



EXHIBIT F

TERAGAN & ASSOCIATES, INC. ARBORICULTURAL CONSULTANTS

MEMORANDUM

DATE: April 23, 2021
TO: Alex Reverman (Roll Tide Corporation)
FROM: Todd Prager, RCA #597, ISA Board Certified Master Arborist
RE: Tree Plan for the Deer Meadows Subdivision

Summary

This report includes tree removal, preservation, and protection recommendations for the proposed Deer Meadows Subdivision in Sandy, Oregon.

Background

Roll Tide Corporation is proposing to construct a 30-lot subdivision at the east end of Dubarko Road in Sandy, Oregon. An existing conditions map of the site and trees is provided in Attachment 1. The schematic site plan with the proposed tree retention area is provided in Attachment 2. A detail of the grove of trees to be retained along Highway 26 is provided in Attachment 3.

The assignment requested of our firm for this project was to:

- Assess the existing grove of trees along Highway 26;
- Identify the trees to be removed and retained in the grove; and
- Provide tree protection recommendations for the trees to be retained in the grove.

Tree Assessment

On September 12 and December 11, 2019 I completed the inventory of existing trees in the grove.

The complete inventory data for each tree is provided in Attachment 4 and includes the tree number, common name, scientific name, trunk diameter (DBH), crown radius, health condition, structural condition, pertinent comments, and whether it is an onsite 11-inch DBH or greater tree in good condition to be retained.¹

¹ Section 17.102.50 of the City of Sandy Code requires three onsite trees over 11-inch DBH that are in good condition to be retained.

The tree numbers in the inventory in Attachment 4 correspond to the tree numbers on the plans in Attachments 1 and 3.

Note that since the site is 15.91 acres, Section 17.102.50 requires 48 trees over 11-inch DBH that are in good condition to be retained. My assignment was to identify at least 48 trees in the grove that meet these criteria.

Tree Removal and Retention

This section of the report includes tree removal and retention recommendations based on the proposed site plan.

Tree Removal

The standard tree protection requirements in the City of Sandy Code range from at least 10 feet from the trunks of retained trees (SDC 17.102.50.B.1) to five feet beyond the driplines (SDC 17.92.10.D) unless otherwise approved by the Planning Director.

A typical alternative minimum protection zone allows encroachments no closer than a radius from a tree of .5 feet per inch of DBH if no more than 25 percent of the critical root protection zone area (estimated at one foot radius per inch of DBH) is impacted. Figure 1 illustrates this concept.

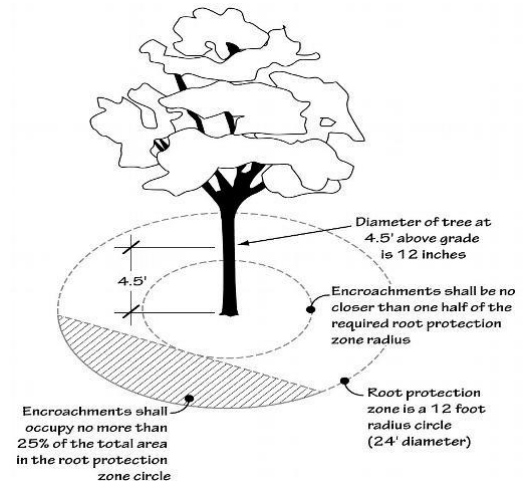


Figure 1: Alternative minimum protection zone

Using the criteria described above, while considering the tree locations relative to construction and other site improvements, 20 of the assessed trees are proposed for removal.

Tree Retention

Fifty-four (54) trees within the grove will be retained. Of the 54 trees to be retained, 48 are in good condition and over 11-inch DBH. Tree preservation has been maximized to the extent practicable with trees removed only as necessary for construction.

Section 17.102.50.A of the City of Sandy Code includes five criteria for tree retention with development. The five criteria followed by my findings in *italics* are listed below:

1. At least three trees 11 inches DBH or greater are to be retained for every one-acre of contiguous ownership.

Finding: The site is 15.91 acres in size so 48 trees over 11-inch DBH in good condition are required to be retained. The proposed preservation includes 48 trees over 11-inch DBH in good condition within the grove along Highway 26 to be retained. This criterion is met.

2. Retained trees can be located anywhere on the site at the landowner's discretion before the harvest begins. Clusters of trees are encouraged.

Finding: The retained trees are clustered within the grove of trees along Highway 26. This criterion is met.

3. Trees proposed for retention shall be healthy and likely to grow to maturity, and be located to minimize the potential for blow-down following the harvest.

