



- Preliminary Tree Protection Plan -

THE LODGE APARTMENTS FR 22-0195

456 Carpenter Road SE
Lacey, WA 98503

Prepared for: Olympia Hangers, LLC
Prepared by: Washington Forestry Consultants, Inc.
Date: December 2, 2022

Introduction and Overview

Olympia Hangers, LLC is planning to construct a multi-family apartment complex on 5.0 acres at 456 Carpenter Road SE in Lacey. The City of Lacey has retained WFCI to:

- Evaluate all existing trees on the site, pursuant to Chapter 14.32 of the Lacey Tree Protection and Vegetation Preservation Ordinance.
- Make recommendations for trees suitable to be saved in open space or tree tract areas, along with required protection and cultural measures.

Observations

Methodology

WFCI has conducted an inventory and assessment of the trees on the project site to determine the number, distribution, and condition of existing trees. The inventory was conducted using 4 variable area plots and dot tally. The inventory plots are installed on a systematic grid across the forested portion of the project site. The potential of trees over 4" diameter at breast height (DBH) to be incorporated into the new project were assessed. Many smaller trees were evaluated in the project area as well. The tree evaluation phase used methodology developed by Matheny and Clark (1998)¹ the International Society of Arboriculture (ISA).

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

Site Description

The 5.0-acre site is mostly flat to gently rolling and mostly forested. An area in the northwest corner of the site has been rough graded for construction trailers associated with the development on the parcel to the north. There is one abandoned building and multiple temporary construction trailers in this area. There are no wetlands or streams on the site. The property is bordered by a new apartments complex to the north, single family homes to the east and south, and Carpenter Road SE to the west.

Soil Depth and Productivity

According to the USDA Soil Survey the two soil types on the site are the Yelm fine sandy loam and a small area of Nisqually loamy sand.

Figure 1. Soil Map of The Lodge Apartments site.



74 – Nisqually loamy fine sand

126 – Yelm fine sandy loam

The largest soil type is the Yelm fine sandy loam, a deep, moderately well drained soil found on terraces. The soil formed in volcanic ash and glacial outwash. Permeability of this soil is moderately rapid and plant available water capacity is high. The effective rooting depth for trees is 40-60 inches and a seasonal high-water table fluctuates between depths of 18 and 36 inches from December to March. Windthrow hazard under normal conditions is slight, and hazard of seedling mortality is slight. This is a productive soil type for trees and other plants. Competition from weeds will be high.

The second type is the Nisqually loamy fine sand is a very deep, somewhat excessively drained soil found on terraces. It formed in sandy glacial outwash. Permeability is moderately rapid in the surface layer and very rapid in the substratum. Available water capacity is moderate and effective rooting is over 60 inches. Windthrow hazard is slight under normal conditions. Droughtiness during the summer months may cause seedling mortality.

Tree Conditions

There are two forest cover types for the purposes of description.

Type I.- This cover type is the 3.46-acre native forested portion of the parcel. It is a mature stand of Douglas-fir (*Pseudotsuga menziesii*). The stand appears to be about 80 years old. The stand is fully stocked at 131 trees per acre. Tree size ranges from 10 to 41 inches DBH.

Table 1. Summary of Trees in Type I of The Lodge Apartments Project Area.

Species	DBH Range (in.)	Condition Range	Trees/Acre	# Healthy Trees	# Unhealthy Trees	Total # of Trees
Douglas-fir	10 – 44	Dead - Good	131	409	44	453
Totals	8 – 24	Dead - Good	131	409	44	453

We project that 453 trees are growing in this type. The condition of living trees ranges from ‘Dead’ to ‘Good’ condition, with about 90% of trees described as being in ‘Fair’ or better condition. This leaves about 409 healthy, long-term trees in this cover type. Mortality in this stand is due primarily to drought stress and trees infected with a stem decay fungus called red ring rot (*Phellinus pini*).

