December 1, 2023

John Keeney
ISA Municipal Specialist, ISA Certified Arborist, TRAQ
City of Mercer Island Arborist

Wes Giesbrecht
Atlin Investments, Inc.
Mercer Island, WA 98040

Site: 7414 78th Ave SE
Mercer Island, WA 980404
TPN: 2524049075
Area: 68,825 sq. ft. = 1.6 acre

Re: RFI dated November 27th, 2023, changes itemized below, on the report and on the city response matrix highlighted in yellow.

Comments on Trees:

1. The tree protection shown on the site plan is right on the building pad, which would be unrealistic in the field. The building pads will need at least five feet of clearance for walking and machine access. The tree protection and limits of allowable disturbance will need to be adjusted to account for the five-foot clearance. (Building pads were reduced to allow for a 5' buffer, completed by Navix; site play is copied and pasted onto page 21)

2. Please provide a separate Tree Inventory and Replacement Submittal Information form. This form will confirm what was listed as removed in the arborist report matches what is shown or removal on the plans. The form would also be able to be updated if the plan changes. This should be completed once the viability of all trees has been confirmed. (Completed; a separate Tree Inventory Worksheet has been provided with the submittal and the information has been copied and pasted to the report on pages: 24-26.

3. The provided tree inventory worksheet and the table in the arborist report and site plan do not match. Some trees are listed as exceptional in one document, but not the other. The arborist report lists tree 8118 as exceptional, but the tree inventory worksheet does not (corrected). The tree inventory worksheet lists tree 8234 as exceptional, but the arborist report does not (corrected). Based on the arborist report, tree 8325 should be included in the list of trees over 24 inches on the tree inventory worksheet as well. (Corrected) Please revisit the arborist report, site plan, and tree inventory worksheet to ensure that they are consistent with each other. (Corrected) I have revised the MI Tree Inventory to correct mistakes, and I have corrected the arborist table to show tree 8234 as exceptional per code regulating DBH of specific species to be included as exceptional trees. Both Navix and CLS have conferred to ensure that trees representations are consistent.

In summary:

Tree Density Calculations	
Total number of onsite trees	86
Total number of non-viable trees	39
Total number of viable trees	47
Total number of trees removed for site improvements	28
Total number of required tree credits (30% X 47)	14
Total number of retained tree credits (40%)	19
Mitigation:	
Exceptional trees >36" (6: 1) - 2	12
Trees removed from "Exceptional groves" (6:1) -12	72
Large trees 24"-36" (3:1) - 0	0
10"-24" (2:1) - 14	28
Mitigation Total	**112**

If you have any questions, please contact me. I can be reached on my cell phone: 425.890.3808 or by email: sprince202@aol.com.

Warm regards,

Susan Prince
Creative Landscape Solutions
ISA Certified Arborist #1481
TRAQ Certified Arborist #481
Landscape Designer
425.890.3808

Personal qualifications, scope of work and methodology:

My examination was limited to a visual one, and did not involve any root excavation, trunk or limb coring, or any soil testing. To evaluate the trees and prepare the report, I drew on my formal college education in botany, preparation and training used to obtain my ISA certification in addition to my certification as a Tree Risk Assessor. I have worked in the field of arboriculture since 1994, have been an ISA Certified Arborist since 1999 and have been TRACE/TRAQ certified since 2009.

I followed protocol delineated by the International Society of Arboriculture (ISA) for Visual Risk Assessment (VRA). By doing so, I am examining each tree independently as well as collectively as groups or stands of trees provide stability and can lower risk of independent tree failure. This scientific process examines tree health (e.g., size, vigor, and insect and disease process) as well as site conditions (soil moisture and composition, quantity of impervious surfaces surrounding the tree etc.)

Introduction:
Identifying and managing the risks associated with trees is still largely a subjective process. Since the exact nature of tree failures remains largely unknown, our ability as scientists and arborists to predict which trees will fail and in what fashion remains limited. As currently practiced, the science of hazard tree evaluation involves examining a tree for structural defects, including genetic problems, those caused by the local environmental that the tree grows in and those attributed to man (pruning etc.).

The assessment process involves evaluating three components: 1) a tree with the potential to fail, 2) an environment that may contribute to that failure, and 3) a person or object that would be injured or damaged (the target). A defective tree cannot be considered hazardous without the presence of a target. All trees have a finite life-span though it is not pre-programmed internally in the same manner as annual plantings. As trees age, they are less able to compartmentalize structural damage following injury from insects, disease or pruning. Trees in urban settings have a shorter life span than trees grown in an undisturbed habitat.

Each species of trees grows differently. Evergreen trees have a "reputation" of growing slowly and defensively. These trees allocate a high proportion of their resources to defending themselves from pathogens, parasites, and wounds. As a rule, trees with this type of growth tend to be long lived. Though like all other living things, they have a predictable life span. Examples of this type of tree include the northwest *Pseudotsuga menziesii* - Douglas fir, and *Thuja plicata* - Western red cedar.

Deciduous trees are trees that annually shed leaves or needles. These trees tend to grow quickly and try to "outgrow" problems associated with insects, disease, and wounds. They allocate a relatively small portion of their internal resources to defense and rely instead upon an ability to grow more quickly than the pathogens which infect them. However, as these trees age, their growth rate declines, and the normal problems associated with decay begins to catch up and compromise the tree's structural integrity. Examples of this type of tree include *Salix, Populus* and *Alnus.*

Knowledge of the growth and failure patterns of individual tree species is critical to effective hazard analysis. Species vary widely in their rates of failure. The hazard tree evaluation rating system used by most arborists was developed by the Colorado Urban Forest Council and recognizes this variation in species failure and includes a species component as part of the overall hazard evaluation.

Methods used to determine tree location and tree health:

Trees were identified previously by numbered aluminum tags attached to the western side of the tree. All the trees on site were examined using the Matheny and Clark[1] criteria for determining the potential hazard of trees in an urban environment as well as the Tree Risk Assessment in Urban Areas and The Urban/Rural Interface by Julian Dunster[2]. Tree diameters were measured at DSH (diameter standard height – 4.5' above ground) using a logger's tape. Tree driplines were measured using a PRO Laser Rangefinder™ from the edge of the longest branch to the tree trunk.

Because of the native, forested area these trees are growing it, the critical root zone (CRZ) of each tree was taken to be the dripline. The maximum intrusion into the dripline was 50% of the CRZ or the interior critical root zone (iCRZ).

Spreadsheet Legend:

1. Tree tag #: Numbered aluminum tags attached to the trees in the field*[1]

2. Species: The common name of each tree

3. Species: Species ID: Spreadsheet contains common names of trees which correspond to scientific names as follows:
    - Apple: *Malus sp.*
    - American sycamore: *Plantanus occidentalis*
    - Austrian pine: *Pinus nigra*
    - Bigleaf maple: *Acer macrophyllum*
    - Birch: *Betula nigra*
    - Bitter Cherry: *Prunus emarginata*
    - Blue atlas cedar: *Cedrus atlantica 'Glauca'*
    - Cedar: *Thuja plicata*
    - Cherry: *Prunus sp.*
    - Dawn redwood: *Chamaecyparis nootkatensis*
    - Deodora cedar: *Cedrus deodara*
    - Colorado blue spruce: *Picea pungens*
    - Cottonwood*: Populus trichocarpa*
    - Dogwood*: Cornus nuttallii*
    - Douglas fir: *Pseudotsuga menziesii*
    - English laurel: *Prunus laurocerasus*
    - Filbert: *Corylus avellana var.*
    - Grand fir: *Abies grandis*
    - Hemlock: *Tsuga hetrophylla*
    - Holly: *Ilex aquifolium*
    - Japanese maple: *Acer palmatum*
    - Leylandii cypress: *Cupressocyparis leylandii*
    - Lodgepole pine*: Pinus contorta*
    - Mountain ash: *Sorbus americana*
    - Nobel fir: *Abies procera*
    - Pear: *Pyrus sp.*
    - Plum: *Prunus*
    - Red Alder: *Alnus rubra*
    - Red maple: *Acer rubrum*
    - Walnut: *Juglans sp.*
    - Western red cedar: *Thuja plicata*
    - Weeping Alaska cedar*: Metasequoia glyptostrobides*
    - White fir*: Abies concolor*
    - White pine*: Pinus strobus*

4. DBH: Diameter of the tree measured at 48" above grade

5. Adjusted Diameter of the tree: Calculated equivalent for multi-stemmed tree

6. Dripline Radius: Measurement in feet of the tree canopy from tree trunk to outermost branch tip

7. Windfirm: Whether the tree can withstand wind if surrounding grove is changed

8. Health: A measurement of overall tree vigor and vitality rated as excellent, good, and fair or poor based on an assessment of crown density, leaf color and size, active callusing, shoot growth rate, extent of crown dieback, cambium layer health, and tree age
   - Excellent: Tree is an ideal specimen for the species with no obvious flaws
   - Good: Tree has minimal structural or situational defects
   - OK: Tree has minimal structural defects AND minimal environmental concerns
   - Fair: Tree has structural or health issues that predispose it to failure if further stressed, it is not suitable for retention as a single tree but may sometimes be retained if it is retained in a grove
   - Poor: Tree has significant structural and/or health issues. It is exempt from total tree count.

9. Defects/Concerns: A measure of the tree's structural stability and failure potential and rated as good, fair or poor based on assessment of specific structural features, e.g., decay, conks, co-dominant trunks, included bark, abnormal lean, one-sided canopy, history of failure, prior construction impact, pruning history, etc.

10. Proposed action:
    - Retain
    - Remove due to viability.
    - Remove due to planned development (tree is otherwise healthy)

11. Limits of disturbance: The area surrounding the tree that defines the area that surrounds the trunk that cannot be encroached upon during construction. This may be a multiple of the trunk diameter (1 -1.5 times the trunk diameter converted to feet.) or it may be related to the width of the canopy. It is always determined by tree species and environment and is up to the discretion of the ISA Certified Arborist to determine.

12. Value: The value the municipality assigns to a tree with the specific DBH, species or location of the assessed tree; notification of size (exceptional etc.)

