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MON-1 Coastlands II Project



Arborist Report

On State Route 1 in Monterey County

District 5-MON-1-PM 44.3

Project Number 0521000188 / EA 05-1P210

August 2024



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Table of Contents

Chapter 1.	Introduction and Qualifications	1
	Project Background	1
	Project Location	1
	Arborist Qualifications	1
Chapter 2.	Regulatory Overview and Methodology	3
	Regulatory Overview.....	3
	Tree Survey Methodology	3
Chapter 3.	Summary of Findings	5
Chapter 4.	Site Plan Review.....	6
	Tree Preservation	6
	Tree Removal.....	6
	Tree Replacement.....	6
Chapter 5.	Tree Observations and Recommendations	10
	Individual Species Observations and Recommendations	10
	Recommendations for Trees During Construction	11
Chapter 6.	Supplemental Information.....	13
	Definitions	13
	References	14
Attachment A	Tree Evaluation Summary.....	15
Attachment B	Photo Documentation.....	16

List of Figures

Figure 1. Project Vicinity/Location Map	2
Figure 2. Site Plan	8
Figure 3. Site Section	9

List of Tables

Table A-1. Observation Summary by Location.....	15
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Chapter 1. Introduction and Qualifications

Project Background

The existing retaining wall within the proposed project location has failed causing soil instability that could damage the highway facility and prevent the highway from being passable. The proposed project will include constructing a new 189-foot-long soldier pile wall to replace the existing failed timber faced mechanically stabilized embankment (MSE) wall. Additionally, the project will reconstruct the existing storm drainage inlet and culvert system, restore the portion of the roadway impacted by the failed retaining wall, and construct a 226-foot guardrail barrier along the southbound highway shoulder. Two alternatives are considered for the guardrail installation. The first alternative proposes constructing an ST-75 rail and the second alternative proposes constructing a Midwest Guardrail System (MGS). The proposed project will require the removal of eight trees: five Monterey cypress trees (*Hesperocyparis macrocarpa*), one California buckeye (*Aesculus californica*), and two coast live oak trees (*Quercus agrifolia*).

