



MEMORANDUM

DATE: August 2, 2016
TO: Robert Hawthorne (PDX Living, LLC)
FROM: Todd Prager, AICP, RCA #597, ISA Board Certified Master Arborist
RE: Updated Tree Plan for 5505 SE 47th Avenue

Summary

This report is an addendum to our August 2, 2016 tree plan for the land division at 5505 SE 47th Avenue in Portland. It provides supplemental findings and recommendations for meeting the requirements in Chapter 33.630 (Tree Preservation) and Title 11 (Trees) of the Portland Code. It also addresses the additional information requested by the City of Portland during their review of project.

Background

Teragan & Associates, Inc. prepared a tree plan for PDX Living, LLC dated August 2, 2016 for the land division at 5505 SE 47th Avenue in Portland. The tree plan included an assessment of the existing trees at the site along with findings and recommendations to meet the standards in Chapter 33.630 and Title 11 of the Portland Code.

The City of Portland reviewed the report and requested additional information. Also, the site plan and building design have been revised since our prior report, so updated findings are required to address the changes.

The purpose of this report is to:

1. Respond to the additional information requested by the City of Portland; and
2. Provide updated findings to address the site plan changes.

Responses to City of Portland Comments

The City of Portland requested additional information during their review of the tree plan. This section of the report includes findings in response to the City's comments. The comments are listed in **bold** followed by my responses.

The arborist report states that the spruce is in fair condition and doesn't state that it's dead, dying or dangerous. If the tree is dangerous, the arborist report should state that information. (In that case the tree would be exempt from

preservation).

The 30-inch Norway spruce (*Picea abies*, T5) is not dead, dying, or dangerous. Therefore, it is not exempt from preservation.

The site plan sketch was intended as a talking point to get the conversation started about site design and layout, and if the spruce could be preserved by adjusting the site design and layout. I'm not saying that you have to preserve the tree, but you need to do a bit of analysis to directly address 33.630.200.C.

Section 33.630.200.C requires analysis of the following:

C. Tree preservation is maximized to the extent practicable while allowing for reasonable development of the site, considering the following:

- 1. The specific development proposed;*
- 2. The uses and intensity of development expected in the zone and the area in which the site is located;*
- 3. Requirements to provide services to the site under Chapters 33.651 through 33.654, including street connectivity and street plan requirements. Options to limit impacts on trees while meeting these service requirements must be evaluated;*
- 4. Requirements to protect resources in Environmental, Pleasant Valley Natural Resources, or Greenway Natural, Water Quality, and River Environmental overlay zones. Protection of environmental resources and retention of benefits from trees should be maximized for the site as a whole; and*
- 5. Other site constraints that may conflict with tree preservation, such as small or oddly shaped sites or trees located in existing utility easements.*

Attachment 1 includes the updated site plan for the project. As shown in Attachment 1, the spruce (T5) is within the proposed footprint of the house on parcel 2.

A typical minimum tree protection setback includes limiting excavation at a distance from a tree to be retained of six times (6x) the trunk diameter. This would equate to a setback of 180-inches (15 feet) from the subject tree.

The project team has created an alternative site plan in Attachment 2 given our 15 foot recommended setback from T5. Note that a five foot setback is required from the south property line and four feet of space is required for excavation of the basement and foundation. Based on these constraints, the proposed house would be 17.25 feet wide. The project team has concluded that constructing a house with these dimensions would

not be marketable in this location. Therefore, the preservation of T5 is not practicable.

Encroaching closer to T5 to create a larger house is not recommended because it would result in the removal of roots closer to the south side of the tree. The strongest storm damaging winds come from the southwest in this area. Removing roots closer to the south side of the tree would increase the likelihood of windthrow toward the existing house to the north of the tree.

Therefore, tree preservation is not practicable due to the small size of the proposed lot, the location of the tree on the lot, and the setback required to adequately protect the tree. All of these factors would result in an unmarketable house.

The arborist report needs to be amended to reflect that Trees T2, T3, T4, T6, T7, T8, T9, T10 are not eligible for preservation, due to poor health, nuisance species, size, or off site location these trees. Have the arborist look at 33.630.030 for which trees are exempt from preservation.

Table 1 below is the updated tree inventory for the project. Exempt trees, including trees T2, T3, T4, T6, T7, T8, T9, T10, and T11 are listed as exempt. The only non-exempt trees are trees T1 and T5.

