGINEER			

Attachment 5. 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).

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 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.
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- 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.