13. Mitigation

C. Size – All replacement trees shall be at least 6' tall for conifers and at least 1.5" diameter at the base for deciduous trees. Shrubs and bushes are not an acceptable replacement for trees. Smaller replacement trees are allowed if the applicant can demonstrate that smaller trees are more suited to the species, site conditions, neighborhood character, and the purposes of MICC 19.10 and that such replacement trees will be planted in sufficient quantities to meet the intent of MICC 19.10.

D. Number of Replacement Trees – Removed trees shall have the following base replacement ratio:

Tree Replacement Ratios	
Diameter of Removed Tree (measured 4.5' above ground)	**Number of Replacement Trees Required**
Less than 10 inches	1
10 inches up to 24 inches	2
24 inches up to 36 inches	3
More than 36 inches and any exceptional tree(s)	6

E. Maintenance – the applicant must maintain replacement trees in a healthy condition for a period of five years after planting. The applicant shall be obligated to replant any replacement tree that dies, becomes diseased, or is removed during this five-year time period.

Specific Tree Observations:

1	2	3	4	5	6	7		8	9	10			11				12					
										Proposed Action			CRZ/TPZ/LOD									
										Ret.	Remove		Radius in feet									
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Viable	Nonviable	Construction	N	W	E	S	Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
1	**8118**	**Bigleaf maple**	**40.5**	**40.5**	**20**		**Y**	**Fair**	**Ivy @ root crown up to 70', co-dominant leaders with included bark x2 @ 5', dead wood, broken branches, moss and lichen**			**1**	**20**	**20**	**20**	**20**	**E**		**1**	**1**		6
2	8119	Bigleaf maple	15.8	15.8	4			Poor	Co-dominant leaders with included bark x2 reduced to 1 @ 6', previous top loss @ 12', ivy @ root crown up to 12'		1		4	4	4	4			1			
3	8121	Bigleaf maple	23.8	23.8	15		Y	Fair	Previous ivy @ root crown up to 60', asymmetric canopy towards east			1	15	15	15	15			1	1		2
4	8122	Bigleaf maple	10	10	24		Y	Fair	Moss and lichen, typical of species, previous top loss @ 60', 2 leaders, asymmetric canopy towards west, dead wood, broken branches, dead scaffolds, low live crown ratio <10%			1	24	24	24	24			1	1		2
5	**8124**	**Bigleaf maple**	**26.1**	**26.1**	**20**			**Fair**	**Previous ivy @ root crown up to 50', moss and lichen, previous top loss, weak leaders**		**1**		**20**	**20**	**20**	**20**	**L**		**1**			

1	2	3	4	5	6	7		8	9	10			11				12					
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action			CRZ/TPZ/LOD				Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
6	8125	Bigleaf maple	17.8	17.8	18			Fair	Ivy @ root crown up to 50', low live crown ratio <10%, moss and lichen		1		18	18	18	18			1			
7	**8126**	**Douglas fir**	**27.8**	**27.8**	**16**			**Poor**	**Ivy @ root crown up to 50', abnormal bark, shedding bark, popping bark, woodpecker activity, racoon scat, laminated root rot?**		**1**		**16**	**16**	**16**	**16**	**L**		**1**			
8	**8127**	**Bigleaf maple**	**31.2**	**31.2**	**24**			**Poor**	**Large cavity @ root crown up towards north, self-corrected lean towards east, ivy @ root crown up to 60', asymmetric canopy towards east, dead wood, broken branches, dead scaffolds**		**1**		**24**	**24**	**24**	**24**	**E**		**1**			
9	8131	Bigleaf maple	23.2	23.2	20		Y	Fair	Ivy @ root crown up to 20', moss and lichen, cavity @ 2' up to 4' towards east, asymmetric canopy towards north, typical of species			1	20	20	20	20			1	1		2
10	8167	Cherry	20.8	20.8	24			Fair	No taper, girdled root? Previous ivy @ root crown up to 30', moss and lichen		1		24	24	24	24			1			
11	**8175**	**Bigleaf maple**	**26.4**	**26.4**	**24**			**Fair**	**Ivy @ root crown up to 40', moss and lichen, cavity @ 3' up to 4' towards east, typical of species**		**1**		**24**	**24**	**24**	**24**	**L**		**1**			

1	2	3	4	5	6	7		8	9	10			11				12					
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action			CRZ/TPZ/LOD				Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
12	8178	Red alder	11.1	11.1	13			Poor	Failing towards east		1		13	13	13	13			1			
13	8179	Leylandii cypress	10.1	10.1	10			OK	Self-corrected lean towards north, exposed roots, hanger, typical of species			1	10	10	10	10			1	1		2
14	8180	Red alder	11.2	11.2	15	No		OK	Exposed roots, failing towards south, typical of species, average health, structurally OK but not windfirm.		1		15	15	15	15			1			
15	**8183**	**Douglas fir**	**47.1**	**47.1**	**27**			**OK**	**Abnormal bark, shedding bark, popping bark, horizontal crack in bark @ 10' towards south, woodpecker activity, elongated branches, coning, co-dominant leaders with included bark x2 @ 50', typical of species**	**1**			**27**	**27**	**27**	**27**	**E**		**1**	**1**	**1**	
16	**8233**	**Bigleaf maple**	**41.4**	**41.4**	**22**			**Fair**	**Roots cut 1' towards south, decay in roots, Hypoxylon canker, moss and lichen, previous top loss @ 15', multiple strong leaders, galls, dead scaffolds, dead wood, broken branches, light fixture**		**1**		**22**	**22**	**22**	**22**	**E**		**1**			

1	2	3	4	5	6	7		8	9	10			11				12					
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action			CRZ/TPZ/LOD				Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
17	**8234**	**Kousa dogwood**	**14**	**14**	**22**			**OK**	**Suppressed canopy, asymmetric canopy-west, dead wood, broken branches, typical of species**			**1**	**22**	**22**	**22**	**22**			**1**	**1**		**2**
18	8238	Western red cedar	18.6	18.6	12			OK	Previous ivy @ root crown up to 50', thin canopy, typical of species	1			12	12	12	12		2	1	1	1	
19	8239	Red alder	12.5	12.5	13		Y	Fair	Exposed roots, serpentine trunk, lean towards north, typical of species	1			13	13	13	10		1	1	1	1	
20	8241	Leylandii cypress	13.5	13.5	9			OK	Typical of species	1			9	9	9	9		1	1	1	1	
21	8242	Leylandii cypress	14.8	14.8	10			OK	Typical of species, dead wood, broken branches	1			10	10	10	10		1	1	1	1	
22	8244	Leylandii cypress	12	12	9			OK	Dead wood, broken branches, typical of species	1			9	9	9	9		1	1	1	1	
23	8245	Leylandii cypress	7, 14	15.5	10			OK	Co-dominant leaders with included bark x2 @ 3', typical of species	1			10	10	10	10		1	1	1	1	
24	8246	Leylandii cypress	11	11	8			OK	Dead wood, broken branches, typical of species	1			8	8	8	8		1	1	1	1	
25	8247	Douglas fir	23.2	23.2	18			OK	Previous light fixture, slight serpentine trunk, typical of species	1			18	18	18	15		1	1	1	1	
26	8248	Douglas fir	16	16	16			OK	Dead wood, broken branches, typical of species	1			16	16	16	12		1	1	1	1	
27	8250	Douglas fir	14	14	14			OK	Dead wood, broken branches, typical of species			1	14	14	14	14		1	1	1		6
28	8251	Douglas fir	13	13	14			OK	Co-dominant canopy, typical of species			1	14	14	14	14		1	1	1		6

1	2	3	4	5	6	7		8	9	10			11				12					
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										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
29	8252	Hemlock	16.1	16.1	14			Fair	Racoon scat, serpentine trunk, suppressed canopy, dead wood, broken branches, thin canopy, typical of species		1		14	14	14	14			1			
30	8253	Douglas fir	17.9	17.9	16			OK	Typical of species			1	16	16	16	16		1	1	1		6
31	8254	Bitter cherry	13	13	19			Fair	Ivy root crown to 20', self-corrected lean west, low live crown ratio< 10, gummosis, dead wood, broken branches		1		19	19	19	19			1			
32	**8261**	**Western red cedar**	**56.6**	**56.6**	**28**		**Y**	**Fair**	**Racoon scat, candelabra @ 10', vertical crack @ 5' up to 15' towards north, multiple 24" diameter branches fused towards south, coning, thin canopy**			**1**	**28**	**23**	**23**	**23**	**E**	**1**	**1**	1		6
33	**8262**	**Western red cedar**	**19.2, 16.3**	**25**	**12**			**OK**	**Co-dominant leaders with included bark x2 @ root crown, thin canopy, nurse tree, typical of species**	**1**			**12**	**12**	**12**	**12**	**L**	**2**	**1**	**1**	**1**	
34	8263	Western red cedar	17.1	17.1	13			OK	Asymmetric canopy towards south, slight lean towards south, typical of species	1			13	13	13	13		2	1	1	1	
35	8264	European plum	14	14	14			Poor	Mostly dead, decay throughout		1		14	14	14	14			1			

1	2	3	4	5	6	7		8	9	10			11				12					
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										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
36	8265	European plum	8, 12	14.5	20 south only			Fair	Co-dominant leaders with included bark x2 @ root crown, lean towards south, asymmetric canopy towards south		1		20	20	20	20			1			
37	8267	Hemlock	14	14	16			Poor	Self-corrected lean towards north, lean towards north, exposed roots, asymmetric canopy towards south		1		16	16	16	16			1			
38	8269	Grand fir	18.2	18.2	18			OK	Thin canopy, vertical crack in bark root crown up to 30', typical of species	1			11	18	18	18		2	1	1	1	
39	8272	Bigleaf maple	22.9	22.9	20			Fair	Nurse tree, exposed roots, previous top loss, asymmetric canopy towards west, typical of species, dead scaffolds		1		20	20	20	20			1			
40	8273	Bigleaf maple	19.2	19.2	23		Y	Fair	Nurse tree, self-corrected lean towards north, lean towards south, moss and lichen, asymmetric canopy towards south			1	23	23	23	23		2	1	1		6
41	**8274**	**Bigleaf maple**	**26**	**26**	**18**			**Poor**	**Mostly dead, Ganoderma**		**1**		**18**	**18**	**18**	**18**	**L**		**1**			
42	8275	Bigleaf maple	23	23	20			OK	Moss and lichen, exposed roots, ivy @ root crown up to 30', dead wood, broken branches, typical of species			1	20	20	20	20		2	1	1		6