Table 1: Updated Tree Inventory

Tree No.	Common Name	Scientific Name	DBH	Single DBH	Condition	Structure	Exempt	Comments	Treatment
T1	Plum	<i>Prunus spp.</i>	6,8	11	Good	Fair	No	one sided	Retain
T2	Bird Cherry	<i>Prunus avium</i>		14	Good	Poor	Yes	Large suckers growing from base of tree, 14 inch diameter, tree is exempt due to nuisance status	Remove
T3	Apple	<i>Malus spp.</i>		15	Poor	Poor	Yes	Multi-stemmed, DBH taken at 2 ft. ,thin crown with apple scab, exempt due to poor health	Retain
T4	Flowering Dogwood	<i>Cornus florida</i>		12	Poor	Poor	Yes	Multi-stemmed, DBH taken at 1.5 feet, two stem wounds east stem, 2 feet is 6"x1' and 6"x1.6' at 4ft, thin crown, exempt due to poor health	Remove

Tree No.	Common Name	Scientific Name	DBH	Single DBH	Condition	Structure	Exempt	Comments	Treatment
T5	Norway Spruce	<i>Picea abies</i>		30	Fair	Fair	No	Double leader at 25ft, sap flow from bifurcation	Remove
T6	Ornamental Cherry	<i>Prunus sub.</i>		21	Poor	Poor	Yes	Multi-stemmed, large internal cavity and hollow at base, history of branch failure, exempt due to poor health	Remove
T7	Red Oak	<i>Quercus rubra</i>		13	Good	Good	Yes	13 inch DBH street tree, exempt because offsite	Retain
T8	Camellia	<i>Camellia spp.</i>		n/a	Good	Good	Yes	Multi-stemmed, DBH taken at 1.5 foot, exempt because shrub	Retain
T9	Red Oak	<i>Quercus rubra</i>		13	Good	Good	Yes	13 inch DBH street tree, exempt because offsite	Retain
T10	Red Oak	<i>Quercus rubra</i>		13	Good	Good	Yes	13 inch DBH street tree, exempt because offsite	Remove
T11	Katsura	<i>Cercidiphyllum japonica</i>		2	Good	Good	Yes	Two inch diameter tree that will count toward tree density but not toward tree retention percentages. On north side of parcel 1.	Retain

The arborist report needs to be amended to focus on the only tree that could be preserved at the site, the spruce tree. The arborist report should focus on approval criteria 33.630.200.B, and C. Read through those code sections for details. Link here: <http://www.portlandoregon.gov/bps/article/53434>

Approval criteria 33.630.200.B and C are listed in italics below followed by my findings. The findings are focused on the 30-inch Norway spruce (T5).

B. Trees proposed for preservation are suitable based on their health, overall condition and potential for long-term viability, considering the anticipated impact of development and tolerance typical for the tree species;

Attachment 1 includes the updated site plan for the project. Since the spruce (T5) is

within the footprint of the structure, it is not suitable for preservation given the impact of development.

A typical minimum tree protection setback includes limiting excavation at a distance from a tree to be retained of 6x the trunk diameter. This would equate to a setback of 180-inches (15 feet) from T5. As discussed in the response to criterion C, providing a 15 foot setback is not practicable for this site. Therefore, T5 is not suitable for preservation given the anticipated impact of development.

The other non-exempt tree on the site (T1) is suitable for preservation based on its health, overall condition and potential for long-term viability, considering the anticipated impact of development and tolerance typical for the tree species. T1 is in good condition and has average tolerance for construction impacts. While the updated site plan includes a driveway through a portion of its 6x tree protection zone, it can be adequately protected by using a modified pavement profile as described in the tree protection section of this report. The modified pavement profile will help to minimize impacts to the tree's root system and allow it to be retained.

This criterion is met because the non-exempt tree proposed for preservation is suitable based on its health, overall condition and potential for long-term viability, considering the anticipated impact of development and tolerance typical for the tree species.

C. Tree preservation is maximized to the extent practicable while allowing for reasonable development of the site, considering the following:

- 1. The specific development proposed;*
- 2. The uses and intensity of development expected in the zone and the area in which the site is located;*
- 3. Requirements to provide services to the site under Chapters 33.651 through 33.654, including street connectivity and street plan requirements. Options to limit impacts on trees while meeting these service requirements must be evaluated;*
- 4. Requirements to protect resources in Environmental, Pleasant Valley Natural Resources, or Greenway Natural, Water Quality, and River Environmental overlay zones. Protection of environmental resources and retention of benefits from trees should be maximized for the site as a whole; and*
- 5. Other site constraints that may conflict with tree preservation, such as small or oddly shaped sites or trees located in existing utility easements.*

Attachment 1 includes the updated site plan for the project. As shown in Attachment 1, the spruce (T5) is within the proposed footprint of the house on parcel 2.