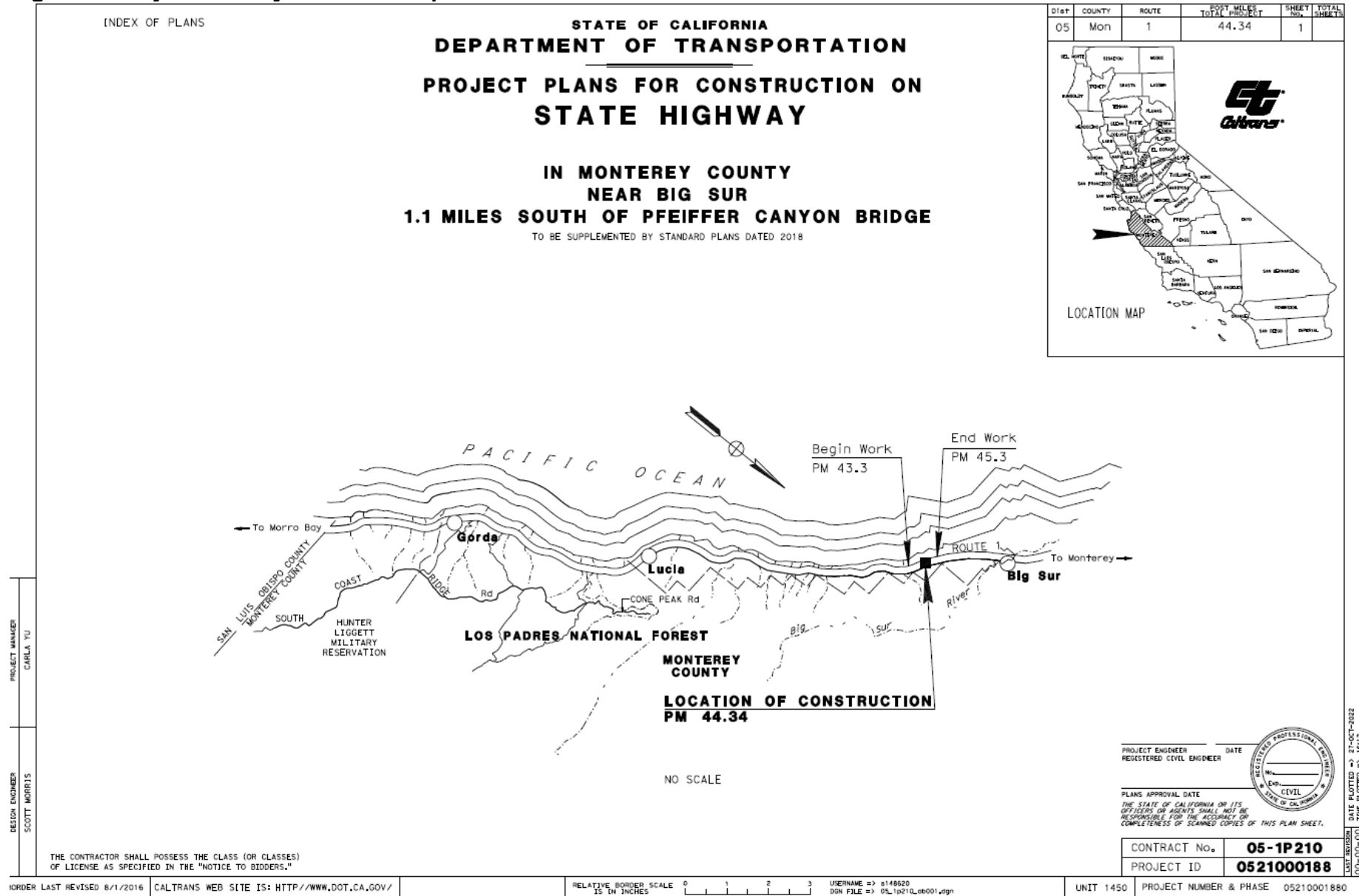
Project Location

The Coastlands II Project (project) is located along State Route 1 (SR-1) in Monterey County approximately three miles south of the town of Big Sur, at postmile (PM) 44.34 (Figure 1). The project proposes a retaining wall constructed adjacent to, and parallel with, the southbound lane just south of Coastlands Road.

Arborist Qualifications

This Arborist Report is written by Caltrans Arborist Jake Minnick. Jake holds an ISA Certified Arborist credential (WE-11830A) and an ISA Tree Risk Assessment Qualification (TRAQ). He is also a Licensed Landscape Architect in the State of California (6426).

Figure 1. Project Vicinity/Location Map



Chapter 2. Regulatory Overview and Methodology

Regulatory Overview

The following State and local agency regulatory documents were referenced during the development of this report. The recommendations provided are consistent with the language of these documents.

1. Section 20.145.060 - Forest Resources Development Standards of the Big Sur Coastal Implementation Plan, Part 3, Monterey County
2. Big Sur Coast Land Use Plan, Monterey County
3. Big Sur Coast Highway Management Plan, Caltrans
4. Visual Impact Assessment of the Proposed Coastlands II Soldier Pile Wall Project, Caltrans

Tree Survey Methodology

Trees were surveyed for this report using the following methodology:

1. Identify each tree species.
2. Note each tree location on a site map with a unique identifying number.
3. Measure each trunk diameter at 54" above grade per current ISA best practices.
4. Evaluate the health and structure of each tree using the following scale:
 - 5 - A healthy, vigorous tree, reasonably free of disease, with good structure and form typical of the species.
 - 4 - A tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
 - 3 - A tree with moderate vigor, moderate twig and small crown dieback, thinning of crown, poor leaf color, moderate structural defects that may be mitigated with care.
 - 2 - A tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
 - 1 - A tree in severe decline, dieback of scaffold branches and or trunk, mostly epicormic growth; extensive structural defects that cannot be abated.
5. Evaluate the vigor of each tree using the following scale:

***Note to Reader: Definitions are provided for underlined text in Chapter 6 - Definitions**

High – Tree putting on healthy, new twig growth in quantities characteristic of the species.