1	2	3	4	5	6	7		8	9	10			11				12					
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										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
43	**8276**	**Bigleaf maple**	**27.1**	**27.1**	**16**			**Poor**	**Taps hollow, Ganoderma @ 3' towards east, ivy @ root crown up to 60', nurse tree, previous top loss @ 50', cavity @ root crown up to 4' towards west, Hypoxylon canker**		**1**		**16**	**16**	**16**	**16**	**L**		**1**			
44	**8277**	**Bigleaf maple**	**34.4**	**34.4**	**24**			**Poor**	**Co-dominant leaders with included bark x2 @ 8', ivy @ root crown to top of tree 60', cavity @ root crown up to 4' towards east**		**1**		**24**	**24**	**24**	**24**	**E**		**1**			
45	8279	European plum	14	14	16			Poor	Twisted trunk, large cavity @ root crown up to 4' towards east, dead scaffolds, gummosis		1		16	16	16	16			1			
46	8281	Bigleaf maple	11.5	11.5	24			OK	Moss and lichen, serpentine trunk, typical of species, lean towards north, asymmetric canopy towards north, dominant canopy			1	24	24	24	24		3	1	1		6
47	8283	Bigleaf maple	10.8	10.8	18			OK	Moss and lichen, exposed roots, typical of species			1	18	18	18	18		3	1	1		6
48	8284	Bigleaf maple	21.8	21.8	16		Y	Fair	Ivy @ root crown up to 50', moss and lichen, low live crown ratio <10%, horizontal crack @ 4' towards south			1	16	16	16	16		2	1	1		6

1	2	3	4	5	6	7		8	9	10			11				12					
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action			CRZ/TPZ/LOD				Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
49	8285	Bigleaf maple	16.5	16.5	16			Poor	Sweep towards south, moss and lichen, previous top loss @ 40', weak leaders		1		16	16	16	16			1			
50	8286	Bigleaf maple	14.8	14.8	18		Y	Fair	Moss and lichen, serpentine trunk, lead towards east, typical of species			1	18	18	18	18		2	1	1		6
51	8289	Bigleaf maple	20.2	20.2	22			Fair	Moss and lichen, self-corrected lean towards east, dead wood, broken branches, typical of species, racoon scat, Hypoxylon canker @ 1' towards east		1		22	22	22	22			1			
52	8290	Bigleaf maple	14.8	14.8	18			OK	Moss and lichen, typical of species			1	18	18	18	18		3	1	1		6
53	8291	Bigleaf maple	11	11	16 south only			OK	Lean towards south, asymmetric canopy towards south, moss and lichen, typical of species			1	16	16	16	16		3	1	1		6
54	8292	Red alder	17.1	17.1	21			Poor	Abnormal bark, shedding bark, previous top loss @ 40', no leaders		1		21	21	21	21			1			
55	8294	Bigleaf maple	12	12	14			OK	Asymmetric canopy towards north, typical of species, no access			1	14	14	14	14		3	1	1		2
56	8295	Bigleaf maple	12	12	16			OK	Typical of species, no access			1	16	16	16	16		3	1	1		2
57	8296	Bitter cherry	19	19	24			OK	Moss and lichen, previous top loss, vertical cracks in bark			1	24	24	24	24		3	1	1		2

1	2	3	4	5	6	7		8	9	10			11				12					
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action			CRZ/TPZ/LOD				Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
58	8298	Bitter cherry	10	10	14			OK	Ivy @ root crown up to 20', typical of species			1	14	14	14	14		3	1	1		2
59	8300	European plum	12	12	26			Poor	Failing towards southeast, lean >45º		1		26	26	26	26			1			
60	8304	Bigleaf maple	16.4	16.4	18			Poor	Abnormal bark, shedding bark, mostly dead		1		18	18	18	18			1			
61	8305	Bigleaf maple	6, 5, 4, 4, 3	10	16			Fair	Co-dominant leaders with included bark x5 @ root crown, moss and lichen, twisted trunks, dead scaffolds		1		16	16	16	16			1			
62	8306	Bigleaf maple	10.4	10.4	20			OK	Moss and lichen, asymmetric canopy towards west, typical of species			1	20	20	20	20		3	1	1		6
63	8309	Bigleaf maple	17.5	17.5	24			Poor	Exposed roots, mostly dead, previous root failure, previous top loss @ 40', weak leader		1		24	24	24	24			1			
64	8312	Bigleaf maple	12	12	20			Poor	Previous top loss @ 15', weak leaders, poor pruning with decay		1		20	20	20	20			1			
65	8313	Bigleaf maple	11	11	12			Fair	Ivy @ root crown up to 45' top of tree, low live crown ratio <5%, dead wood, broken branches, moss and lichen		1		12	12	12	12			1			
66	**8314**	**Western red cedar**	**45.7**	**45.7**	**22**			**OK**	**Thin canopy, previous top loss, elongated branches, racoon scat, drought stress**	**1**			**22**	**22**	**22**	**22**	**E**		**1**	**1**	**1**	

1	2	3	4	5	6	7		8	9	10			11				12					
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action			CRZ/TPZ/LOD				Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
67	**8318**	**Bigleaf maple**	**39.1**	**39.1**	**28**			**Poor**	**Ivy @ root crown up to 30', column of decay 7' up to 12' towards north, co-dominant leaders with included bark x2 @ 7', low live crown ratio <10%, moss and lichen, exposed roots, previous top failure @ 40'**		**1**		**28**	**28**	**28**	**28**	**E**		**1**			
68	8320	Red alder	18	18	10			Poor	Previous large trunk failure, resprout		1		10	10	10	10			1			
69	**8321**	**Bigleaf maple**	**28.2**	**28.2**	**12**			**Poor**	**Mostly dead, ivy @ root crown up to 70', dead top**		**1**		**12**	**12**	**12**	**12**	**L**		**1**			
70	8323	Bigleaf maple	13.8	13.8	10			Poor	Ivy @ root crown up to 50' top of tree		1		10	10	10	10			1			
71	8324	Bigleaf maple	11.4	11.4	18 west only			Fair	Ivy @ root crown up to 40'		1		18	18	18	18			1			
72	**8325**	**Douglas fir**	**42**	**42**	**24**			**Poor**	**Previous ivy @ root crown up to 40', previous top loss @ 80', weak leaders**		**1**		**24**	**24**	**24**	**24**	**E**		**1**			
73	8326	Bigleaf maple	15.6	15.6	23			OK	Asymmetric canopy to south, co-dominant canopy, moss and lichen, typical of species			1	23	23	23	23			1	1		2
74	8327	Bigleaf maple	2, 6.5	7	16 east only			Poor	Co-dominant leaders with included bark x2 @ 3', dead spur, hangers		1		16	16	16	16			1			

1	2	3	4	5	6	7		8	9	10			11				12					
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action			CRZ/TPZ/LOD				Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
75	8329	Bigleaf maple	10.5	10.5	15			OK	Moss and lichen, ivy @ root crown up to 60', previous top loss, elongated branches, co-dominant canopy, typical of species			1	15	15	15	15			1	1		2
76	8330	Bigleaf maple	11.1	11.1	14			OK	Serpentine trunk, previous ivy @ root crown up to 40', low live crown ratio <10%, co-dominant canopy, lean towards north			1	14	14	14	14			1	1		2
77	8332	Bigleaf maple	12.3	12.3	12			Poor	Ivy @ root crown up to 40', no visible canopy		1		12	12	12	12			1			
78	8333	Bigleaf maple	16, 17.2	23.5	26			Fair	Co-dominant leaders with included bark x2 @ root crown, ivy @ root crown up to 40', previous top loss, moss and lichen, asymmetric canopy towards north, dead wood, broken branches, dead spur, decay in center		1		26	26	26	26			1			
79	8334	Bigleaf maple	14.2	14.2	22			Fair	Ivy @ root crown u to 20', suppressed canopy, previous top loss, asymmetric canopy towards east, moss and lichen, low live crown ratio dying		1		22	22	22	22			1			
80	8340	Bigleaf maple	14	14	14			OK	Ivy @ root crown up to 12', lean towards south, typical of species	1			14	14	14	14			1	1	1	

1	2	3	4	5	6	7		8	9	10			11				12					
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action			CRZ/TPZ/LOD				Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
										Ret.	Remove		Radius in feet									
										Viable	Nonviable	Construction	N	W	E	S						
81	8347	Bigleaf maple	12	12	18			OK	Serpentine trunk, moss and lichen, typical of species			1	18	18	18	18			1	1		2
82	**8356**	**Douglas fir**	**37.2**	**37.2**	**18**		**Y**	**Fair**	**Previous ivy @ root crown up to 30', abnormal bark, shedding bark, popping bark, previous top loss, elongated branches, dead wood, broken branches, hanger, debris over crown, typical of species**	**1**			**18**	**18**	**18**	**18**	**E**		**1**	**1**	**1**	
83	8357	Bigleaf maple	11.4	11.4	12		Y	Fair	Co-dominant leaders with included bark x2 reduced to 1 @ 15', weak leader, previous ivy @ root crown up to 20'	1			12	12	12	12			1	1	1	
84	8358	Bigleaf maple	10.6	10.6	10			OK	Low live crown ratio <30%, asymmetric canopy towards north, suppressed canopy, dead wood, broken branches, typical of species	1			10	10	10	10			1	1	1	
85	8360	Bigleaf maple	14.2	14.2	18		Y	Fair	Ivy @ root crown up to 15', moss and lichen, asymmetric canopy towards north, typical of species			1	18	18	18	18			1	1		2

1	2	3	4	5	6	7		8	9	10			11				12					
										Proposed Action			CRZ/TPZ/LOD									
										Ret.	Remove		Radius in feet									
#	Tree Tag #	Species ID	DBH (in)	Adj. DBH (in)	Drip-line radius (ft)	Wind-firm	OK in Grove	Health	Defects/Comments	Viable	Nonviable	Construction	N	W	E	S	Large tree DBH > 24" Exceptional Tree MICC 19.16	Located in grove?	Value	Healthy Trees	Retained trees	Replacement
86	8361	Bigleaf maple	23	23	18		Y	Fair	Moss and lichen, ivy @ root crown up to 30', dead wood, broken branches, wrapped by 6" Red alder, dead scaffolds	1			18	12	18	12			1	1	1	
										86	19	39	28						86	47	19	112