Finding: All of the trees subject to this standard are in good health condition and likely to grow to maturity. Future selective thinning of the grove is recommended to improve the availability of space, water, nutrients, and light for the retained trees. Also, invasive understory and vine species such as Himalayan blackberry and English ivy should be removed to improve the condition of the understory and prevent vine growth on the retained trees.

Trees along portions of the southwest, east, and north sides of the grove are proposed for removal for construction. It will be important to reassess and monitor the trees along the newly exposed edges following site clearing and periodically during construction and after high wind events to ensure they do not pose a high risk. Since the bulk of the grove will be retained, I anticipate that the overall grove will remain viable. However, selective thinning of trees within the grove should be delayed until the changes in wind dynamics from edge tree removal is more thoroughly assessed. Retaining more of the interior trees will help to protect the overall integrity of grove from blow-down during the near term. It will also be very important to protect the root zones of the trees in the grove from construction impacts with tree protection fencing and other measures to further minimize the risk of blow-down. Tree protection measures are further described in the next section of this report.

Since the bulk of the grove will be retained and measures to monitor and protect the trees in the grove will be implemented, this criterion is met.

4. If possible, at least two of the required trees per acre must be of conifer species.

Finding: All 48 trees over 11-inch DBH and in good condition are conifer species. This criterion is met.

5. Trees within the required protected setback areas may be counted towards the tree retention standard if they meet these requirements.

Finding: Any retained trees that are over 11-inch DBH and in good condition that are within protected setback areas will be counted towards the tree retention standards. This criterion is met.

Tree Protection Recommendations

The standard tree protection requirements in the City of Sandy Code range from at least 10 feet from the trunks of retained trees (SDC 17.102.50.B.1) to five feet beyond the driplines (SDC 17.92.10.D) unless otherwise approved by the Planning Director.

A typical alternative minimum protection zone allows encroachments no closer than a radius from a tree of .5 feet per inch of DBH if no more than 25 percent of the critical root protection zone area (estimated at one foot radius per inch of DBH) is impacted. Figure 1 illustrates this concept.

The reason for using this alternative is because it allows the tree protection zone to better relate to the size of the tree and its root zone. For example, a 10-foot tree protection setback would not be adequate for a 36-inch DBH tree which should have a minimum setback of at least 18 feet. Also, driplines can be highly variable based on species growth habits and onsite conditions such as the presence of adjacent trees or past pruning.

The critical root zone radii of 1 foot per inch of DBH is shown for the trees to be retained on the plan sheet in Attachments 3. The trees to be retained can be adequately protected by placing tree protection fencing as shown in Attachment 3. The tree protection fencing will protect at least 75 percent of their critical roots zones and avoid any encroachments closer than a radius of .5 feet per inch of DBH to a tree to be retained. No grading, stockpiling, storage, disposal, or any other construction related activity shall occur in the tree protection zones unless specifically reviewed and approved by the project arborist.

The following additional protection measures shall apply to the trees at the site:

- *Tree Protection Fencing*: Establish tree protection fencing in the locations shown in Attachment 3. Required fencing shall be a minimum of six feet tall supported with metal posts placed no farther than ten feet apart installed flush with the initial undisturbed grade.
- *Directional Felling*: Fell the trees to be removed away from the trees to be retained so they do not contact or otherwise damage the trunks or branches of the trees to be retained. No vehicles or heavy equipment shall be permitted within the tree protection zones during tree removal operations.
- *Stump Removal*: The stumps of the trees to be removed from within the tree protection zones shall either be retained in place or stump ground to protect the root systems of the trees to be retained.
- *Protect Tree Crowns*: Care will need to be taken to not contact or otherwise damage the crowns of the trees that may extend into the construction area.
- *Monitoring of New Grove Edges*: Trees along portions of the southwest, east, and north sides of the grove are proposed for removal for construction. It will be important to reassess and monitor the trees along the newly exposed edges following site clearing and periodically during construction and after high

wind events to ensure they do not pose a high risk. This monitoring should occur for the next two to three storm seasons following site clearing.

- *Selective Thinning of Grove Trees*: Selective thinning of the grove is recommended to improve the availability of space, water, nutrients, and light for the retained trees. Also, invasive understory and vine species such as Himalayan blackberry and English ivy should be removed to improve the condition of the understory and prevent vine growth on the retained trees.

