

**Tree Inventory & Tree Protection Plan
For SFR Residential Development**

at 1204 Yew St.
Bellingham, WA 98225
Parcel 380333038441

Prepared for
Brad Widman
1615 Old Samish Rd.
Bellingham, WA 98229



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TRAQ



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Background Information

Brad Widman is proposing the construction of an 8-lot single-family residential development on 2.15 acres at 1204 Yew St. Bellingham, WA. This report serves to inventory the existing site significant trees (trees = >6" dbh) and provide a Tree Protection Plan for the trees to be retained. The City of Bellingham Planning and Development Services has requested an analysis of expected impacts to the retention trees from the proposed development and provide construction guidance to help preserve the trees to be retained.

Existing Conditions

There are 132 significant trees inventoried on the subject area of 2.15 acres. The site is a mix of forested and open areas. Trees are a variety of native and non-native species from young ages to ~ 60 years old. Topography is flat to gently sloping with elevation increasing going easterly with western aspect. Table 1 below details the inventory. The trees are mostly in clusters scattered around the property. The Tree Inventory begins in the southwest corner of the property immediately east of Yew St. and travels easterly recording all significant trees. Trees 1-66 are all south of the existing gravel road traversing the property west to east except for trees 64, 65. The remaining trees are north of the existing gravel road. Many of these trees are near suspected property lines and may/may not be on the subject property. This would have to be determined by a Professional Land Surveyor.

Table 1 below provides an inventory of existing site trees.

Tree	Species	Dbh	Location & Comments
1	<i>Cedrus deodara</i> , Deodar cedar	36"	SW cor prop. Few feet e. of Yew St., appears healthy/stable
2	<i>A. macrophyllum</i> , bigleaf maple	9"	12' n of s. fence, appears healthy/stable
3	<i>A. macrophyllum</i> , bigleaf maple	16"	2' n of s. fence, appears fair to good cond.
4	<i>B. papyrifera</i> , paper birch	17"	6' n of s fence, dead tree w/high decay
5	<i>P. menziesii</i> , Douglas fir	40"	7' n of s. fence, heavy ivy, fair to good cond.,
6	<i>Salix</i> sp., willow	12"	trunk scar, broken scaffold branches
7	<i>P. menziesii</i> , Douglas fir	28"	base wrapped in cottonwood roots, good cond.
8	<i>P. trichocarpa</i> , black cottonwood	36"	large root flare scar, otherwise good cond.
9	<i>P. trichocarpa</i> , black cottonwood	40"	5' e. of neighbor garage, good cond.
10	<i>B. papyrifera</i> , paper birch	7", 15"	dead clump, high decay
11	<i>Crataegus douglasii</i> , hawthorn	6"	good cond.
12	<i>Prunus</i> sp., cherry	8"	good cond.
13	<i>A. macrophyllum</i> , bigleaf maple	10", 12"	lean e., old branch breaks, fair cond.
14	<i>P. menziesii</i> , Douglas fir	17"	fair to good cond.
15	<i>P. menziesii</i> , Douglas fir	10"	poor to fair cond., suppressed near sw prop cor
16	<i>B. papyrifera</i> , paper birch	15"	nearly dead
17	<i>Tsuga heterophylla</i> , W.hemlock	7"	nearly dead, 1 live branch
18	<i>B. papyrifera</i> , paper birch	12", 13", 14"	poor condition clump
19	<i>P. menziesii</i> , Douglas fir	37"	limby, open-grown, good cond.
20	<i>B. papyrifera</i> , paper birch	23", 26"	large prune wounds, dead top, poor to fair cond.