The understory shrub stocking includes salal (*Gaultheria shallon*), bracken fern (*Pteridium aquilinum*), red huckleberry (*Vaccinium parviflorum*), western hazel (*Corylus cornuta*), tall Oregon grape (*Mahonia aquifolium*), grasses, and broadleaved weeds.



Photo 1. View of trees in Type I on The Lodge Apartments site.

Type II.- This cover type covers the partially cleared areas of the project area. The type occurs in the northwest corner of the site. The area in the type has been graded and used as a materials stockpile for the project to the north. Many trees have had their root protection zones impacted from this activity. The main component of the stand is mature Douglas-fir similar to the trees in Cover Type I. There are also a small number of bigleaf maple (*Acer macrophyllum*) and shore pine (*Pinus contorta* var. *contorta*). The stand is the same age as Cover Type I. The stand is fully stocked at 131 trees per acre. Tree size ranges from 10 to 41 inches DBH.

Table 2. Summary of Trees in Type II of The Lodge Apartments Project Area.

Species	DBH Range (in.)	Condition Range	Trees/Acre	# Healthy Trees	# Unhealthy Trees	Total # of Trees
Bigleaf Maple	8	Fair	1	2	0	2
Douglas-fir	8 – 65	Poor – Fair	32	24	25	49
Shore Pine	8	Fair	1	1	0	1
Totals	8 – 24	Poor – Fair	34	27	25	52

We found 52 trees growing in this type. The condition of living trees ranges from ‘Poor’ to ‘Fair’ condition, with about 52% of trees described as being in ‘Fair’ or better condition. This leaves 27 healthy, long-term trees in this cover type. Mortality in this stand is due primarily to grading within the root protection zones of the trees.

The understory shrub stocking includes western hazel, tall Oregon grape, grasses, and broadleaved weeds.



Photo 2. View of trees and site disturbance in Type II on The Lodge Apartments site.

Forest Practices Permit

Trees removed from this parcel will contain more than 5,000 board feet. **Therefore, a forest practices permit from the City of Lacey is required.**

Recommendations

Tree Retention in Tree Tract

The City of Lacey Tree and Vegetation: Urban Forest Management Ordinance (Chapter 14.32) requires that a minimum of 5% of the gross project area be set aside as a dedicated tree tract.

The following is a summary of the tree tract calculations:

Total Project Area:	5.0 acres
5% Minimum Requirement for Tree Tract:	0.25 acres

The current site plan does not show a designated tree tract on the site. The undeveloped area on the east side of the site is recommended for a tree tract location. There are approximately 85 trees to retain in this area.

Lot Tree Planting Requirement

The City of Lacey Tree and Vegetation Protection and Preservation Ordinance (Chapter 14.32) requires 4 trees per 5,000 ft² when developing a multi-family residential lot over 7,500 ft² to meet the minimum density.

The following is a summary of tree retention requirements:

Total Project Area:	5.0 acres
Required Tree Tract Area:	<u>0.25 acres</u>
Net Project Acreage:	4.75 acres

Required Multi-family Tree Retention (4 Trees/5,000 ft. ²):	166 trees
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At least 166 trees are required to be retained or planted in the buildable area of the site. These trees are in addition to the trees required in the landscaping ordinance. Planted landscape trees should be selected from the Lacey approved general tree list and be at least 2-inch caliper B&B trees for deciduous species and 7-8 foot-tall B&B conifers. Thirty percent (30%) of planted trees need to be native conifers. Final landscape plans should be reviewed by WFCI before final approval.

Street Tree Planting Requirement

There are already street trees planted on Carpenter Road SE. No additional street trees need planted.

Hazard Tree Removal

All trees within range of the proposed project or other targets should have hazard tree evaluation completed after staking, but prior to the logging. Trees that will be hazardous to the new

buildings or other targets should be removed during the logging operation; this includes trees in the designated tree tract.