Any thinning of trees within the grove should be delayed until the changes in wind dynamics from edge tree removal is more thoroughly assessed. Retaining more of the interior trees will help to protect the overall integrity of the grove from blow-down during the near term. After, site adaptations of the trees are better understood in the following two to three storm seasons following disturbance, the project arborist may prescribe a selective thinning treatment.

Additional tree protection recommendations for the trees to be retained are provided in Attachment 5.

Conclusion

Forty-eight (48) trees over 11-inch DBH in good condition are proposed to be retained within the grove of trees along Highway 26. The required tree retention for the 15.91 acre site is 48 trees.

While the grove of trees will have areas of disturbance along the edges, I anticipate that the overall grove will remain viable. It will be important to reassess and monitor the trees along the newly exposed edges following site clearing and periodically during construction and after high wind events to ensure they do not pose a high risk.

Once the grove is stabilized, I recommend selective thinning of trees to improve the availability of space, water, nutrients, and light for the retained trees. Also, invasive understory and vine species such as Himalayan blackberry and English ivy should be removed to improve the condition of the understory and prevent vine growth on the retained trees.

Please contact me if you have questions, concerns, or need any additional information.

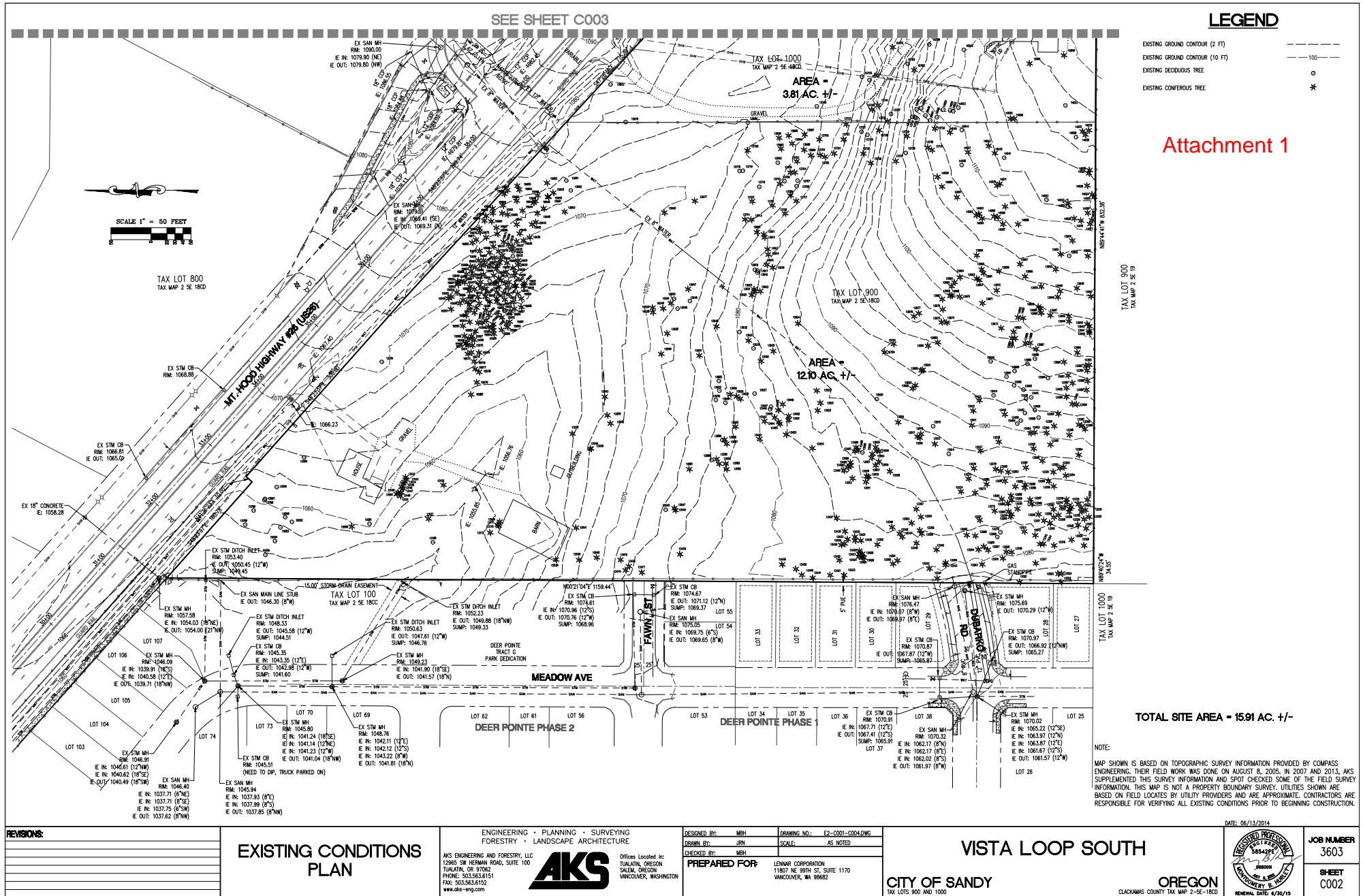
Sincerely,



Todd Prager

*ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association*

Attachments: Attachment 1 - Existing Site Conditions with Existing Trees
Attachment 2 - Conceptual Site Plan with Trees Retention Area
Attachment 3 - Grove Detail with Tree Protection
Attachment 4 - Tree Inventory
Attachment 5 - Tree Protection Recommendations
Attachment 6 - Assumptions and Limiting Conditions



Attachment 1

TOTAL SITE AREA = 15.91 AC +/-

NOTE:
 MAP SHOWN IS BASED ON TOPOGRAPHIC SURVEY INFORMATION PROVIDED BY COMPASS ENGINEERING. THEIR FIELD WORK WAS DONE ON AUGUST 8, 2005, IN 2007 AND 2013, AYS SUPPLEMENTED THIS SURVEY INFORMATION AND SPOT CHECKED SOME OF THE FIELD SURVEY INFORMATION. THIS MAP IS NOT A PROPERTY BOUNDARY SURVEY. UTILITIES SHOWN ARE BASED ON FIELD LOCATES BY UTILITY PROVIDERS AND ARE APPROXIMATE. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.

REVISIONS:

EXISTING CONDITIONS PLAN

ENGINEERING • PLANNING • SURVEYING
 FORESTRY • LANDSCAPE ARCHITECTURE

AKS

AKS ENGINEERING AND FORESTRY, LLC
 12945 SW HERMAN ROAD, SUITE 100
 TUALATIN, OR 97062
 PHONE: 503.263.6151
 FAX: 503.263.5152
 www.aks-eng.com

Offices Located In:
 TUALATIN, OREGON
 SALEM, OREGON
 VANCOUVER, WASHINGTON

DESIGNED BY: MSH	DRAWING NO.: E2-C001-C004.DWG
DRAWN BY: JPH	SCALE: AS NOTED
CHECKED BY: MSH	
PREPARED FOR: LEMAR CORPORATION	11807 NE 99TH ST, SUITE 1170 VANCOUVER, WA 98682