Offsite Potentially Impacted trees:

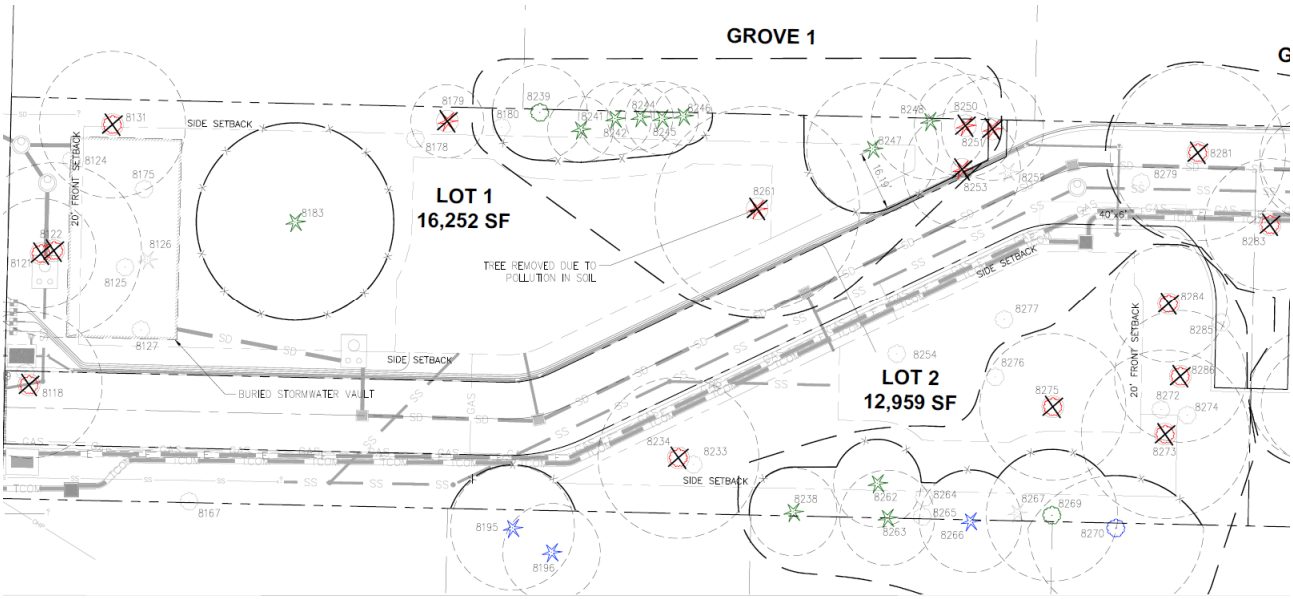
1	2	3	4	5	6	7		8	9	10		11			
										Proposed Action		CRZ/TPZ/LOD			
										Retain		Radius in feet			
#	Tree Tag #	Species ID	DBH inches	Adj. DBH inches	Drip-line radius feet	Wind-firm	OK in Grove	Health	Defects/Comments	Viable	Non- viable	N	W	E	S
1	8195	Deodora cedar	26	26	12 over fence		Y	Fair	thin canopy, asymmetric canopy south dead wood, broken branches	1		12	12	12	12
2	8196	Hemlock	20	20	2 over fence			Poor	2 large vertical caracks 30-45' East, previous top loss @ 50', coning, thin canopy		1	2	2	2	2

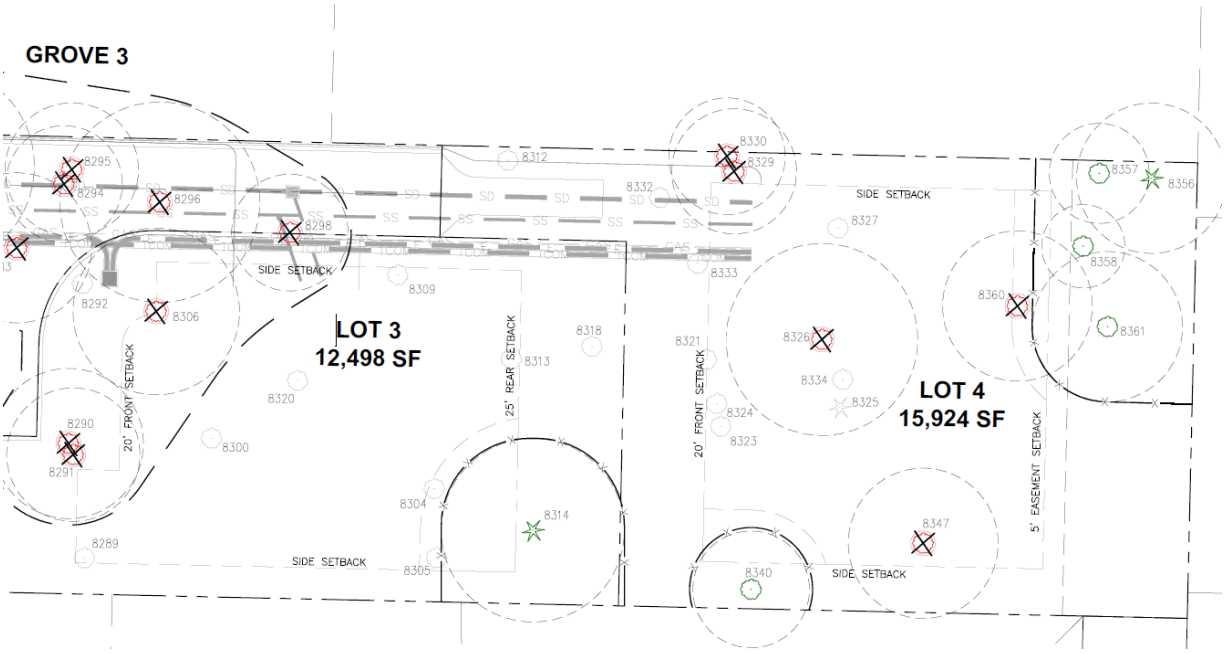
1	2	3	4	5	6	7		8	9	10		11			
#	Tree Tag #	Species ID	DBH inches	Adj. DBH inches	Drip-line radius feet	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action		CRZ/TPZ/LOD			
										Retain		Radius in feet			
										Viable	Non- viable	N	W	E	S
3	8266	Western red cedar	18	18	14			OK	Thin canopy, typical of species, vertical crack @ root crown up to 6' towards north	1		14	14	14	14
4	8270	Bigleaf maple	36	36	24 over fence			Poor	Cavity @ root crown up to 4' towards east, serpentine trunk, previous large scaffold failure @ 15' towards north resulting in a large cavity		1	13	24	24	24
5	8400	Grand fir	12	12	2 over fence			OK	Suppressed canopy, typical of species	1		2	2	2	2
6	8401	Bigleaf maple	28	28	0 over fence		Y	Fair	Previous top loss, strong leaders, asymmetric canopy towards south, typical of species	1		0	0	0	0
7	8402	Bigleaf maple	26	26	4 over fence			OK	Serpentine trunk, decay @ root crown, lean towards south, typical of species	1		4	4	4	4
8	8403	Hemlock	13	13	9 over fence			Fair	Exposed roots, thin canopy, suppressed canopy		1	9	9	9	9
9	8404	Norway spruce	12	12	0 over fence			Poor	Previous top loss, elongated branches, free flowing sap, lean towards south		1	0	0	0	0
10	8405	Grand fir	18	18	0 over fence			OK	Dead wood, broken branches, co-dominant canopy	1		0	0	0	0

1	2	3	4	5	6	7		8	9	10		11			
#	Tree Tag #	Species ID	DBH inches	Adj. DBH inches	Drip-line radius feet	Wind-firm	OK in Grove	Health	Defects/Comments	Proposed Action		CRZ/TPZ/LOD			
										Retain		Radius in feet			
										Viable	Non- viable	N	W	E	S
11	8406	Bigleaf maple	26	26	0 over fence			Poor	Previous top loss @ 70'		1	0	0	0	0

Aerial View of Site:

Proposed site Improvements: (for reference only, see civil plans for details)





Discussion:

Tree Density Calculations	
Total number of onsite trees	86
Total number of non-viable trees	39
Total number of viable trees	47
Total number of trees removed for site improvements	28
Total number of required tree credits (30% X 47)	14
Total number of retained tree credits (40%)	19
Mitigation:	
Exceptional trees >36" (6: 1) - 2	12
Trees removed from "Exceptional groves" (6:1) -12	72
Large trees 24"-36" (3:1) - 0	0
10"-24" (2:1) - 14	28
Mitigation Total	**112**

The applicant is requesting to short plat the existing 1.6-acre SFR into four (4) SFR parcels. Currently there is a single-family residence on the parcel accessed by a gravel driveway that wraps around the back of the home to the garage area.

There are eighty-six (86) trees with DBH's 10" or greater on the parcel; thirty-nine (39) are non-viable, forty-seven (47) are viable and suitable for retention.

The trees include nine (9) trees, that are exceptional in DBH: #8118, 8183, 8233, 8261, 8277, 8314, 8318, 8325, 8356 – four (4) are non-viable and five (5) are viable and suitable for retention (#8118, 8183, 8261, 8314, 8356. Of the five viable exceptional sized trees, two (2) are proposed to be removed (8118 and 8261) and three (3) are proposed to be retained (8183, 8314, 8356).

MICC requires that the applicant retain 30% of the existing trees (30% X 47 = 14). Proposed site improvements retain nineteen (19) trees-40%.

There are two (2) retained tree grove areas; the understory of native shrubs and ground-covers in and around the groves of trees should be retained intact. Any work in the area to remove invasive species (especially holly, ivy, and blackberries) should be completely by hand and 4" of arborist bark (or hog fuel) should be applied around any retained tree that has been impacted by site construction. Additional water should be provided three (3) times per week (approximately 1" of water per week) during periods of drought.