A typical minimum tree protection setback includes limiting excavation at a distance from a tree to be retained of 6x the trunk diameter. This would equate to a setback of 180-inches (15 feet) from the subject tree.

The project team has created an alternative site plan in Attachment 2 given our 15 foot recommended setback from T5. Note that a five foot setback is required from the south property line and four feet of space is required for excavation of the basement and foundation. Based on these constraints, the proposed house would be 17.25 feet wide. The project team has concluded that constructing a house with these dimensions would not be marketable in this location. Therefore, the preservation of T5 is not practicable.

Encroaching closer to T5 to create a larger house is not recommended because it would result in the removal of roots closer to the south side of the tree. The strongest storm damaging winds come from the southwest in this area. Removing roots closer to the south side of the tree would increase the likelihood of windthrow toward the existing house to the north of the tree.

Therefore, tree preservation is not practicable due to the small size of the proposed lot, the location of the tree on the lot, and the setback required to adequately protect the tree. All of these factors would result in an unmarketable house.

As far as mitigation, payment to the tree fund will most likely be required. Otherwise, the arborist would have to analyze T11 density plantings for both lots (which he did) and show how you could also meet on site mitigation planting. The arborist would have to address minimum planting areas as required by Table 50-2 of Title 11 (minimum planting area) for both the T11 and mitigation planting trees. It's possible to do some kind of combination of on-site planting and payment (note the tree planting specs of section 11.60.020).

The owner's preference for mitigation is to pay into the tree fund rather than plant additional trees on the lots. The Title 11 tree density plantings will be the only trees that will be planted on the lots.

Tree Plan Updates

The updated site plan requires a number of updates to the August 2, 2016 tree plan. This section of the report details the updates.

Street Tree Preservation, Removal, and Mitigation (11.50.040.C.2)

This section of the report includes a summary of applicable street tree preservation, removal, and mitigation standards in *italics* followed by my findings.

Section 11.50.040.C.2.a requires coordination with the City Forester during the project design for impacts to City and street trees.

Street trees T7 and T9 will be retained and protected. Tree protection fencing will be necessary surrounding T9 as shown in Attachment 1. T7 will not require tree protection fencing because it is far away from proposed construction.

This report should be provided to the City Forester to coordinate on possible impacts to the street trees.

Section 11.50.040.C.2.b(2) requires replacement of each street tree removed that is greater than 6-inches in DBH with a new tree on the site, in the street right of way, or in the same watershed. The replacement tree is in addition to any other required onsite tree density or street tree planting requirements. The minimum replacement tree size is 1.5-inch caliper for deciduous and 5 feet tall for conifers.

T10 is proposed for removal because it is in the alignment of the proposed driveway. The project team considered a tuck under garage, but it would have required a staircase for access to the house. The house design seeks to maximize accessibility, and constructing a tuck under garage with staircase conflicts with that goal.

Due to limited space onsite and in the right of way, a fee in lieu of street tree planting may be required. According to the Title 11 Trees Fee Schedule, the street tree fee in lieu is \$450.00.

Street Tree Planting Requirements

Section 11.50.060 of the Portland Code requires one street tree to be planted or retained for each full increment of 25 linear feet per side of street frontage. When the required number of trees cannot be planted, a fee in lieu of planting may be required. Street tree planting is not required when the planting strip is less than 3 feet wide, there is not a planting strip, or there is insufficient space to add tree wells.

Parcel 1 has 50 feet of frontage along SE 47th Avenue and 100 feet along SE Harold Street. Since SE Harold Street is unimproved with no planting strip, only two street trees are required for parcel 1. The proposed preservation of T7 and T9 will meet the street tree requirements for parcel 1.

Parcel 2 has 50 feet of street frontage along SE 47th Avenue so two street trees are required. Due to the setback requirements for driveways and adjacent trees, there is only room for one street tree. A possible street tree species and location is shown on the updated site plan in Attachment 1. A street tree fee in lieu of \$450 will be required for the other required street tree.

Tree Density Recommendations

Section 11.50.050 of the Portland Code requires one and two family residential development to provide 40 percent onsite tree density. Parcels 1 and 2 are both 5,000

square feet, so 2,000 square feet of tree density is required for each parcel.