VISTA LOOP SOUTH

CITY OF SANDY
 TAX LOTS 900 AND 1000

OREGON
 CLATSOP COUNTY TAX MAP 2-5E-18C2

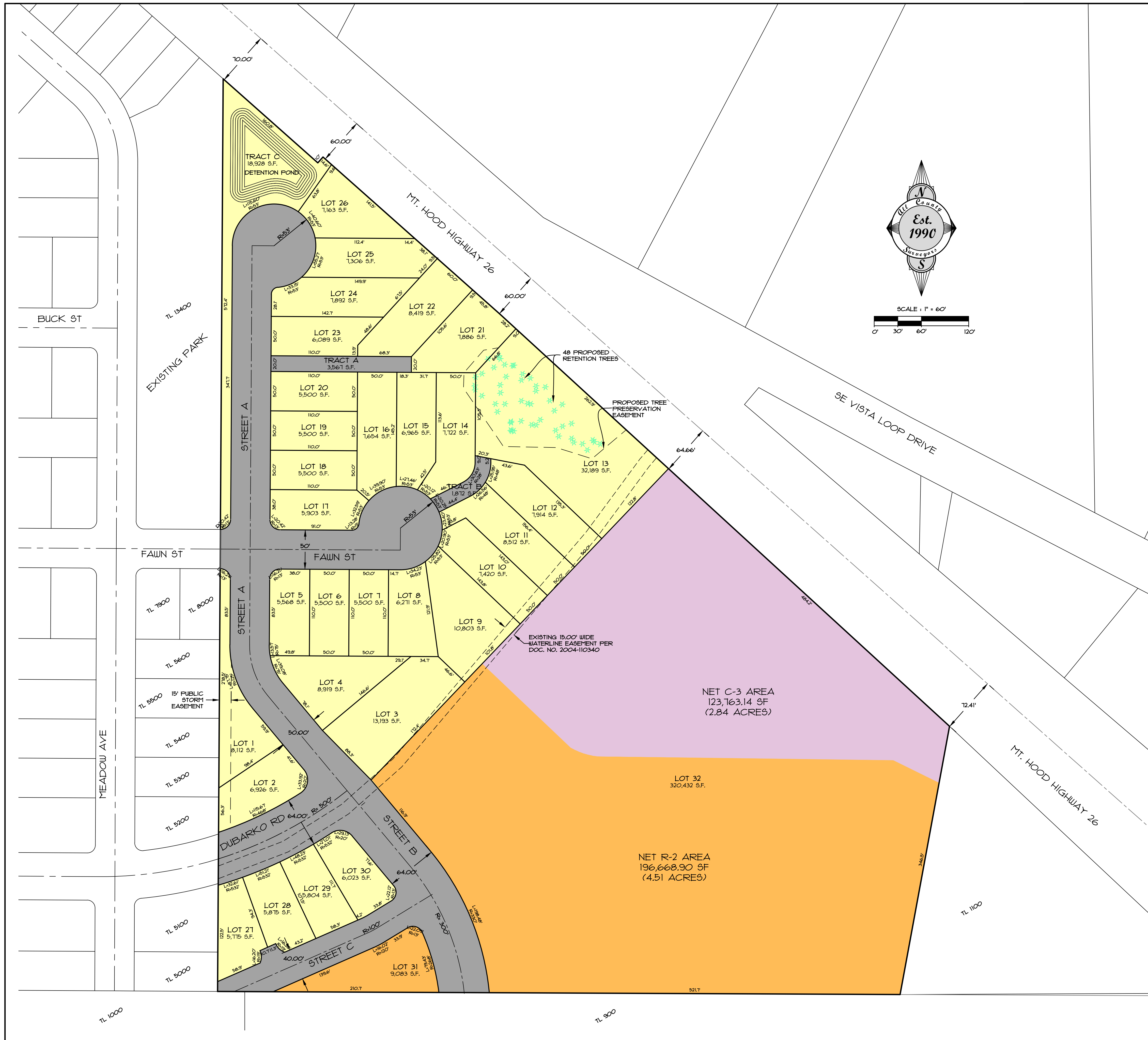
DATE: 06/13/2014

JOB NUMBER
 3603

SHEET
 C002

RENEWAL DATE: 6/30/15

Attachment 2



TREE RETENTION NOTES

TREES REQUIRED TO BE RETAINED:
3 TREES/ACRE X 15.91 ACRES = **48 TREES**

NUMBER OF TREES PROPOSED FOR RETENTION: **48 TREES**

LEGEND

- R-1 ZONE
- R-2 ZONE
- C-3 ZONE

DATE	NO.	REVISION	BY	SHEET
				1
DESIGNED:	RLM	OF	RLM	X
DRAWN:	RLM	CHECKED:	DLH	
APPROVED:	RLM			

RENEWAL DATE: 12/31/2022

PROFESSIONAL SURVEYOR
Est. 1990
Ray L. Wood

SCALE: VERT. N/A, HORIZ. 1"=60'
DATE: 1-14-21
FILE: 19-035-Planning-04.dwg