Table 1 Continued

21	<i>P. menziesii</i> , Douglas fir	25"	16' ne. of neighbor deck, good cond.
22	<i>Thuja plicata</i> , W. red cedar	12"	good cond.
23	<i>Thuja plicata</i> , W. red cedar	9"	good cond.
24	<i>Prunus</i> sp., cherry	9"	fair cond.
25	<i>Thuja plicata</i> , W. red cedar	15"	dead
26	<i>Prunus</i> sp., cherry	11"	dead, decayed
27	<i>Thuja plicata</i> , W. red cedar	13"	good cond.
28	<i>P. menziesii</i> , Douglas fir	13"	good cond.
29	<i>P. menziesii</i> , Douglas fir	11"	poor cond., top break, suppressed
30	<i>P. menziesii</i> , Douglas fir	13"	good cond.
31	<i>Cedrus deodara</i> , Deodar cedar	15"	good cond., crown hvy to s., neighbor's tree?
32	<i>P. trichocarpa</i> , black cottonwood	39"	fair to good cond., sweep to west
33	<i>P. trichocarpa</i> , black cottonwood	35", 30"	poor to fair cond.
34	<i>A. macrophyllum</i> , bigleaf maple	9"	nearly dead
35	<i>A. macrophyllum</i> , bigleaf maple	6"	poor cond., suppressed
36	<i>A. macrophyllum</i> , bigleaf maple	15"	poor cond., nearly dead
37	<i>A. macrophyllum</i> , bigleaf maple	39"	fair to good cond.
38	<i>B. papyrifera</i> , paper birch	8"-14"	6 trunk clump, poor to fair cond.
39	<i>A. macrophyllum</i> , bigleaf maple	12"	top break, fair cond.
40	<i>Alnus rubra</i> , red alder	9"	poor to fair cond.
41	<i>A. macrophyllum</i> , bigleaf maple	27", 28"	fair to good cond.
42	<i>B. papyrifera</i> , paper birch	6"	poor cond., suppressed
43	<i>Salix</i> sp. willow	7"	fair cond., suppressed, lean s. over fence
44	<i>Salix</i> sp. Willow	21"	basal rot, fair cond., lean s. over fence
45	<i>P. menziesii</i> , Douglas fir	28"	good cond.
46	<i>P. menziesii</i> , Douglas fir	35"	basal rot, fair cond.
47	<i>P. menziesii</i> , Douglas fir	21"	broken out top, poor cond.
48	<i>P. menziesii</i> , Douglas fir	18"	fair to good cond.
49	<i>P. menziesii</i> , Douglas fir	26"	fair to good cond.
50	<i>P. menziesii</i> , Douglas fir	35"	pitted bark, old break @ 40'/kink, 5' s of road cut, fair cond.
51	<i>P. menziesii</i> , Douglas fir	21"	good cond.
52	<i>P. menziesii</i> , Douglas fir	23"	fair to good cond. some suppressed
53	<i>P. menziesii</i> , Douglas fir	30"	poor to fair, top break, suppressed
54	<i>P. menziesii</i> , Douglas fir	26"	poor cond., fungal conk, mild resin flow
55	<i>P. menziesii</i> , Douglas fir	20"	poor to fair cond., top break, suppressed
56	<i>P. menziesii</i> , Douglas fir	35"	6' s. of road cut, fair to good cond.
57	<i>P. menziesii</i> , Douglas fir	8"	crest of slope/driveway turn, good cond.
58	<i>Prunus</i> , sp., cherry	6"	poor cond., diseased leaves, string girdle
59	<i>B. papyrifera</i> , paper birch	27"	fair to poor cond., dead top portions
60	<i>Prunus</i> sp., cherry	6"	good cond.
61	<i>Prunus</i> sp., cherry	6"	good cond.
62	<i>Prunus</i> sp., cherry	6"	good cond.
63	<i>P. menziesii</i> , Douglas fir	46"	good cond., 21' e. of power pole
64	<i>Pinus</i> sp., Pine	40"	4 tops, large branch breaks, 20' s. of exist home, fair to good
65	<i>Malus</i> sp., apple	8"	good cond.
66	<i>Malus</i> sp., apple	7"	good cond.
67	<i>Prunus</i> sp., cherry	7"	20' nw of exist home, fair cond.
68	<i>Robinia pseudoacacia</i> , black locust	10", 14"	Good cond.
69	<i>Robinia pseudoacacia</i> , black locust	15"	Good cond.
70	<i>Robinia pseudoacacia</i> , black locust	13"	Good cond.
71	<i>Robinia pseudoacacia</i> , black locust	12"	Good cond.
72	<i>Robinia pseudoacacia</i> , black locust	12"	Good cond.
73	<i>Robinia pseudoacacia</i> , black locust	11"	Good cond.
74	<i>Robinia pseudoacacia</i> , black locust	9"	Good cond.
75	<i>Robinia pseudoacacia</i> , black locust	14"	Good cond.