Tree Protection Requirements

Trees and tree tracts to be saved must be protected during construction by temporary orange mesh fencing on driven posts, located at the edge of the critical root zone. The individual critical root zones are 5 feet outside the dripline of all edge trees unless otherwise delineated by WFCI.

There should be no equipment activity (including rototilling) within the critical root zone. No irrigation lines, trenches, or other utilities should be installed within the critical root zone. If roots are encountered outside the critical root zone, they should be cut cleanly with a saw and covered immediately with moist soil. Noxious vegetation within the critical root zone should be removed by hand. If a proposed save tree must be impacted by grading or fills, then the tree should be re-evaluated by WFCI to determine if the tree can be saved and mitigating measures, or if the tree should be removed.

Timeline for Tree Protection Activity

Submit ‘tree protection plan map’ on the face of the grading plan to the City of Lacey for approval. The tree plan map should include the tree tract boundaries, the locations of tree protection fencing, a tree protection fence schematic and this ‘Timeline for Tree Protection Activity.’ The tree protection plan map should be part of the construction drawings packet sent out to contractors for bid.

1. Heavily flag and stake the clearing limits.
2. Conduct a pre-job conference with WFCI prior to the start of clearing.
3. WFCI will re-evaluate all trees within the tree tract at this time with the clearing limits marked. In particular, we want to examine edge trees in the tree tract to determine if any additional trees can be saved, or if any proposed save trees require mitigation or removal due to probable construction/grading damage. A final count of trees to be retained can be made at this time.
4. Complete the logging. Hazard trees and unhealthy, short-term trees should be thinned from the tree tract at this time.
5. Install tree protection fences after logging but prior to the start of land clearing. Maintain fences throughout construction.
6. WFCI should be contacted to inspect the fences prior to the start of grading.
7. Construct project.

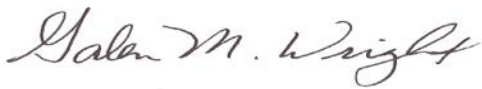
Summary

The project proponent is planning on developing a multi-family complex on 5.0-acres in the City of Lacey. The Lacey Tree Protection and Vegetation Preservation Ordinance requires 0.25 acres (5% project acreage) to be dedicated as a tree tract. At least 166 trees will need to be retained or replanted within the buildable area of the project.

Please give us a call if you have questions.

Respectfully submitted,

Washington Forestry Consultants, Inc.



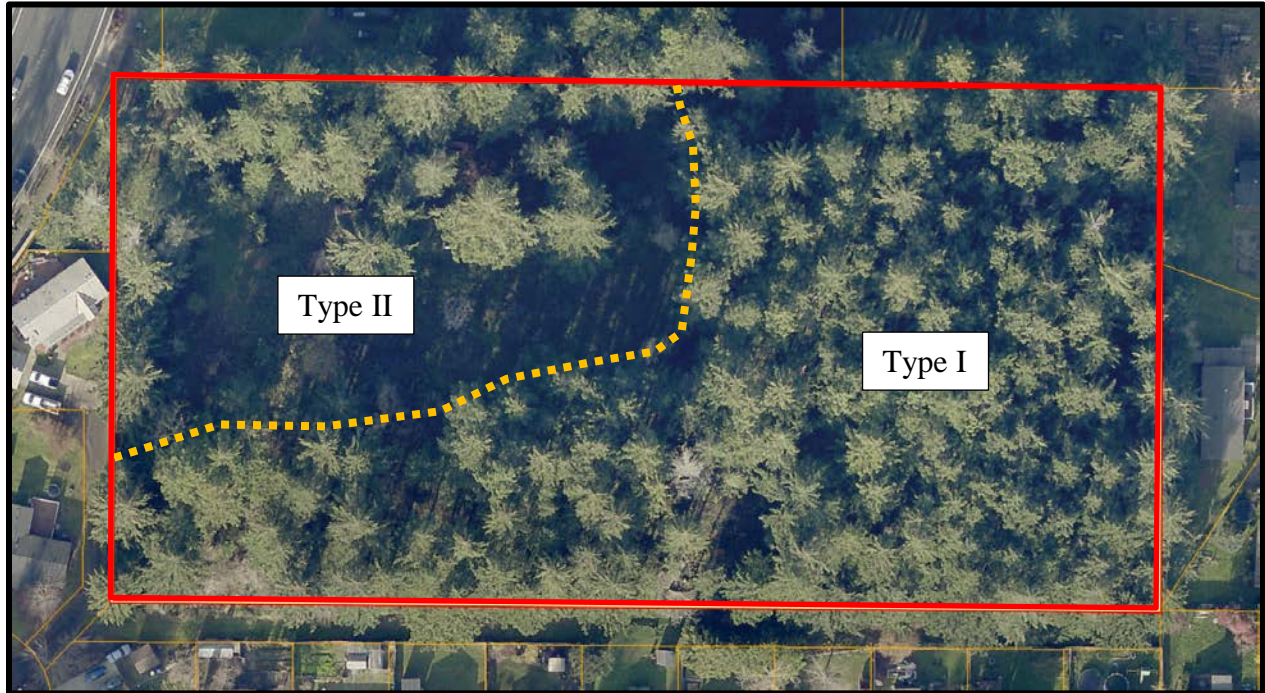
Galen M. Wright, ACF, ASCA
ISA Bd. Certified Master Arborist PN-129BU
Certified Forester No. 44
ISA Tree Risk Assessor Qualified
ASCA Tree and Plant Appraisal Qualified