Table 50-2 below from the Portland Code includes the tree density credits and minimum planting areas for trees of varying size categories.

Table 50-2 Number of Required Trees and Minimum Planting Area		
Canopy size category (at maturity)	Number of trees required per size of tree area	Min. required planting area per tree (min. dimension)
Large	1 per 1,000 s.f.	150 s.f. (10' x 10')
Medium	1 per 500 s.f.	75 s.f. (5' x 5')
Small	1 per 300 s.f.	50 s.f. (3' x 3')

Non-exempt trees that are retained and protected that are between 1.5- and 6-inches DBH count as small canopy trees and trees that are greater than 6-inches in DBH count as medium canopy trees for each full increment of 6-inches. An equivalent of 1 small canopy tree (300 square feet) is provided through the retention of T11 on parcel 1, and 1 medium canopy tree (500 square feet) is provided through the retention of T1 on parcel 2.

Table 2 is a summary of the tree density requirements for the parcels:

Table 2: Tree Density Summary				
Parcel No.	Parcel Area	Tree Density Required	Tree Density from Preservation	Balance of Tree Density Required
1	5,000 ft ²	2,000 ft ²	300 ft ²	1,700 ft ²
2	5,000 ft ²	2,000 ft ²	500 ft ²	1,500 ft ²

As shown in Table 2, 1,700 square feet of tree density is required to be planted to meet the tree density requirements for parcel 1 and 1,500 square feet of tree density is required to be planted to meet the tree density requirements for parcel 2. This could be accomplished by planting any combination of large, medium, or small stature trees. The site plan in Attachment 1 shows possible tree canopy sizes and locations to meet the tree density requirements for both parcels.

Tree Protection Recommendations

The only significant change to the tree protection plan in our August 2, 2016 report is the new driveway location. The updated site plan in Attachment 1 includes a new driveway that encroaches within the 6x tree protection zone of T1. The driveway should either be redesigned so it is outside the 6x tree protection zone or constructed using a modified pavement profile as shown in Figure 1 to limit impacts to the tree's root zone:

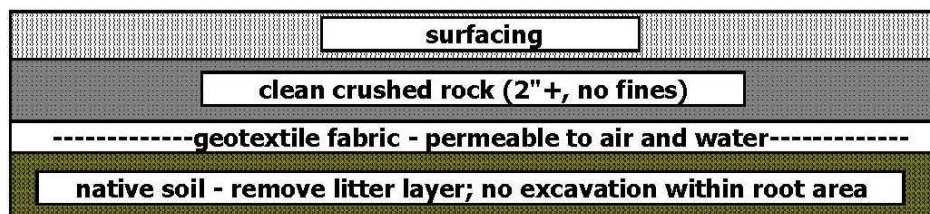


Figure 1. Sample profile for areas within Critical Root Zones. Depth of rock is dependent on grading. Technique based on best management practices.

The other tree protection recommendations in our August 2, 2016 report shall continue to apply.

Tree Mitigation Recommendations

Section 33.630.200.D includes the following mitigation requirements:

D. Mitigation. Where the minimum tree preservation standards of 33.630.100 cannot be fully met, as determined by evaluating the above criteria, or when there is a concurrent Environmental Review and the minimum tree preservation standards do not apply, mitigation must be provided as needed to replace the functions of trees removed from the site. Options for mitigation may include preservation of smaller diameter or native trees, permanent preservation of trees within a tree preservation or environmental resource parcel, tree planting, payment into the City's Tree Planting and Preservation Fund, or other options that are consistent with the purpose of this chapter.

This criterion is applicable because the minimum preservation requirements in Section 33.630.100 will not be met through the proposed tree preservation at the site.

The total non-exempt diameter inches at the site is 41-inches from T1 (11-inch) and T5 (30-inch). The proposed preservation of T1 represents 36 percent of the non-exempt inches at the site. However, since less than 50 percent of the non-exempt trees over 20-inch DBH will be retained, none of the tree preservation options will be met.

If T1 were 20-inch DBH, tree preservation option 3 would be met by preserving at least 30% of the total DBH and at least 50 percent of the trees over 20-inch DBH. Therefore, mitigation of 9 additional inches of trees could be considered as mitigation for the proposed tree removal.

Since T11 (2-inch caliper tree) will be retained in excess of the tree density requirements for the site, it could be considered as a mitigation tree. Therefore, the balance of required mitigation is seven inches. Since the owner does not want to plant additional trees on the property, payment into the City's Tree Planting and Preservation Fund is required.