Overall Tree Distribution:

Tree Distribution Summary			
Exceptional Trees by Size (30"DBH or <)			
Total	Nonviable	Removed	Retained
9	4	2	3
Large (24"-30" DBH)			
8	7	0	1
Regulated not large or exceptional			
69	28	26	15
Total			
86	39	28	19

CITY OF MERCER ISLAND

COMMUNITY PLANNING & DEVELOPMENT
9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercergov.org

MERCER ISLAND TREE INVENTORY & REPLACEMENT SUBMITTAL INFORMATION

PROJECT INFORMATION	
Property Owner Name:	Saintfield 2, LLC
Site Address or Parcel Number:	2524049075
Project Contact Name:	Wes Giesbrecht
Contact Email Address:	atlin@qwestoffice.ne
Contact Phone Number:	206.769.1888

EXCEPTIONAL TREES

Exceptional Trees- means a tree or group of trees that because of its unique historical, ecological or aesthetic value constitutes an important community resource. A tree that is rare or exceptional by virtue of its size, species, condition, cultural/historical importance, age, and/or contribution as part of a tree grove. Trees with a diameter of more than 36 inches, or with a diameter that is equal to or greater than the diameter listed in the Exceptional Tree Table shown in MICC 19.16 under Tree, Exceptional.

List the total number of trees for each category and the tree identification numbers from the arborist report.

Number of trees 36" or greater: 8 (3 nonviable)
List tree numbers: 8118, 8261, 8183, 8314, 8325 (nv), 8233 (nv), 8318 (nv), 8356

Number of trees 24" or greater (including 36" or greater): 17 (11 nonviable)
List tree numbers: 8261, 8183, 8314, 8325nv, 8233nv, 8118, 8318nv, 8356, 8277nv, 8127nv, 8321nv, 8126nv, 8276nv, 8175nv, 8124nv, 8274nv, 8262

Number of trees from Exceptional Tree Table (MICC 19.16): 11 (5 nonviable)
List tree numbers: 8118, 8261, 8183, 8314, 8325nv, 8233nv, 8318nv, 8356, 8277nv, 8127nv,8234

LARGE REGULATED TREES

Large Regulated Trees- means any tree with a diameter of 10 inches or more, and any tree that meets the definition of an Exceptional Tree.

Number of Large Regulated Trees on site: 86 (47 v) (A)

List tree numbers: See additional page

Number of Large Regulated Trees on site proposed for removal: 66 (28 v) (B)

List tree numbers: See additional page

Percentage of trees to be retained ((A-B)/Ax100) note: must be at least 30%: (47-28) 40 %

RIGHT OF WAY TREES

Right of Way Trees- means a tree that is located in the street right of way adjacent to the project property.

Number of Large Regulated Trees in right of way: N/A

List tree numbers:

Number of Large Regulated Trees in right of way proposed for removal: N/A

List tree numbers:

Reason for removal:

TREE REPLACEMENT

Tree replacement- removed trees must be replaced based on the ratio in the table below. Replacement trees shall be conifers at least six feet tall and or deciduous at least one and one-half inches in diameter at base.

Diameter of Removed Tree (measured 4.5' above ground)	Tree replacement Ratio	Number of Trees Proposed for Removal	Number of Tree Required for Replacement Based on Size/Type
Less than 10"* N/A	1	N/A	N/A
10" up to 24"	2	14	24
Greater than 24" up to 36"	3	0	0
Greater than 36" and any Exceptional Tree	6	14	84
	TOTAL TREE REPLACEMENTS		112

no replacement tree is needed if the tree fits all of the following;
Less than 10 inches in diameter, not an exceptional tree, and not a replacement tree from another tree permit. *

Large Regulated trees					
8261	**8183**	8253	8281	8305	8330
8118	**8233**	8254	8283	8306	8332
8119	8234	**8262**	8284	8309	8333
8121	8238	8263	8285	8312	8334
8122	8239	8264	8286	8313	8340
8124	8241	8265	8289	**8314**	8347
8125	8242	8267	8290	**8318**	**8356**
8126	8244	8269	8291	8320	8357
8127	8245	8272	8292	**8321**	8358
8131	8246	8273	8294	8323	8360
8167	8247	**8274**	8295	8324	8361
8175	8248	8275	8296	**8325**	
8178	8250	**8276**	8298	8326	
8179	8251	**8277**	8300	8327	
8180	8252	8279	8304	8329	

Regulated trees to be Removed				
8118	8234	**8277**	8300	8329
8119	8250	8279	8304	8330
8121	8251	8281	8305	8332
8122	8252	8283	8306	8333
8124	8253	8284	8309	8334
8125	8254	8285	8312	8347
8126	**8261**	8286	8313	8360
8127	8264	8289	**8318**	
8131	8265	8290	8320	
8167	8267	8291	**8321**	
8175	8272	8292	8323	
8178	8273	8294	8324	
8179	**8274**	8295	**8325**	
8180	8275	8296	8326	
8233	**8276**	8298	8327	

Tree Risk Assessment Forms:

ISA Basic Tree Risk Assessment Form

Client Wes Giesbrecht Date 10.09.23 Time 11:30 PM
Address/Tree location 7414 78th Ave SE Tree no. 8325 Sheet 1 of 2
Tree species Douglas fir dbh 42" Height 80' Crown spread dia. 48'
Assessor(s) Susan Prince PN-1481A TRAQ Time frame Immediate Tools used tape, mallet, binoc, hypsometer

Target Assessment

Target number	Target description	Target zone: Target within drip line	Target zone: Target within 1 x Ht.	Target zone: Target within 1.5 x Ht.	Occupancy rate (1 – rare, 2 – occasional, 3 – frequent, 4 – constant)	Practical to move target?	Restriction practical?
1	Future Homes	✓			4	No	No
2							
3							
4							

Site Factors

History of failures Yes **Topography** Flat ■ Slope ☐ _____% **Aspect** _____
Site changes None ☐ Grade change ■ Site clearing ☐ Changed soil hydrology ☐ Root cuts ☐ Describe _____
Soil conditions Limited volume ☐ Saturated ☐ Shallow ☐ Compacted ☐ Pavement over roots ☐ _____% Describe _____
Prevailing wind direction SW **Common weather** Strong winds ■ Ice ☐ Snow ■ Heavy rain ■ Describe Typical PNW

Tree Health and Species Profile

Vigor Low ■ Normal ☐ High ☐ **Foliage** None (seasonal) ☐ None (dead) ☐ Normal 40 % Chlorotic _____% Necrotic 60 %
Pests Carpenter ants **Abiotic** _____
Species failure profile Branches ■ Trunk ■ Roots ■ Describe branches, then trunk lastly roots

Load Factors

Wind exposure Protected ☐ Partial ■ Full ☐ Wind funneling ☐ _____ **Relative crown size** Small ■ Medium ☐ Large ☐
Crown density Sparse ■ Normal ☐ Dense ☐ **Interior branches** Few ■ Normal ☐ Dense ☐ **Vines/Mistletoe/Moss** ☑ ivy
Recent or planned change in load factors site clearing and grading

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ☐ LCR _____%
Dead twigs/branches ■ _____% overall Max. dia. _____
Broken/Hangers Number _____ Max. dia. _____
Over-extended branches ■
Pruning history
Crown cleaned ☐ Thinned ☐ Raised ☐
Reduced ☐ Topped ☐ Lion-tailed ☐
Flush cuts ☐ Other _____

Cracks ☐ _____ Lightning damage ☐
Codominant ☐ _____ Included bark ☐
Weak attachments ■ _____ Cavity/Nest hole ____% circ.
Previous branch failures ■ _____ Similar branches present ■
Dead/Missing bark ☐ Cankers/Galls/Burls ☐ Sapwood damage/decay ☐
Conks ☐ Heartwood decay ☐ _____
Response growth _____

Main concern(s) Wind, continued decline

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■
Likelihood of failure Improbable ☐ Possible ☐ Probable ■ Imminent ☐

—Trunk —

Dead/Missing bark ■ Abnormal bark texture/color ■
Codominant stems ☐ Included bark ☐ Cracks ☐
Sapwood damage/decay ☐ Cankers/Galls/Burls ☐ Sap ooze ☐
Lightning damage ☐ Heartwood decay ☐ Conks/Mushrooms ☐
Cavity/Nest hole _____% circ. Depth _____ Poor taper ☐
Lean _____° Corrected? _____
Response growth _____
Main concern(s) wind
Previous large top failue at 80'

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■
Likelihood of failure
Improbable ☐ Possible ☐ Probable ■ Imminent ☐

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth _____ Stem girdling ☐
Dead ☐ Decay ☐ Conks/Mushrooms ☐
Ooze ☐ Cavity ☐ _____% circ.
Cracks ☐ Cut/Damaged roots ☐ Distance from trunk _____
Root plate lifting ☐ Soil weakness ☐
Response growth _____
Main concern(s) Wind

Load on defect N/A ☐ Minor ☐ Moderate ■ Significant ☐
Likelihood of failure
Improbable ☐ Possible ☐ Probable ■ Imminent ☐

8325 2/2

Risk Categorization

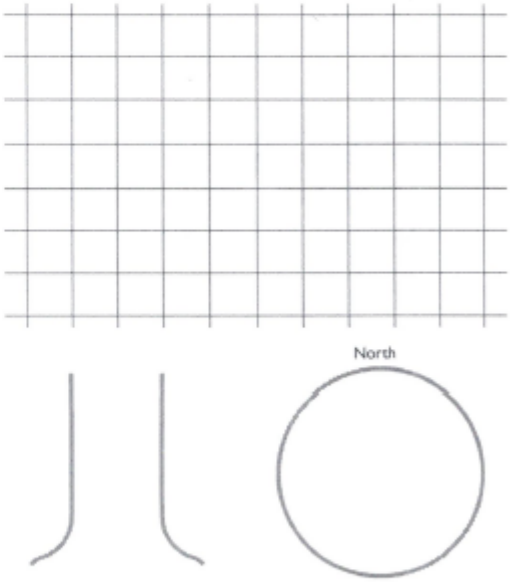
Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Likelihood: Failure: Possible	Likelihood: Failure: Probable	Likelihood: Failure: Imminent	Likelihood: Impact: Very low	Likelihood: Impact: Low	Likelihood: Impact: Medium	Likelihood: Impact: High	Likelihood: Failure & Impact (from Matrix 1): Unlikely	Likelihood: Failure & Impact (from Matrix 1): Somewhat	Likelihood: Failure & Impact (from Matrix 1): Likely	Likelihood: Failure & Impact (from Matrix 1): Very likely	Consequences: Negligible	Consequences: Minor	Consequences: Significant	Consequences: Severe	Risk rating of part (from Matrix 2)
1	Trunk	High wind	42	80	4	No	○	○	◉	○	○	○	○	◉	○	○	◉	○	○	○	◉	○	High
1							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
1							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
2							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
2							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
2							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
3							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
3							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
3							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
4							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
4							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
4							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low