Joshua Sharpes
Professional Forester
ISA Certified Arborist®,
Municipal Specialist, PN- 5939AM
ISA Tree Risk Assessor Qualified

Attachment 1. Aerial Photo of The Lodge Apartments Project Area

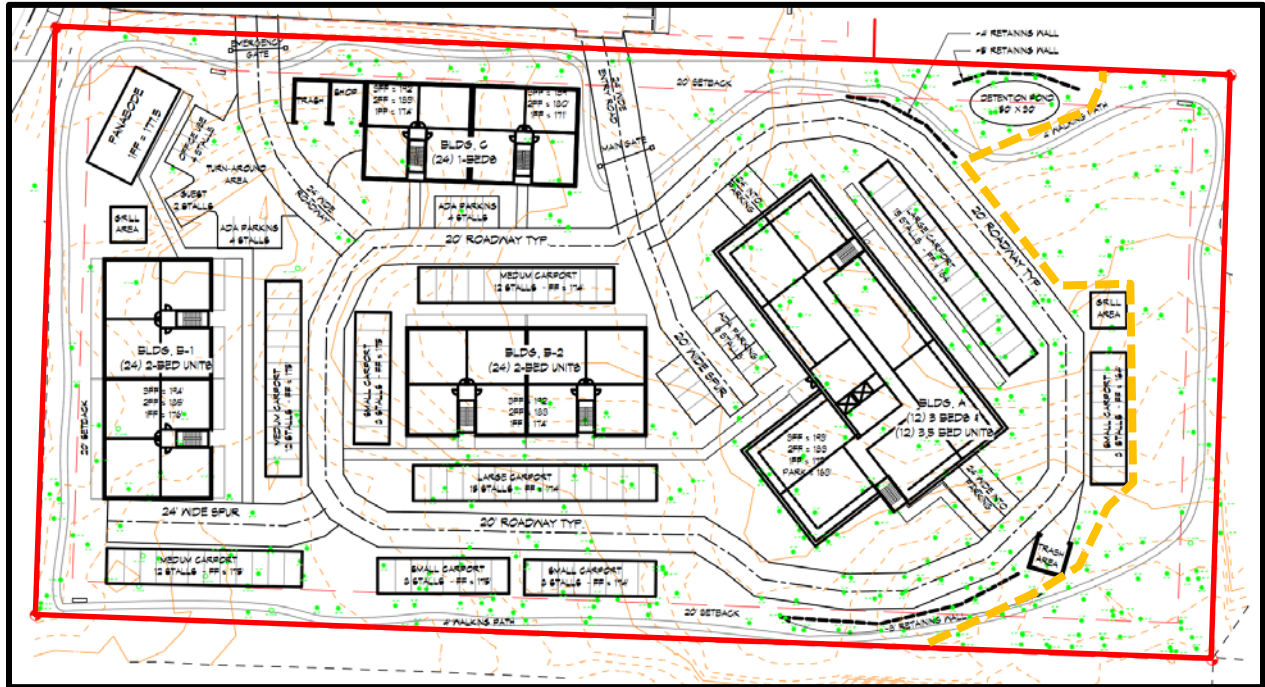
(Thurston County GeoData 2021)