Table 1 Continued

76	<i>Robinia pseudoacacia</i> , black locust	6"	Fair cond., suppressed
77	<i>Robinia pseudoacacia</i> , black locust	10"	Good cond.
78	<i>Robinia pseudoacacia</i> , black locust	9"	Good cond.
79	<i>Robinia pseudoacacia</i> , black locust	10"	Good cond.
80	<i>Robinia pseudoacacia</i> , black locust	10"	Good cond.
81	<i>Robinia pseudoacacia</i> , black locust	14"	Good cond.
82	<i>P. menziesii</i> , Douglas fir	36"	Good cond., liner tree?
83	<i>P. menziesii</i> , Douglas fir	25"	Good cond., liner tree?
84	<i>Robinia pseudoacacia</i> , black locust	7"	Good cond.
85	<i>Robinia pseudoacacia</i> , black locust	6"	Good cond.
86	<i>Robinia pseudoacacia</i> , black locust	6"	Good cond.
87	<i>Robinia pseudoacacia</i> , black locust	8"	Good cond.
88	<i>Robinia pseudoacacia</i> , black locust	7"	Good cond.
89	<i>A. macrophyllum</i> , bigleaf maple	4", 4", 8"	3 trunk clump, Fair Cond.
90	<i>Robinia pseudoacacia</i> , black locust	8", 7"	Poor cond., near dead, suppressed
91	<i>P. trichocarpa</i> , black cottonwood	13"	Good cond.
92	<i>P. trichocarpa</i> , black cottonwood	15"	Good cond.
93	<i>A. macrophyllum</i> , bigleaf maple	11", 5"	Poor cond., suppressed
94	<i>B. papyrifera</i> , paper birch	11"	Fair cond., suppressed top
95	<i>P. menziesii</i> , Douglas fir	25"	Good cond. but unbalanced crown
96	<i>P. menziesii</i> , Douglas fir	24"	Good cond., liner tree?
97	<i>A. macrophyllum</i> , bigleaf maple	20"	Good cond.
98	<i>P. trichocarpa</i> , black cottonwood	22"	Good cond., liner tree?
99	<i>A. macrophyllum</i> , bigleaf maple	6"	Fair cond., suppressed
100	<i>A. macrophyllum</i> , bigleaf maple	6"	Poor cond., suppressed
101	<i>A. macrophyllum</i> , bigleaf maple	4"-11"	6 trunk clump, Fair cond.
102	<i>A. macrophyllum</i> , bigleaf maple	6", 5"	Poor cond., suppressed
103	<i>A. macrophyllum</i> , bigleaf maple	9"	Fair cond., broken top
104	<i>A. macrophyllum</i> , bigleaf maple	3"-11"	12 stem clump, Fair cond.
105	<i>Robinia pseudoacacia</i> , black locust	10"	Poor cond., 90 deg trunk bend, die-back
106	<i>A. macrophyllum</i> , bigleaf maple	12", 17"	inter-wrapped trunks, hvy ivy, wire in wood, poor cond.
107	<i>A. macrophyllum</i> , bigleaf maple	5"-7"	4 trunk clump, Fair cond.
108	<i>A. macrophyllum</i> , bigleaf maple	5"-10"	5 stem clump, Poor cond., nearly dead
109	<i>A. macrophyllum</i> , bigleaf maple	6"-22"	8 trunk clump, Fair cond., heavy ivy
110	<i>B. papyrifera</i> , paper birch	13", 14"	2 trunk clump, Poor cond., dead top portions
111	<i>B. papyrifera</i> , paper birch	4"-11"	4 trunk clump, Poor to Fair cond. suppressed
112	<i>B. papyrifera</i> , paper birch	9"-13"	6 trunk clump, all dead/decayed
113	<i>B. papyrifera</i> , paper birch	4", 15"	Poor cond., broken out top
114	<i>B. papyrifera</i> , paper birch	11", 14"	Fair cond., suppressed
115	<i>B. papyrifera</i> , paper birch	6", 13"	Fair cond.
116	<i>B. papyrifera</i> , paper birch	12"	Fair cond.
117	<i>P. menziesii</i> , Douglas fir	22"	Good cond.
118	<i>Thuja plicata</i> , W. red cedar	18"	Good cond.
119	<i>Abies grandis</i> , Grand fir	35"	Good cond., liner tree?
120	<i>Abies grandis</i> , Grand fir	14"	Poor cond., weak crown, liner tree?
121	<i>Abies grandis</i> , Grand fir	10"	dead tree, liner tree?
122	<i>Abies grandis</i> , Grand fir	9"	dead tree, liner tree?
123	<i>Abies grandis</i> , Grand fir	18"	Good cond., liner tree?
124	<i>Abies grandis</i> , Grand fir	14"	Poor cond., weak/dead top, liner tree?
125	<i>Abies grandis</i> , Grand fir	18"	dead tree, liner tree?
126	<i>Abies grandis</i> , Grand fir	14"	Poor cond. dead/weak top, liner tree?
127	<i>Abies grandis</i> , Grand fir	20"	Good cond. liner tree?
128	<i>Thuja plicata</i> , W. red cedar	38"	Good cond.
129	<i>P. menziesii</i> , Douglas fir	40"	18' n of exist road,
130	<i>Thuja plicata</i> , W. red cedar	43"	9' n of exist road