Moderate – Tree putting on new twig growth but showing signs of stress.

Low – Tree putting on most of their new twig growth as epicormic growth with signs of severe stress. There may be areas of crown dieback.

6. Evaluate the crown opacity of each tree using the following scale:

High – Tree with a thin crown characterized by lack of old growth and small quantities of newer growth. Visually, the sky is seen through the crown with little obstruction.

Moderate – Tree with a moderately thin crown, or with high opacity areas in the crown.

Low – Tree with a healthy, full crown that is characteristic of the species. Visually, it is difficult to see the sky through the crown.

Chapter 3. Summary of Findings

A large section of an existing MSE timber retaining wall failed causing slope instability along the southbound lane of State Route 1 at postmile 44.34 in Monterey County. Soon after the failure, a section of the southbound lane was closed and a one-way automated signal was installed to facilitate controlled two-way traffic on the northbound lane that remained open. A soil nail concrete wall was installed to temporarily stabilize the roadway and allow two-way traffic while alternative permanent slope stabilization designs could be studied and engineered. This report analyses the permanent slope stabilization design, which proposes the installation of a 189-foot-long soldier pile wall near the edge of the southbound lane of the roadway.

Caltrans Staff engaged in several site visits to gather field data between January, 2023 and July, 2024. Data collected includes photographs and diameter at breast height measurements of the eight trees impacted by the proposed project. Site visits were conducted after the temporary soil nail wall was constructed. This wall covers much of the limit of disturbance with steel reinforced concrete, as outlined in blue in *Figure 2*. Additionally, the failed MSE timber retaining wall remains in place downslope of the temporary soil nail wall. *Figure 3* includes a section of the proposed soldier pile wall and shows how it relates to the existing conditions. It illustrates why the failed MSE timber retaining wall and temporary soil nail wall are proposed to be demolished and removed along with a portion of existing soil to construct the soldier pile wall. Existing site elements proposed to be demolished and removed are highlighted in yellow in *Figure 3*.

Eight trees were selected for study due to their locations within, or immediately adjacent to, the limit of disturbance illustrated in *Figure 2*. These trees represent three California native species: Monterey cypress, coast live oak, and California buckeye. Of these species, coast live oak and the California buckeye are native to the project area, while the Monterey cypress is not. Several of the trees appear to have been planted by local residents in the State right-of-way to screen nearby properties from motorists on State Route 1.

Chapter 4. Site Plan Review

Tree Preservation

Trees will be preserved to the extent feasible to construct the proposed project.

Tree Removal

Impacts associated with construction of the proposed soldier pile retaining wall call for the removal eight trees. Of the eight trees proposed for removal, three are native to the project area. The diameter at breast height for each of the three native trees measures less than 10".

Tree Replacement

Several State and local regulatory documents were taken into consideration for the development of this recommendation for tree replacement. The full list of documents can be found in *Chapter 2 - Regulatory Overview and Methodology* and related content is summarized below.

Monterey County's *Forest Resources Development Standards of the Big Sur Coastal Implementation Plan* was reviewed for tree replacement language pertaining to the proposed project. Generally, this document calls for a replacement ratio of 1:1 for the removal of each native tree over 12" DBH and supports the removal of non-native vegetation. It also supports the screening of structures with vegetation.

Monterey County's *Big Sur Coast Land Use Plan* (Local Coastal Plan) includes much of the same language included in the *Big Sur Coastal Implementation Plan* but does not directly outline requirements for tree replacement. It does support the removal of non-native vegetation and the screening of structures with vegetation.