Notes, explanations, descriptions _____

Mitigation options Remove tree _____ **Residual risk** _____

_____ **Residual risk** _____

_____ **Residual risk** _____

_____ **Residual risk** _____

Overall tree risk rating Low ☐ Moderate ☐ High ■ Extreme ☐ **Work priority** 1 ☐ 2 ☐ 3 ☐ 4 ☐

Overall residual risk Low ■ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** _____

Data ■ Final ☐ Preliminary **Advanced assessment needed** ■ No ☐ Yes-Type/Reason _____

Inspection limitations ■ None ☐ Visibility ☐ Access ☐ Vines ☐ Root collar buried Describe _____

ISA Basic Tree Risk Assessment Form

Client Wes Giesbrecht Date 10.09.23 Time 11:30 PM
Address/Tree location 7414 78th Ave SE Tree no. 8277 Sheet 1 of 2
Tree species Bigleaf maple dbh 34.4 Height 85' Crown spread dia. 48'
Assessor(s) Susan Prince PN-1481A TRAQ Time frame immediate Tools used tape, mallet, binoc, hypsometer

Target Assessment

Target number	Target description	Target zone: Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.	Occupancy rate (1 – rare, 2 – occasional, 3 – frequent, 4 – constant)	Practical to move target?	Restriction practical?
1	Driveway	✓			3	No	No
2	Future home	✓			4	No	No
3							
4							

Site Factors

History of failures Yes **Topography** Flat ☒ Slope ☐ _____% **Aspect** _____
Site changes None ☐ Grade change ■ Site clearing ☐ Changed soil hydrology ☐ Root cuts ☐ Describe _____
Soil conditions Limited volume ☐ Saturated ☐ Shallow ☐ Compacted ☐ Pavement over roots ☐ _____% Describe _____
Prevailing wind direction SW **Common weather** Strong winds ■ Ice ☐ Snow ■ Heavy rain ■ Describe Typical PNW

Tree Health and Species Profile

Vigor Low ■ Normal ☐ High ☐ **Foliage** None (seasonal) ☐ None (dead) ☐ Normal 40 % Chlorotic _____% Necrotic 60 %
Pests Carpenter ants **Abiotic** _____
Species failure profile Branches ■ Trunk ■ Roots ■ Describe branches, then trunk lastly roots

Load Factors

Wind exposure Protected ☐ Partial ■ Full ☐ Wind funneling ☐ _____ **Relative crown size** Small ■ Medium ☐ Large ☐
Crown density Sparse ■ Normal ☐ Dense ☐ **Interior branches** Few ■ Normal ☐ Dense ☐ **Vines/Mistletoe/Moss** ☑ Ivy
Recent or planned change in load factors site clearing and grading

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ☐ LCR _____%
Dead twigs/branches ■ _____% overall Max. dia. _____
Broken/Hangers Number _____ Max. dia. _____
Over-extended branches ■
Pruning history
Crown cleaned ☐ Thinned ☐ Raised ☐
Reduced ☐ Topped ☐ Lion-tailed ☐
Flush cuts ☐ Other _____

Cracks ☐ _____ Lightning damage ☐
Codominant ■ _____ Included bark ☐
Weak attachments ■ _____ Cavity/Nest hole ____% circ.
Previous branch failures ■ _____ Similar branches present ■
Dead/Missing bark ☐ Cankers/Galls/Burls ☐ Sapwood damage/decay ☐
Conks ☐ Heartwood decay ☐ _____
Response growth _____

Main concern(s) Wind, continued decline

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■
Likelihood of failure Improbable ☐ Possible ☐ Probable ■ Imminent ☐

— Trunk —

Dead/Missing bark ☐ Abnormal bark texture/color ■
Codominant stems ■ Included bark ■ Cracks ☐
Sapwood damage/decay ■ Cankers/Galls/Burls ☐ Sap ooze ☐
Lightning damage ☐ Heartwood decay ☐ Conks/Mushrooms ☐
Cavity/Nest hole _____% circ. Depth _____ Poor taper ☐
Lean _____° Corrected? _____
Response growth _____
Main concern(s) 4' tall cavity of decay at root crown

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■
Likelihood of failure
Improbable ☐ Possible ☐ Probable ☐ Imminent ☐

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth _____ Stem girdling ☐
Dead ☐ Decay ☐ Conks/Mushrooms ☐
Ooze ☐ Cavity ☐ _____% circ.
Cracks ☐ Cut/Damaged roots ☐ Distance from trunk _____
Root plate lifting ☐ Soil weakness ☐
Response growth _____
Main concern(s) Wind

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■
Likelihood of failure
Improbable ☐ Possible ☐ Probable ■ Imminent ☐

8277
2/2

Risk Categorization

Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Failure: Possible	Failure: Probable	Failure: Imminent	Likelihood: Impact: Very low	Impact: Low	Impact: Medium	Impact: High	Likelihood: Failure & Impact (from Matrix 1): Unlikely	Somewhat	Likely	Very likely	Consequences: Negligible	Minor	Significant	Severe	Risk rating of part (from Matrix 2)
1	Trunk	High wind	34.4	100	3	No	○	○	◉	○	○	○	○	◉	○	○	◉	○	○	○	◉	○	High
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
2							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
3							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
4							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Notes, explanations, descriptions _____

Mitigation options Remove tree _____ **Residual risk** _____

_____ **Residual risk** _____

_____ **Residual risk** _____

_____ **Residual risk** _____

Overall tree risk rating Low ☐ Moderate ☐ High ■ Extreme ☐ **Work priority** 1 ☐ 2 ☐ 3 ☐ 4 ☐

Overall residual risk Low ■ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** _____

Data ■ Final ☐ Preliminary **Advanced assessment needed** ■ No ☐ Yes-Type/Reason _____

Inspection limitations ■ None ☐ Visibility ☐ Access ☐ Vines ☐ Root collar buried Describe _____

ISA Basic Tree Risk Assessment Form

Client Wes Giesbrecht Date 10.09.23 Time 11:30 PM
Address/Tree location 7414 78th Ave SE Tree no. 8318 Sheet 1 of 2
Tree species Bigleaf maple dbh 39.1" Height 85' Crown spread dia. 56'
Assessor(s) Susan Prince PN-1481A TRAQ Time frame Immediate Tools used tape, mallet, binoc, hypsometer

Target Assessment

Target number	Target description	Target zone: Target within drip line	Target zone: Target within 1 x Ht.	Target zone: Target within 1.5 x Ht.	Occupancy rate (1 – rare, 2 – occasional, 3 – frequent, 4 – constant)	Practical to move target?	Restriction practical?
1	Driveway	✓			3	No	No
2	Future homes	✓			4	No	No
3							
4							

Site Factors

History of failures Yes **Topography** Flat ■ Slope ☐ _____% **Aspect** _____
Site changes None ☐ Grade change ■ Site clearing ☐ Changed soil hydrology ☐ Root cuts ☐ Describe _____
Soil conditions Limited volume ☐ Saturated ☐ Shallow ☐ Compacted ☐ Pavement over roots ☐ _____% Describe _____
Prevailing wind direction SW **Common weather** Strong winds ■ Ice ☐ Snow ■ Heavy rain ■ Describe Typical PNW

Tree Health and Species Profile

Vigor Low ■ Normal ☐ High ☐ **Foliage** None (seasonal) ☐ None (dead) ☐ Normal 40 % Chlorotic ____% Necrotic 60 %
Pests Carpenter ants **Abiotic** _____
Species failure profile Branches ■ Trunk ■ Roots ■ Describe branches, then trunk lastly roots

Load Factors

Wind exposure Protected ☐ Partial ■ Full ☐ Wind funneling ☐ _____ **Relative crown size** Small ■ Medium ☐ Large ☐
Crown density Sparse ■ Normal ☐ Dense ☐ **Interior branches** Few ■ Normal ☐ Dense ☐ **Vines/Mistletoe/Moss** ☑ ivy
Recent or planned change in load factors site clearing and grading

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ■ LCR <10 %
Dead twigs/branches ■ ____% overall Max. dia. _____
Broken/Hangers Number _____ Max. dia. _____
Over-extended branches ■
Pruning history
Crown cleaned ☐ Thinned ☐ Raised ☐
Reduced ☐ Topped ☐ Lion-tailed ☐
Flush cuts ☐ Other _____

Cracks ☐ _____ Lightning damage ☐
Codominant ■ _____ Included bark ☐
Weak attachments ■ _____ Cavity/Nest hole ____% circ.
Previous branch failures ■ _____ Similar branches present ■
Dead/Missing bark ☐ Cankers/Galls/Burls ☐ Sapwood damage/decay ☐
Conks ☐ Heartwood decay ☐ _____
Response growth _____

Main concern(s) Wind, continued decline

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■
Likelihood of failure Improbable ☐ Possible ☐ Probable ■ Imminent ☐

— Trunk —

Dead/Missing bark ☐ Abnormal bark texture/color ■
Codominant stems ■ Included bark ■ Cracks ☐
Sapwood damage/decay ■ Cankers/Galls/Burls ☐ Sap ooze ☐
Lightning damage ☐ Heartwood decay ■ Conks/Mushrooms ☐
Cavity/Nest hole 50 % circ. Depth 24" Poor taper ☐
Lean ____° Corrected? _____
Response growth _____
Main concern(s) 4' tall cavity of decay at root crown
Previous large top failue

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■
Likelihood of failure
Improbable ☐ Possible ☐ Probable ☐ Imminent ■