According to the Title 11, Trees Fee Schedule, the planting and establishment fee in lieu is \$300 per inch. Therefore, the mitigation fee for the balance of the seven required inches is \$2,100.00.

Conclusion

This report addendum provides supplemental findings and recommendations for meeting the requirements in Chapter 33.630 and Title 11 of the Portland Code. It also addresses the additional information requested by the City of Portland during their review of project.

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

Sincerely,



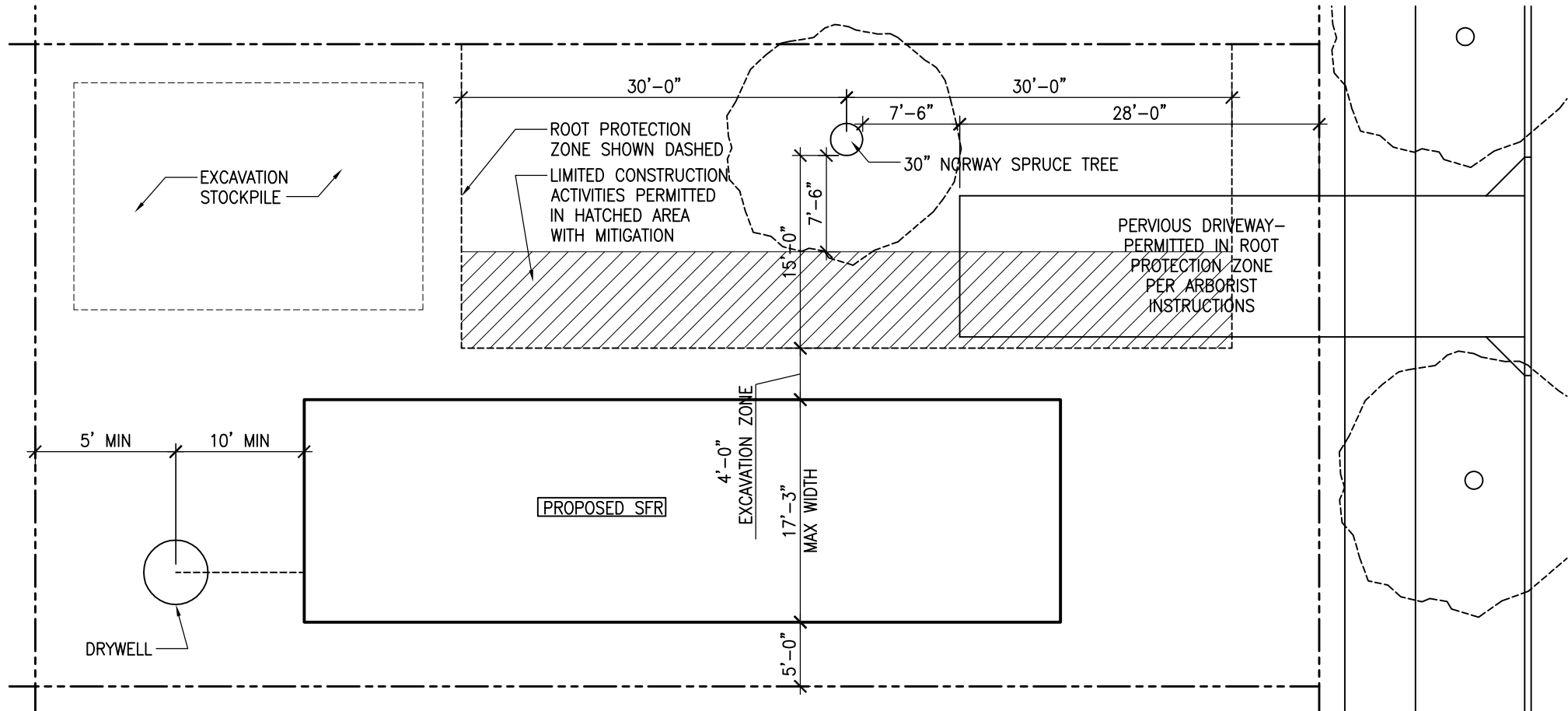
Todd Prager
ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association

Attachments: Attachment 1: Updated Site Plan
 Attachment 2: Alternative Site Plan
 Attachment 3: Assumptions and Limiting Conditions

LAND DIVISION LU-16-195824-LDP



Attachment 2



Attachment 3

Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The information provided by PDX Living LLC 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:
 - Respond to the additional information requested by the City of Portland; and
 - Provide updated findings to address the site plan changes.