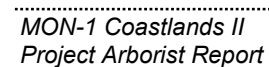
Caltrans' *Big Sur Coast Highway Management Plan* provides a broad overview of resource management and stewardship objectives specific to the Big Sur coast State right-of-way. Related management objectives include preservation of views, control of noxious weeds, and vegetation control along the highway for visibility and safety.

Caltrans' *Visual Impact Assessment of the Proposed Coastlands II Soldier Pile Wall Project* notes the removal of trees will be noticeable from the roadway but also describes how this visual change will lead to increased views of the Pacific Ocean.

Generally, the policies of these regulatory documents align in that scenic views should be preserved while undesirable views should be screened, and non-native vegetation should be removed and replaced with native vegetation where feasible.

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The removal of these eight trees may slightly increase the visibility of several private residences downslope of the project site, but will in turn increase scenic views of the steep forested topography and Pacific Ocean below. The proposed grading in front of the soldier pile wall includes a gently sloping bench cut of native soil. It is recommended this bench be planted with a minimum of one small native tree or large shrub for each native tree proposed for removal. Several native species are suitable for planting including, but not limited to, the California buckeye (*Aesculus californica*), toyon (*Heteromeles arbutifolia*), and the California wax myrtle (*Morella californica*). In combination with the proposed guardrail or barrier, these smaller native replacement specimens will provide some screening of the private residences below while preserving scenic views from the roadway.





Chapter 5. Tree Observations and Recommendations

Individual Species Observations and Recommendations

Species: *Aesculus californica* (California buckeye)

Quantity: 1

Observations: There are two California buckeye trees visible within the immediate watershed below and above the project. Tree 5, shown in *Figure 2*, is located within the project limit of disturbance and the other is located just downslope and outside the limit of disturbance.

The failure of the southern portion of the existing timber retaining wall appears to be limited by the main stem of tree 5, which may be partially supporting the weight of the wall and retained soil. Mechanical bark damage is visible on the main stem from the initial impact of the wall with more damage suspected below the resting point of the wall on the main stem. Additionally, the tree appears to be leaning downslope from the weight of the timber wall and soil it is supporting. California buckeye is a deciduous tree that typically experiences summer dormancy, and sometimes full or partial winter dormancy. Early summer dormancy of just the foliage on the damaged side of the tree was visible during a July 2024 site visit, indicating stress. This may be traced back to the mechanical bark damage and the disruption of water and nutrient flows between the upslope portion of the crown and roots. It may also indicate damage to the upslope root system from the increased tension forces exerted on the main stem and roots from the weight of the resting retaining wall and soil.

Recommendations: Remove the damaged California buckeye tree to facilitate the demolition of the failed timber wall and construction of the proposed soldier pile wall.

Species: *Hesperocyparis macrocarpa* (Monterey cypress)

Quantity: 5

Observations: Many similarly aged Monterey cypress trees line the top of the slope adjacent to the southbound lane along this section of State Route 1, south of Coastlands Road. The project is located well outside of the southernmost native range of the Monterey cypress in the Point Lobos area. The narrow and purposeful distribution of these specimens suggests they may have been planted to screen

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nearby properties from motorists on State Route 1. Younger specimens appear to have naturalized from these plantings.

The five Monterey cypress trees studied for this report are young and generally in moderate to good health. Trees 1, 3, and 6 are the larger of the Monterey cypress trees and have good structure typical of the species. Trees 4 and 8 both appear to be volunteers growing under the canopy of larger neighboring trees. These younger trees exhibit poor structure associated with phototropism. All five Monterey cypress are within the limit of disturbance required for construction of the soldier pile retaining wall.

Recommendations: Remove all five Monterey cypress trees to facilitate the demolition of the failed timber wall and construction of the proposed soldier pile wall.