— Project Area Boundary

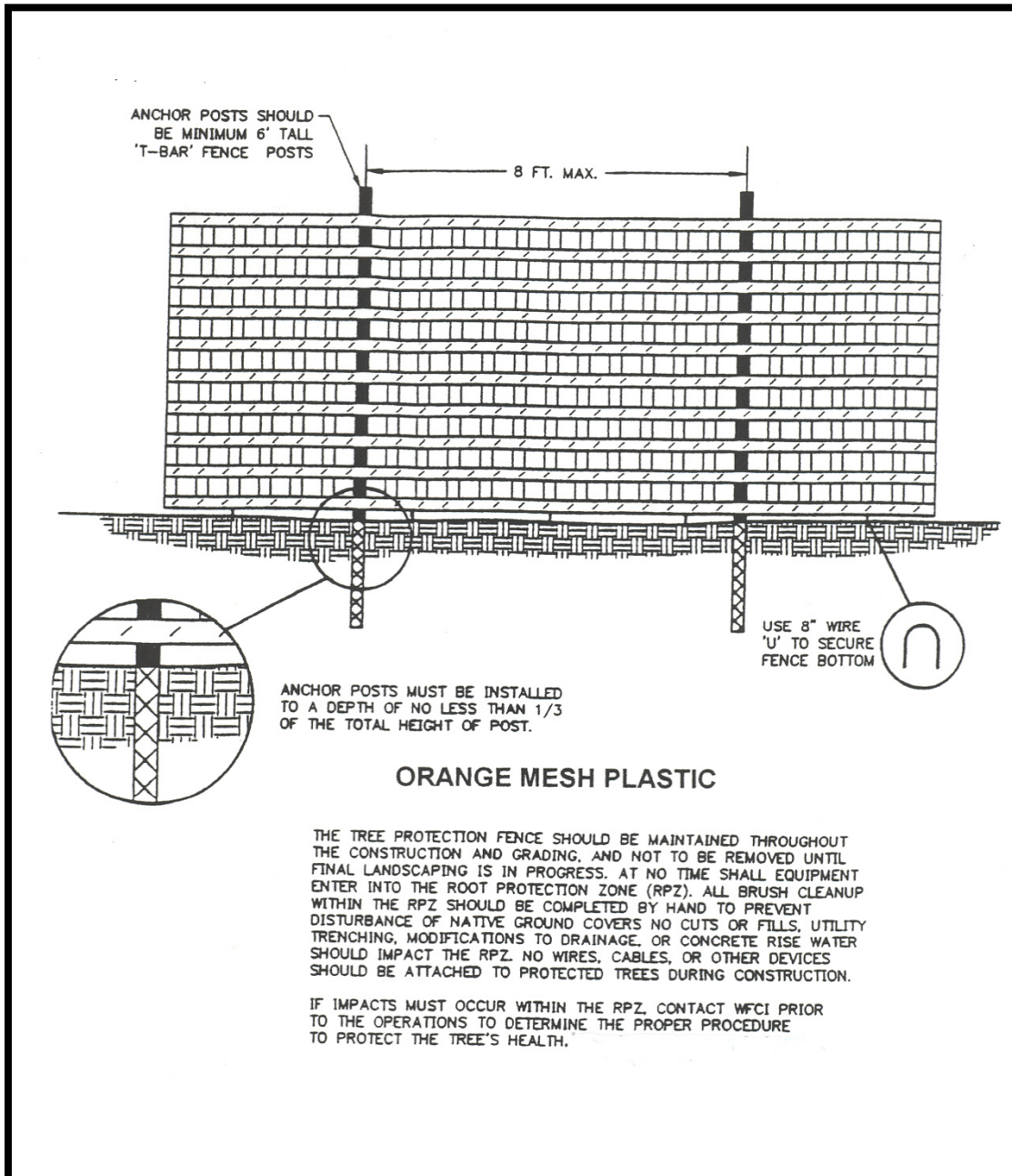
- - - Cover Type Boundary

Attachment 2. The Lodge Apartments Site Plan



- Parcel Boundary
- Area for Designated Tree Tract

Attachment 3. Tree Protection Fence Detail



Attachment 4. Glossary of Forestry and Arboricultural Terminology

DBH: Diameter at Breast Height (measured 4.5 ft. above the ground line on the high side of the tree).

Crown: Portion of a trees stem covered by live foliage.

Crown Position: Position of the crown with respect to other trees in the stand.

Dominant Crown Position: Receives light from above and from the sides.

Codominant Crown Position: Receives light from above and some from the sides.

Intermediate Crown Position: Receives little light from above and none from the sides. Trees tend to be slender with poor live crown ratios.

Suppressed Crown Position: Receives no light from above and none from the sides. Trees tend to be slender with poor live crown ratios.

Live Crown Ratio: Ratio of live foliage on the stem of the tree. Example: A 100' tall tree with 40 feet of live crown would have a 40% live crown ratio. Conifers with less than 30% live crown ratio are generally not considered to be long-term trees in forestry.

Root Protection Zone/Critical Root Zone: A radius from the trees stem of 1 foot for each 1 inch of DBH unless otherwise determined by WFCI. For example, a 7 inch DBH tree would have a critical root zone radius of 7 feet.

Condition Class Descriptions:

CONDITION CLASS	CHARACTERISTICS
Excellent	Single stem; Normal foliage color; No branch dieback; No apparent insect or disease problems; No other apparent problems;