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth _____ Stem girdling ☐
Dead ☐ Decay ☐ Conks/Mushrooms ☐
Ooze ☐ Cavity ☐ ____% circ.
Cracks ☐ Cut/Damaged roots ☐ Distance from trunk _____
Root plate lifting ☐ Soil weakness ☐

Response growth Exposed roots
Main concern(s) Wind

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ■
Likelihood of failure
Improbable ☐ Possible ☐ Probable ■ Imminent ☐

8318
2/2

Risk Categorization

Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Failure: Possible	Failure: Probable	Failure: Imminent	Impact: Very low	Impact: Low	Impact: Medium	Impact: High	Failure & Impact (from Matrix 1): Unlikely	Somewhat	Likely	Very likely	Consequences: Negligible	Minor	Significant	Severe	Risk rating of part (from Matrix 2)
1	Trunk	High wind	30	100	4	No	○	○	○	●	○	○	○	●	○	○	○	●	○	○	●	○	Extreme
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
2							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
3							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
4							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Notes, explanations, descriptions _____

Mitigation options Remove tree _____ **Residual risk** _____

_____ **Residual risk** _____

_____ **Residual risk** _____

_____ **Residual risk** _____

Overall tree risk rating Low ☐ Moderate ☐ High ☐ Extreme ■ **Work priority** 1 ☐ 2 ☐ 3 ☐ 4 ☐

Overall residual risk Low ■ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** _____

Data ■ Final ☐ Preliminary **Advanced assessment needed** ■ No ☐ Yes-Type/Reason _____

Inspection limitations ■ None ☐ Visibility ☐ Access ☐ Vines ☐ Root collar buried Describe _____

ISA Basic Tree Risk Assessment Form

8127
1/2

Client Wes Giesbrecht Date 10.09.23 Time 11:30 PM

Address/Tree location 7414 78th Ave SE Tree no. 8127 Sheet 1 of 2

Tree species Bigleaf maple dbh 31.2" Height 80' Crown spread dia. 48

Assessor(s) Susan Prince PN-1481A TRAQ Time frame immediate Tools used tape, mallet, binoc, hypsometer

Target Assessment

Target number	Target description	Target zone: Target within drip line	Target zone: Target within 1 x Ht.	Target zone: Target within 1.5 x Ht.	Occupancy rate (1 – rare, 2 – occasional, 3 – frequent, 4 – constant)	Practical to move target?	Restriction practical?
1	Roadway	✓			3	No	No
2	Powerlines	✓			3	No	No
3							
4							

Site Factors

History of failures Yes **Topography** Flat ☐ Slope ☑ ____% **Aspect** W

Site changes None ☐ Grade change ☑ Site clearing ☐ Changed soil hydrology ☐ Root cuts ☐ Describe ____

Soil conditions Limited volume ☐ Saturated ☐ Shallow ☐ Compacted ☐ Pavement over roots ☐ ____% Describe ____

Prevailing wind direction SW **Common weather** Strong winds ☑ Ice ☑ Snow ☐ Heavy rain ☑ Describe Typical PNW

Tree Health and Species Profile

Vigor Low ☑ Normal ☐ High ☐ **Foliage** None (seasonal) ☐ None (dead) ☐ Normal 40 % Chlorotic ____% Necrotic 60 %

Pests carpenter ants **Abiotic** ____

Species failure profile Branches ☑ Trunk ☑ Roots ☐ Describe branches, trunk, common, uncommon-roots

Load Factors

Wind exposure Protected ☐ Partial ☑ Full ☐ Wind funneling ☐ ____ **Relative crown size** Small ☑ Medium ☐ Large ☐

Crown density Sparse ☑ Normal ☐ Dense ☐ **Interior branches** Few ☑ Normal ☐ Dense ☐ **Vines/Mistletoe/Moss** ☑ ivy to 60'

Recent or planned change in load factors ____

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ☑ LCR ____%

Dead twigs/branches ☑ 10 % overall Max. dia. 10"

Broken/Hangers Number ____ Max. dia. ____

Over-extended branches ☐

Pruning history

Crown cleaned ☐ Thinned ☐ Raised ☐

Reduced ☐ Topped ☐ Lion-tailed ☐

Flush cuts ☐ Other ____

Cracks ☐ ____ Lightning damage ☐

Codominant ☐ ____ Included bark ☐

Weak attachments ☑ ____ Cavity/Nest hole 50 % circ.

Previous branch failures ☑ ____ Similar branches present ☐

Dead/Missing bark ☑ Cankers/Galls/Burls ☐ Sapwood damage/decay ☐

Conks ☐ Heartwood decay ☐ ____

Response growth ____

Main concern(s) Sudden limb failure, or trunk

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☑

Likelihood of failure Improbable ☐ Possible ☐ Probable ☑ Imminent ☐

— Trunk —

Dead/Missing bark ☑ Abnormal bark texture/color ☑

Codominant stems ☑ Included bark ☑ Cracks ☐

Sapwood damage/decay ☐ Cankers/Galls/Burls ☐ Sap ooze ☐

Lightning damage ☐ Heartwood decay ☐ Conks/Mushrooms ☐

Cavity/Nest hole 50 % circ. Depth ____ Poor taper ☐

Lean 5 ° Corrected? East, yes

Response growth ____

Main concern(s) Trunk collapse @ root crown

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☑

Likelihood of failure

Improbable ☐ Possible ☐ Probable ☑ Imminent ☐

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth ____ Stem girdling ☐

Dead ☐ Decay ☐ Conks/Mushrooms ☐

Ooze ☐ Cavity ☐ ____% circ.

Cracks ☐ Cut/Damaged roots ☐ Distance from trunk ____

Root plate lifting ☐ Soil weakness ☐

Response growth ____

Main concern(s) ____

Load on defect N/A ☐ Minor ☐ Moderate ☑ Significant ☐

Likelihood of failure

Improbable ☐ Possible ☑ Probable ☐ Imminent ☐

8127
2/2

Risk Categorization

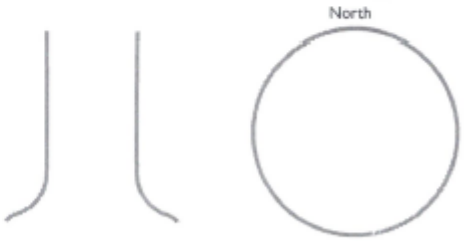
Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Likelihood: Failure: Possible	Likelihood: Failure: Probable	Likelihood: Failure: Imminent	Likelihood: Impact: Very low	Likelihood: Impact: Low	Likelihood: Impact: Medium	Likelihood: Impact: High	Likelihood: Failure & Impact (from Matrix 1): Unlikely	Likelihood: Failure & Impact (from Matrix 1): Somewhat	Likelihood: Failure & Impact (from Matrix 1): Likely	Likelihood: Failure & Impact (from Matrix 1): Very likely	Consequences: Negligible	Consequences: Minor	Consequences: Significant	Consequences: Severe	Risk rating of part (from Matrix 2)
1	trunk	wind	30"	50'	3	No	○	○	✗	○	○	○	○	✗	○	○	✗	○	○	○	○	✗	High
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	✗	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
2							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
3							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
4							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low



Notes, explanations, descriptions _____

Mitigation options _____ **Residual risk** _____

Residual risk _____

Residual risk _____

Residual risk _____

Overall tree risk rating Low ☐ Moderate ☐ High ☑ Extreme ☐ **Work priority** 1 ☐ 2 ☐ 3 ☐ 4 ☐

Overall residual risk Low ☑ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** _____

Data ☑ Final ☐ Preliminary **Advanced assessment needed** ☑ No ☐ Yes-Type/Reason _____ Remove tree

Inspection limitations ☑ None ☐ Visibility ☐ Access ☐ Vines ☐ Root collar buried Describe _____

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1 of 2

ISA Basic Tree Risk Assessment Form

Client Wes Giesbrecht Date 10.09.23 Time 11:30 PM
Address/Tree location 7414 78th Ave SE Tree no. 8233 Sheet 1 of 2
Tree species Bigleaf maple dbh 41.4 Height 80' Crown spread dia. 44'
Assessor(s) Susan Prince PN-1481A TRAQ Time frame immediate Tools used tape, mallet, binoc, hypsometer

Target Assessment

Target number	Target description	Target zone: Target within drip line	Target zone: Target within 1x Ht.	Target zone: Target within 1.5x Ht.	Occupancy rate (1 – rare, 2 – occasional, 3 – frequent, 4 – constant)	Practical to move target?	Restriction practical?
1	Roadway	✓			3	No	No
2	future home	✓			4	No	No
3							
4							

Site Factors

History of failures yes
Topography Flat ☑ Slope ☐ _____% **Aspect** _____
Site changes None ☐ Grade change ☑ Site clearing ☐ Changed soil hydrology ☐ Root cuts ☑ Describe 1' from trunk
Soil conditions Limited volume ☐ Saturated ☐ Shallow ☐ Compacted ☐ Pavement over roots ☐ _____% Describe _____
Prevailing wind direction SW **Common weather** Strong winds ☑ Ice ☐ Snow ☑ Heavy rain ☑ Describe typical PNW

Tree Health and Species Profile

Vigor Low ☑ Normal ☐ High ☐ **Foliage** None (seasonal) ☐ None (dead) ☐ Normal 60 % Chlorotic _____% Necrotic 40 %
Pests carpenter ants **Abiotic** hypoxylon canker
Species failure profile Branches ☑ Trunk ☑ Roots ☐ Describe primary branches/trunk

Load Factors

Wind exposure Protected ☐ Partial ☑ Full ☐ Wind funneling ☐ _____ **Relative crown size** Small ☐ Medium ☐ Large ☐
Crown density Sparse ☑ Normal ☐ Dense ☐ **Interior branches** Few ☐ Normal ☐ Dense ☐ **Vines/Mistletoe/Moss** ☐ _____
Recent or planned change in load factors _____

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ☐ LCR _____%
Dead twigs/branches ☑ _____% overall Max. dia. _____
Broken/Hangers Number _____ Max. dia. _____
Over-extended branches ☐
Pruning history
Crown cleaned ☐ Thinned ☐ Raised ☐
Reduced ☐ Topped ☐ Lion-tailed ☐
Flush cuts ☐ Other _____