Species: *Quercus agrifolia* (coast live oak)

Quantity: 2

Observations: There are two coast live oak trees located within the limit of disturbance required for construction of the soldier pile retaining wall. Trees 2 and 7 are young coast live oaks in moderate to good health with structure typical of the species natural form. Tree 2 is the larger of the two and is equally spaced between Monterey cypress trees 1 and 3 along the top of the slope adjacent to the State Route 1 southbound lane. Tree 2 appears to be similar in age to Monterey cypress trees 1 and 3 and its location within the grove at the top of the slope suggests it may have been planted around the same time the Monterey cypress trees to screen nearby properties from motorists on State Route 1. Tree 7 appears to be a younger volunteer coast live oak located close to the edge of pavement along the southbound lane of State Route 1. It is growing in very close proximity to Monterey cypress trees 6 and 8.

Recommendations: Remove both coast live oak trees to facilitate the demolition of the failed timber wall and construction of the proposed soldier pile wall.

Recommendations for Trees During Construction

Site preparation: All existing trees to remain with trunks or foliage located within the limit of disturbance must be fenced off along the extent of the dripline of the tree, as feasible. Alternatively, where this is not feasible, the trunk must be wrapped with a straw waddle and orange temporary high visibility fencing (THVF). Tree protection fencing should be constructed of THVF with steel stakes or a material superior in quality as approved by the Engineer. If the fence is within the dripline of the trees,

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the crown must be raised to offset the chance of limb breakage from construction equipment encroaching within the dripline. All contractors, subcontractors and other personnel must be warned that encroachment within the fenced area is forbidden without the consent of the Engineer. This includes, but is not limited to, storage of lumber and other materials, disposal of paints, solvents or other noxious materials, parked cars, grading equipment or other heavy equipment. Penalties, based on the cost of remedial repairs and the evaluation guide published by the International Society of Arboriculture, must be assessed for damages to the trees.

Grading/excavating: All grading plans that specify grading within the dripline of any tree, or within the distance from the trunk as outlined in the site preparation section above when said distance is outside the dripline, must first be reviewed by a Certified Arborist. Provisions for aeration, drainage, pruning, tunneling beneath roots, root pruning or other necessary actions to protect the trees must be outlined by a Certified Arborist. If trenching is necessary within the area as described above, said trenching must be undertaken by hand labor and dug directly beneath the trunk of the tree. All roots 2 inches or larger must be tunneled under and other roots must be cut smoothly to the trunk side of the trench. A Certified Arborist must examine the trench prior to back filling to ascertain the number and size of roots cut, to suggest the necessary remedial repairs.

Remedial repairs: A Certified Arborist must have the responsibility of observing all ongoing activities that may affect existing trees to remain and prescribing necessary remedial work to ensure the health and stability of these trees. This includes, but is not limited to, all arborist activities brought out in the previous sections. In addition, pruning, as outlined in the *Pruning Standards* of ANSI A300, must be prescribed as necessary. Fertilizing, aeration, irrigation, pest control and other activities must be prescribed according to tree needs, local site requirements, and State agricultural pest control laws. All specifications must be in writing. For pest control operations, consult the local county agricultural commissioner's office for individuals licensed as pest control advisors or pest control operators.

Chapter 6. Supplemental Information

Definitions

Canopy: This term refers one or more tree crowns growing in a given area.

Crown: This term refers to the small branch and leafy part of the tree, usually above the main trunk.

Crown Dieback: A condition typically associated with stress where branches in a tree crown die from the tips toward the center.

Crown Opacity: The amount of skylight visible through the tree crown. For the purposes of this report, the crown opacity of an individual tree is compared with that typical of the species. Higher crown opacities can be indicative of tree stress.

Diameter at Breast Height (DBH): A measurement of tree diameter in inches, rounded to the nearest half-inch increment. DBH measurement height varies by agency but is typically recorded at 54" above average grade per ISA guidelines.

Dripline: This is the outermost limit of the crown of a tree as determined by the perimeter of its branches and foliage.