SECTION 18, RANGE 29, TWP. 5E
LEGAL

PROJECT: **BULL RUN TERRACE PLAN B SUBDIVISION**
32 LOT SUBDIVISION

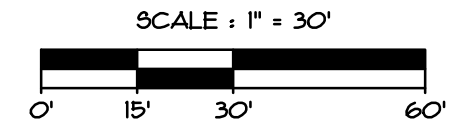
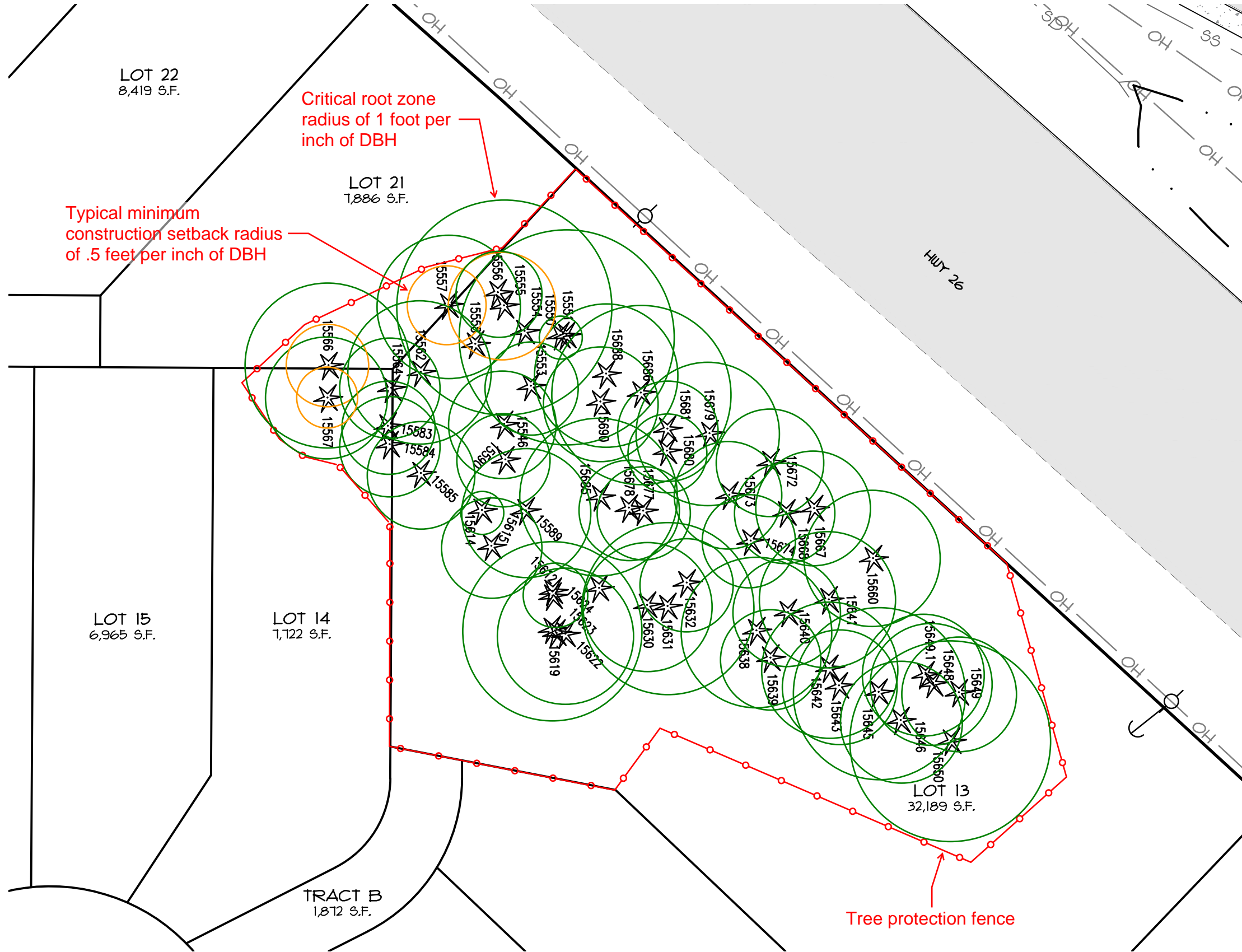
LOCATION: **40808 & 41010 HWY 26, SANDY, OR 97055**

CLIENT: **ROLL TIDE PROPERTIES CORPORATION**
PO BOX 703
CORNELIUS, OR 97113

DATE OF PLOT: 1-14-21

Surveyors & Planners, Inc.
Surveying, Planning and Civil Engineering
P.O. Box 925, Sandy, OR 97055
Fax: (503) 668-4730

GROVE DETAIL



Attachment 3

All County Surveyors & Planners, Inc.
Surveying, Planning and Civil Engineering
P.O. Box 955 Sandy, OR 97055
Phone: (503) 668-3151
Fax: (503) 668-4730
Subject to General Conditions 2006 ©