Cracks ☐ _____ Lightning damage ☐
Codominant ☑ _____ Included bark ☐
Weak attachments ☑ _____ Cavity/Nest hole ____% circ.
Previous branch failures ☑ _____ Similar branches present ☑
Dead/Missing bark ☐ Cankers/Galls/Burls ☑ Sapwood damage/decay ☑
Conks ☐ Heartwood decay ☑ _____
Response growth _____

Main concern(s) Sudden limb drop

Load on defect N/A ☐ Minor ☐ Moderate ☑ Significant ☐ _____
Likelihood of failure Improbable ☐ Possible ☐ Probable ☑ Imminent ☐ _____

— Trunk —

Dead/Missing bark ☐ Abnormal bark texture/color ☐
Codominant stems ☑ Included bark ☑ Cracks ☑
Sapwood damage/decay ☑ Cankers/Galls/Burls ☐ Sap ooze ☐
Lightning damage ☐ Heartwood decay ☑ Conks/Mushrooms ☐
Cavity/Nest hole _____% circ. Depth _____ Poor taper ☐
Lean _____° Corrected? _____
Response growth _____
Main concern(s) previous top failure ⇒ scaffold failure

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☒
Likelihood of failure
Improbable ☐ Possible ☐ Probable ☒ Imminent ☐

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth _____ Stem girdling ☐
Dead ☐ Decay ☐ Conks/Mushrooms ☐
Ooze ☐ Cavity ☐ _____% circ.
Cracks ☐ Cut/Damaged roots ☒ Distance from trunk _____
Root plate lifting ☐ Soil weakness ☐
Response growth decay in roots @ 1' from root crown
Main concern(s) root failure after heavy rain & strong wind

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☑
Likelihood of failure
Improbable ☐ Possible ☐ Probable ☑ Imminent ☐

8283
2/2

Risk Categorization

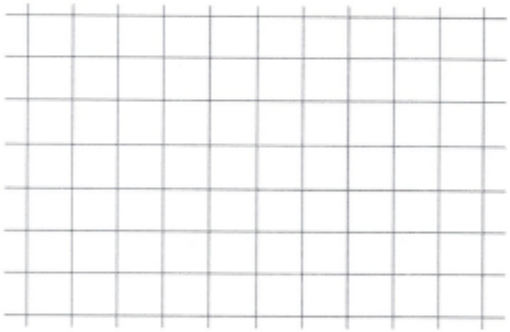
Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Likelihood: Failure: Possible	Likelihood: Failure: Probable	Likelihood: Failure: Imminent	Likelihood: Impact: Very low	Likelihood: Impact: Low	Likelihood: Impact: Medium	Likelihood: Impact: High	Likelihood: Failure & Impact (from Matrix 1): Unlikely	Likelihood: Failure & Impact (from Matrix 1): Somewhat likely	Likelihood: Failure & Impact (from Matrix 1): Likely	Likelihood: Failure & Impact (from Matrix 1): Very likely	Consequences: Negligible	Consequences: Minor	Consequences: Significant	Consequences: Severe	Risk rating of part (from Matrix 2)
1	roots	heavy rain & strong wind → root failure	4	100'	3	N			✓					✓			✓				✓		High
2																							
3																							
4																							

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low



Notes, explanations, descriptions _____

Mitigation options _____ **Residual risk** _____

Residual risk _____

Residual risk _____

Residual risk _____

Overall tree risk rating Low ☐ Moderate ☐ High ☑ Extreme ☐ **Work priority** 1 ☐ 2 ☐ 3 ☐ 4 ☐

Overall residual risk Low ☑ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** _____

Data ☑ Final ☐ Preliminary **Advanced assessment needed** ☑ No ☐ Yes-Type/Reason Remove tree

Inspection limitations ☑ None ☐ Visibility ☐ Access ☐ Vines ☐ Root collar buried Describe _____

Tree Protection Fencing: Tree Protection fencing should be erected prior to any site grading.

First, protect roots that lie in the path of construction. Approximately 90 to 95 percent of a tree's root system is in the top three feet of soil, and more than half is in the top one foot. Construction activities should be avoided in this area. Protect as much of the area beyond the tree's dripline as possible. Some healthy trees survive after losing half of their roots. However, other species are extremely sensitive to root damage even outside the dripline.

Do not disturb the Critical Root Zone (CRZ). The CRZ is defined by its "critical root radius." It is more accurate than the dripline for determining the CRZ of trees growing in forests or that have narrow growth habits. To calculate critical root radius, measure the tree's diameter (DBH) in inches, 4.5 feet above the ground. For each inch, allow for 1 to 1.5 feet of critical root radius. If a tree's DBH is ten inches, its critical root radius is 10 to 15 feet.

In addition to the CRZ, it is important to determine the Limits of Disturbance (LOD) for preserved trees. Generally, this is approximating the CRZ however in previously excavated areas around the dripline the LOD may be smaller, or in the case of a tree situated on a slope the LOD may be larger. The determination of LOD is also subject to the tree species. Some tree species do better than others after root disturbance.

Tree protection is advised throughout the duration of any construction activities whenever the critical root zone or leaf canopy may be encroached upon by such activities.

The Critical Root Zone (CRZ) or LOD should be protected with fencing adequate to hinder access to people, vehicles and equipment. Fencing detail is provided. It should consist of continuous 4 ft. high temporary chain-link fencing with posts sec at 10’ on center or polyethylene laminar safety fencing or similar. The fencing must contain fencing signage detailing that the tree protection area cannot be trespassed on.

Soil compaction is one of the most common killers of urban trees. Stockpiled materials, heavy machinery and excessive foot traffic damage soil structure and reduce soil pore space. The effected tree roots suffocate. When construction takes place close to the protected CRZ, cover the site with 4 inches of bark to reduce soil compaction.

Tree Protection fencing must be erected prior to soil excavation, boring, grading or fill operations. It is erected at the LOD. If it is necessary to run utilities within the LOD, the utilities should be combined into one cut, as practical. Trenching is not allowed in the LOD. In these areas boring or tunneling techniques should be used. If roots greater than 1” diameter near the LOD are damaged or torn, it is necessary to hand trim them to a clean cut. Any roots that are exposed during construction should be covered with soil as soon as possible.

During drought conditions, trees must be adequately watered. The site should be visited regularly by a qualified ISA Certified Arborist to ensure the health of the trees. Tree protection fencing is the last item to be removed from the site after construction is completed.

After construction has been completed, evaluate the remaining trees. Look for signs and symptoms of damage or stress. It may take several years for severe problems to appear.

If fencing around portions of the CRZ of a tree to be retained are not practical to erect due to construction or obstacles, tree protection fencing should be placed three feet laterally from the obstruction (ex. three feet back of a curb, building, or other existing or planned permanent infrastructure.

Glossary:

ANSI A300: American National Standards Institute (ANSI) standards for tree care

Chlorotic: discoloration caused by lack of chlorophyll in the foliage

Conifer: A tree that bears cones and has evergreen needles or scales

Crown: the above ground portion of the tree comprised of branches and their foliage

Crown raise pruning: a pruning technique where the lower branches are removed, thus raising the overall height of the crown from the ground

DBH or DSH: diameter at breast or standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade

Deciduous: tree or other plant that loses its leaves annually and remains leafless generally during the cold season

Epicormic: arising from latent or adventitious buds

Evergreen: tree or plant that keeps its needles or leaves year round; this means for more than one growing season

Increment: the amount of new wood fiber added to a tree in a given period, normally one year.

ISA: International Society of Arboriculture

Landscape function: the environmental, aesthetic, or architectural functions that a plant can have

Lateral: secondary or subordinate branch

Limits of disturbance: The boundary of minimum protection around a tree, the area that cannot be encroached upon without possible permanent damage to the tree. It is a distance determined by a qualified professional and is based on the age of the tree, its health, the tree species tolerance to disruption and the type of disturbance. It also considers soil and environmental condition and previous impacts. It is unique to each tree in its location.

Limited visual assessment: a visual assessment from a specified perspective such as foot, vehicle, or aerial (airborne) patrol of an individual tree or a population of trees near specified targets to identify specified conditions or obvious defects (ISA 2013)

Live crown ratio: the percentage of living tissue in the canopy versus the tree's height. It is a good indicator of overall tree health and the trees growing conditions. Trees with less than a 30% Crown ratio often lack the necessary quantity of photosynthetic material necessary to sustain the roots; consequently, the tree may exhibit low vigor and poor health.

Monitoring: keeping a close watch; performing regular checks or inspections

Owner/manager: the person or entity responsible for tree management or the controlling authority that regulates tree management

Pathogen: causal agent of disease

Phototropic growth: growth toward light source or stimulant

ROW: Right-of-way; generally referring to a tree that is located offsite on a city easement

Reaction wood: Specialized secondary xylem which develops in response to a lean or similar mechanical stress, it serves to help restore the stem to a vertical position

Self-corrected lean: a tree whose trunk is at an angle to the grade but whose trunk and canopy changes to become upright/vertical

Significant tree: a tree measuring a specific diameter determined by the municipality the tree grows in. Some municipalities deem that only healthy trees can be significant, other municipalities consider both healthy and unhealthy trees of a determined diameter to be significant

Snag: a tree left partially standing for the primary purpose of providing habitat for wildlife

Soil structure: the size of particles and their arrangement; considers the soil, water, and air space

Sounding: process of striking a tree with a mallet or other appropriate tool and listening for tones that indicate dead bark, a thin layer of wood outside a cavity, or cracks in wood

Structural defects: flaws, decay, or other faults in the trunk, branches, or root collar of a tree, which may lead to failure; may be genetic, or environmental

Tree credit: A number assigned to a tree by a municipality that may be equal to the diameter of the tree or a numerical count of the tree, or related to diameter by a factor conveyed in a table of the municipal code

Trunk area: the cross-sectional area of the trunk based upon measurement at 54 inches (4.5 ft.) above grade

Visual Tree Assessment (VTA): method of evaluating structural defects and stability in trees by noting the pattern of growth. Developed by Claus Mattheck (Harris, et al 1999) detailed visual inspection of a tree and surrounding site that may include the use of simple tools. It requires that a tree risk assessor walk completely around the tree trunk looking at the site, aboveground roots, trunk, and branches (ISA 2013)

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