Epicormic Growth: Watersprouting on trunk and main leaders. Typically indicative of tree stress and commonly associated with overpruning of trees in an urban forest setting.

ISA Certified Arborist: A person certified by the International Society of Arboriculture (ISA) based on demonstrated training and knowledge in the field of arboriculture.

ISA Tree Risk Assessment Qualification (TRAQ): An ISA Certified Arborist with a specialized qualification credential focused on a standardized, systematic process for assessing tree risk and providing information to tree owners and risk managers.

Licensed Landscape Architect: A landscape architect is an individual who holds a professional license to practice landscape architecture as defined under Business and Professions Code (BPC) section 5615. Under BPC section 5615, a landscape architect is a person who offers or performs professional services, for the purpose of landscape preservation, development, and enhancement, such as consultation, investigation, reconnaissance, research, planning, design, preparation of drawings, construction documents and specifications, and responsible construction observation.

Limit of Disturbance: Delineates the footprint of suspected site impacts associated with the proposed project. For the purposes of this report, this area defines the extent of proposed grading and demolition required to construct the project.

Naturalize: A plant that has successfully established and reproduced in a new environment outside of its native range. This term is commonly used to describe the status of invasive plant species in a given area.

Phototropism: Tree growth toward the direction of light as a response to resource competition.

Vigor: In the context of this report, tree vigor is the measure of new seasonal shoots and leaf growth of an individual tree compared with that typical of the species. Lower vigor can be indicative of tree stress.

Volunteer: In the context of this report, a volunteer refers to an individual specimen that has set seed and successfully established by natural means. This term is related to the term "naturalize" but can be used to describe individual specimens within a naturalized or native plant community.

References

- American National Standards Institute, & Tree Care Industry Association, inc. (2017). *American national standard: tree, shrub, and other woody plant management: standard practices (pruning)*. Tree Care Industry Association.
- Calscape - California Native Plant Society. (n.d.). <https://calscape.org/>
- Fite, Kelby, Smiley, Thomas E., *Managing Trees During Construction, Manual, Second Edition*, International Society of Arboriculture, 2016, ISBN: 978-1-881956-94-5
- Matheny, Nelda P. and Clark, James R., *Trees and Development: A Technical Guide to Preservation of Trees During Land Development*, International Society of Arboriculture, 1998, ISBN: 978-1881956204

Attachment A Tree Evaluation Summary

Table A-1. Observation Summary by Location

Tree #	Botanical & Common Names	DBH	Native	Tree Health	Vigor	Crown Opacity	Notes
1	<i>Hesperocyparis macrocarpa</i> Monterey cypress	13"	No	3	Mod.	Mod.	
2	<i>Quercus agrifolia</i> coast live oak	9"	Yes	4	Mod.	Low	
3	<i>Hesperocyparis macrocarpa</i> Monterey cypress	13.5"	No	4	High	Mod.	
4	<i>Hesperocyparis macrocarpa</i> Monterey cypress	7.75"	No	2	High	Low	Volunteer beneath crown of tree 3. Severe uncorrected lean
5	<i>Aesculus californica</i> California buckeye	10"	Yes	2	Mod.	Low	Large wound on main stem from timber wall failure
6	<i>Hesperocyparis macrocarpa</i> Monterey cypress	10"	No	4	High	Mod.	
7	<i>Quercus agrifolia</i> coast live oak	5"	Yes	3	Mod.	Mod.	Severely crowded by trees 6 & 7
8	<i>Hesperocyparis macrocarpa</i> Monterey cypress	4"	No	2	High	Low	Volunteer beneath crown of tree 6. Severe uncorrected lean

Attachment B Photo Documentation

Photos of Studied Trees



Trees 1-4 (left to right). Viewed from the SR-1 northbound lane looking west. August 2023.



Tree 5. Viewed from the southbound shoulder looking west. July 2024.



Trees 6-8 (left to right). Viewed from the northbound lane looking west. August 2023.

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