Table 1 Continued

131	<i>B. papyrifera</i> , paper birch	11"	dead tree
132	<i>B. papyrifera</i> , paper birch	13"	dead tree

132 significant trees

Tree Survival/Structural Stability

Development of this site for residential construction will require significant site alteration pursuant to access road construction/relocation, stormwater infrastructure, utilities installation, and building footprint excavation. Likelihoods of survival/structural stability are based upon tree species tolerance to disturbance and percentage/proportion of CRZ disturbance. The International Society of Arboriculture has defined the Critical Root Zone of a tree as having 1' of radius from the trunk for every inch of diameter at breast height (dbh). Thus, a 20" dbh tree would have a CRZ with a radius of 20'. CRZ disturbance is defined as significant soil compaction and/or excavation/root damage. In general, trees having > 40% CRZ disturbance are deemed to have a Low likelihood of long term survival/structural stability. This is due to loss of water and nutrient absorbing roots and loss of mechanical/physical anchorage to the soil.

In the interest of preserving the viability of the site trees to be retained, please see Tree Protection Recommendations enumerated below.

Recommendations

The following are recommendations for construction of the necessary infrastructure to preserve the long-term safety of the site and viability of the trees to be retained in the context of the proposed work. Given that none of the subject trees observed will have > ~ 10% CRZ impacts the steps below will not likely be required but are listed for informational purposes.

Recommendation 1

Place secure and sturdy construction fencing around the CRZ's of trees to be retained. Secure the fencing with methods that do not damage near surface roots.

Recommendation 2

Remove any tree with more than 40% of the CRZ impacted by the site activities and replace with site appropriate trees on a 2:1 replacement ratio.

Recommendation 3

Avoid any grade changes, placement of fill, vehicle parking, heavy equipment traffic, or underground utility work within the CRZ of each tree to minimize root disturbance and soil compaction. Efforts should be made to go over or under with utility lines when roots larger than 2" diameter are encountered in the utility trench. Hand excavation is recommended around larger roots. Where roots have to be cut they should be severed cleanly using sharp tools at right angles to the root length to minimize surface area damage and exposure and facilitate compartmentalization. Do not cut any roots larger than 3" in diameter.

Recommendation 4

Provide additional watering to the retained trees that have soil disturbance within the CRZ for the first three years following construction during the dryer summer months that is the equivalent to 1" water per week. A slower but deep soaking is more beneficial than a quick heavy application of water. Apply 4" of mulch around the CRZ to preserve soil moisture, suppress weeds, and attenuate temperature extremes.

Recommendation 5

Apply 6" depth of organic mulch to the CRZ of any tree that has activity/soil disturbance within the CRZ.

Recommendation 6

Avoid any changes in drainage patterns from excavation, irrigation or otherwise within the root zone.

Recommendation 7

Avoid any above ground tree contact (trunk or limbs) by equipment booms, delivery trucks, or other contact.

Recommendation 8

Prohibit concrete washout, herbicides/pesticides application, heat sources within the root zone and any tree attachments (hardware, rope etc.).

Recommendation 9

Monitor the trees for 3 years for signs of decline and consideration of remediation steps if necessary.

These recommendations are in no way a guarantee of tree health and survival in the future due to potential unforeseen circumstances and acts of God/force majeure. However, they do represent responsible steps in promoting the continued viability of the trees.

Respectfully,

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References:

Pacific Northwest ISA Tree Protection Measures

Tree Protection on Construction and Development Sites, Oregon State University, December 2009.

Exhibit A

Critical Root Zone