Very Good	Single stem; Normal foliage color; No branch dieback or only a few minor branches died back; No apparent insect or disease problems; No other apparent problems, or they are minor and do not impact the long-term survival of the tree;
Good	Single stem; Normal foliage color; Minor branch dieback; Minor problems such as crown unbalanced; Minor foliage problems; Expected to be a long-term tree;
Fair	Single stem or double stem that is not expected to fail soon; Crown may be slightly thinned due to exposure or reduced vigor; Minor branch dieback and 1 or 2 major branches died back; Minor insect or disease problems; Tree expected to survive;
Poor	Single or Multiple stem tree; Thinning crown; Foliage color yellowed; Inadequate live crown ratio; Major and minor branch dieback; Not a long-term tree or quality tree for development;
Very Poor	Single or Multiple stem tree; Severe thinning crown; Yellow foliage; Major branch dieback; Expected to die within 5 years or so;
Hazard Tree	Dead, dying, diseased, defective; Would be hazardous to new development or if other targets are placed within reach of tree;

Attachment 5. Assumptions and Limiting Conditions

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- 10) Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree or other plant or property in question may not arise in the future.

Note: Even healthy trees can fail under normal or storm conditions. The only way to eliminate all risk is to remove all trees within reach of all targets. Annual monitoring by an ISA Certified Arborist or Certified Forester will reduce the potential of tree failures. It is impossible to predict with certainty that a tree will stand or fail, or the timing of the failure. It is considered an 'Act of God' when a tree fails, unless it is directly felled or pushed over by man's actions.