Attachment 4

Tree No	Common Name	Scientific Name	DBH ¹	C-Rad ²	Condition ³	Structure ³	Comments	Treatment	Onsite Trees >11" DBH in Good Cond. to be Retained
13653	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	15	fair	fair	thin crown, large wound at lower trunk	remove	
15546	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	15	good	poor	25% live crown ratio, poor trunk taper	retain	x
15550	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	0	very poor	very poor	dead	retain	
15551	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	15	good	fair	codominant at 1', west stem has 33% live crown ratio	retain	x
15552	n/a	n/a	n/a	n/a	n/a	n/a	same as tree 15551	n/a	n/a
15553	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	15	good	poor	25% live crown ratio, poor trunk taper	retain	x
15554	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	10	fair	poor	poor trunk taper, suppressed	remove	
15555	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	25	good	fair	moderately one sided	retain	x
15556	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	10	poor	poor	overtopped by adjacent trees, suppressed	retain	
15557	grand fir	<i>Abies grandis</i>	22	20	good	fair	one sided, codominant at 30' with included bark	retain	x
15558	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	15	good	poor	33% live crown ratio, poor trunk taper	retain	x
15562	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	15	good	fair	40% live crown ratio, marginal trunk taper	retain	x
15564	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	15	good	poor	marginal trunk taper, 33% live crown ratio	retain	x
15565	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	15	fair	fair	one sided, marginal trunk taper, 5" codominant dead stem at 3'	remove	
15566	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	20	good	fair	one sided	retain	x
15567	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	15	good	fair	marginal trunk taper, 40% live crown ratio	retain	x
15568	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	0	very poor	very poor	dead	remove	
15569	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	8	fair	poor	poor trunk taper	remove	
15570	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	15	fair	fair	one sided, overtopped by adjacent trees	remove	
15571	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	5	fair	poor	poor trunk taper, suppressed	remove	
15582	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	5	fair	poor	poor trunk taper, suppressed	remove	
15583	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	15	good	poor	poor trunk taper, 25% live crown ratio	retain	x
15584	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	15	good	fair	marginal trunk taper, 40% live crown ratio	retain	x
15584.1	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	0	very poor	very poor	dead	remove	
15585	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	20	good	poor	35% live crown ratio, poor trunk taper	retain	x
15589	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	20	good	poor	33% live crown ratio, marginal trunk taper	retain	x
15590	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	15	good	poor	35% live crown ratio, poor trunk taper	retain	x
15612	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	0	very poor	very poor	dead	retain	
15614	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	10	fair	poor	25% live crown ratio, poor trunk taper	retain	
15615	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	15	good	poor	25% live crown ratio, poor trunk taper	retain	x
15619	Douglas-fir	<i>Pseudotsuga menziesii</i>	20,16	20	good	fair	codominant at ground level with included bark, marginal trunk taper	retain	x
15620	n/a	n/a	n/a	n/a	n/a	n/a	same as tree 15619	n/a	n/a
15621	n/a	n/a	n/a	n/a	n/a	n/a	duplicate tree point?	n/a	n/a

Attachment 4

Tree No	Common Name	Scientific Name	DBH ¹	C-Rad ²	Condition ³	Structure ³	Comments	Treatment	Onsite Trees >11" DBH in Good Cond. to be Retained
15622	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	20	good	fair	one sided, bowed trunk, marginal trunk taper	retain	x
15623	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	10	good	poor	one sided, poor trunk taper	retain	
15624	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	0	very poor	very poor	dead	retain	
15630	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	20	good	fair	one sided	retain	x
15631	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	20	good	fair	one sided	retain	x
15632	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	15	good	poor	40% live crown ratio, poor trunk taper	retain	x
15638	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	20	good	fair	one sided	retain	x
15639	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	15	good	fair	one sided, marginal trunk taper, bowed trunk	retain	x
15640	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	15	good	fair	one sided, 70% live crown ratio, marginal trunk taper	retain	x
15641	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	20	good	fair	40% live crown ratio, marginal trunk taper	retain	x
15642	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	15	good	fair	moderately one sided, marginal trunk taper, 50% live crown ratio	retain	x
15643	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	15	good	fair	one sided	retain	x
15644	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	20	good	poor	33% live crown ratio, marginal trunk taper	remove	
15645	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	25	good	fair	one sided	retain	x
15646	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	15	good	fair	one sided	retain	x
15648	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	15	good	fair	one sided, 60% live crown ratio, marginal trunk taper	retain	x
15649	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	20	good	fair	one sided, marginal trunk taper	retain	x
15649.1	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	20	good	fair	moderately one sided, marginal trunk taper	retain	x
15650	Douglas-fir	<i>Pseudotsuga menziesii</i>	23,16	25	good	fair	codominant at ground level, north stem has poor trunk taper	retain	x
15651	n/a	n/a	n/a	n/a	n/a	n/a	same as tree 15650	n/a	n/a
15654	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	20	good	fair	one sided, codominant at 12' with included bark	remove	
15655	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	25	good	fair	one sided	remove	
15656	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	15	good	fair	marginal trunk taper, 40% live crown ratio	remove	
15659	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	20	good	fair	moderately one sided, 6" dead codominant stem at base of trunk	remove	
15660	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	20	good	fair	35% live crown ratio, marginal trunk taper, dead 8" codominant stem at 15'	retain	x
15662	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	0	very poor	very poor	dead	remove	
15666	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	15	good	fair	marginal trunk taper, 35% live crown ratio	remove	
15667	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	15	good	fair	40% live crown ratio, marginal trunk taper	retain	x
15668	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	15	good	fair	40% live crown ratio, marginal trunk taper	retain	x

Attachment 4

Tree No	Common Name	Scientific Name	DBH ¹	C-Rad ²	Condition ³	Structure ³	Comments	Treatment	Onsite Trees >11" DBH in Good Cond. to be Retained
15669	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	15	good	fair	one sided, overtopped by adjacent trees	remove	
15670	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	20	good	fair	moderately one sided	remove	
15671	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	10	good	poor	one sided, poor trunk taper	remove	
15672	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	20	good	poor	33% live crown ratio, marginal trunk taper	retain	x
15673	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	15	good	fair	35% live crown ration, marginal trunk taper	retain	x
15674	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	10	good	poor	25% live crown ratio, poor trunk taper	retain	x
15677	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	10	good	poor	25% live crown ratio, poor trunk taper	retain	x
15678	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	10	good	poor	33% live crown ratio, poor trunk taper	retain	x
15679	Douglas-fir	<i>Pseudotsuga menziesii</i>	16,12	20	good	fair	codominant at ground level with included bark, south stem has marginal trunk taper with 25% live crown ratio	retain	x
15680	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	10	good	poor	25% live crown ratio, poor trunk taper	retain	x
15681	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	10	good	poor	poor trunk taper, 20% live crown ratio	retain	x
15682	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	20	good	fair	one sided	remove	
15685	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	20	good	fair	moderately one sided	retain	x
15686	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	25	good	fair	one sided	retain	x
15688	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	20	good	fair	marginal trunk taper, 50% live crown ratio	retain	x
15690	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	20	good	poor	33% live crown ratio, poor trunk taper	retain	x

¹DBH is the trunk diameter in inches measured in accordance with International Society of Arboriculture standards.

²C-Rad is the approximate crown radius in feet.

³Condition and Structure ratings range from very poor, poor, fair, to good.

Attachment 5 Additional Tree Protection Recommendations

The following recommendations meet or exceed City of Sandy Code requirements:

Before Construction Begins

1. Notify all contractors of tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
 - a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
 - c. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the resulting fines issued by the local jurisdiction plus the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outline in the current edition of the *Guide for Plant Appraisal* by the Council of Tree & Landscape Appraisers. The penalty should be paid to the owner of the property.
2. Fencing
 - a. Trees to remain in the grove should be protected by installation of tree protection fencing as shown in Attachments 2 and 3.
 - b. The fencing should be put in place before the ground is cleared in order to protect the trees and the soil around the trees from disturbances.
 - c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
 - d. Fencing should consist of 6-foot high steel fencing on concrete blocks or 6-foot metal fencing secured to the ground with 8-foot metal posts placed no farther than ten feet apart to prevent it from being moved by contractors, sagging, or falling down.
 - e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist until final project approval.
3. Signage
 - a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

TREE PROTECTION ZONE

DO NOT REMOVE OR ADJUST THE APPROVED LOCATION OF THIS TREE PROTECTION FENCING.

Please contact the project arborist if alterations to the approved location of the tree protection fencing are necessary.

Todd Prager, Project Arborist - 971-295-4835

- b. Signage should be placed every 75-feet or less.

During Construction

1. Protection Guidelines Within the Tree Protection Zones:
 - a. No new buildings; grade change or cut and fill, during or after construction; new impervious surfaces; or utility or drainage field placement should be allowed within the tree protection zones.
 - b. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
 - c. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
 - d. Construction trailers should not to be parked/placed within the tree protection zones.
 - e. No vehicles should be allowed to park within the tree protection zones.
 - f. No other activities should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. Trees that have roots cut should be provided supplemental water during the summer months.
5. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
6. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

After Construction

1. Carefully landscape the areas within the tree protection zones. Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. Carefully plant new plants within the tree protection zones. Avoid cutting the woody roots of trees that are retained.
3. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting or the irrigation is approved by the project arborist.
4. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. Provide for the ongoing inspection and treatment of insect and disease populations that are capable of damaging the retained trees and plants.
6. The retained trees may need to be fertilized if recommended by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

Attachment 6

Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The site plans and other information provided by Roll Tide Corporation and their consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The purpose of this report is to:
 - Assess the existing grove of trees along Highway 26;
 - Identify the trees to be removed and retained in the grove; and
 - Provide tree protection recommendations for the trees to be retained in the grove.

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