

Appendix M
Heritage Tree Survey

Rockaway Quarry Heritage Tree Survey

I. Introduction

A. Summary

Zentner and Zentner (Z&Z) conducted a survey of all trees located on both the eastern and western sections of the Rockaway Quarry property (Quarry property) to identify trees meeting the City of Pacifica's Heritage Tree definition. Surveyors examined and tagged all trees with a circumference of greater than 44 inches on the property with a numbered aluminum tree tag and recorded the tag number, species, and circumference. As required by the City of Pacifica Municipal Code, tree circumference was measured 24 inches above the natural grade.

One hundred and forty (140) trees were identified on the Quarry property that meet the City of Pacifica's Heritage tree definition. As a part of the Reclamation project, 11 heritage trees will be removed (tree numbers 4, 5, 6, 7, 16, 18, 19, 21, 25, 26, and 37). See **Appendix A** for additional information on these trees. After completion of reclamation, the Quarry property will contain 129 heritage trees.

B. Heritage Tree Definition

The Pacifica Municipal Code stipulates regulations designed to preserve and protect heritage trees on private or city-owned property. These regulations include a permit requirement to cut down, destroy, remove, or move or commence a new construction project within the dripline of a heritage tree. To destroy a tree is to substantially trim a tree so as to threaten the tree's healthy growth and development.

The City of Pacifica Municipal Code defines heritage trees in Section 4 Chapter 12.02 of the Municipal code as follows:

"All trees within the City of Pacifica, exclusive of eucalyptus, which have a trunk with a circumference of fifty (50") inches (approximately sixteen (16") inches in diameter) or more, measured at twenty-four (24") inches above the natural grade; or (2) A tree or grove of trees, including eucalyptus, designated by resolution of the Council to be of special historical, environmental, or aesthetic value."

Additionally as stated in Section 4 Chapter 12.03, the municipal code provides the following provisions with regards to heritage tree designation:

"(a) All trees within the City, exclusive of eucalyptus, which meet the size criteria set out in Section 4-12.02(c) (1) herein are hereby designated to be heritage trees.

(b) In addition to heritage trees designated under Section 4-12.02(c)(1) herein, where a tree has special historical, environmental or aesthetic value, the Council,

by resolution, may designate an individual tree or a grove of trees as a heritage tree, regardless of its size.

(c) The Director, City Council, landowner, or any other interested person may request that a tree or grove of trees be designated as a heritage tree regardless of its size.

(d) The City Clerk shall notify the landowner in writing personally or by mail at least ten (10) days before the Council intends to designate an individual tree or trees on his or her land as a heritage tree under subsection (b) herein, unless the landowner has requested the designation. (§ 1, Ord. 542-C.S., eff. January 10, 1990)

Z&Z staff consulted City of Pacifica staff to determine the appropriate way to measure trees with numerous trunks that branch less than 24 inches above natural grade. The City determined that, in such cases, the diameter the tree's largest trunk should be measured to determine whether or not the tree meets the City's heritage tree definition.

II. Methods

Z&Z biologists examined all trees on the Quarry property to determine whether they meet the City of Pacifica's heritage tree requirements. Hereafter, references to a tree's circumference are in reference to the circumference at 24 inches above the natural grade.

Z&Z conducted the heritage tree survey over six days between May 17 and June 21, 2016 (May 17, May 18, June 1, June 7, June 16, and June 21, 2016). Surveys were completed by a biologist, or pair of biologists, experienced in identifying and measuring trees.

Biologists surveyed all trees on the Quarry property beginning with the trees located on the property's western parcel and ending with the trees located on the eastern parcel. All trees that met the City of Pacifica's Heritage Tree definition (defined above) were tagged with a numbered aluminum tree tag and the circumference and tree species was recorded. This same procedure was followed for non-native trees that were within 12 inches of the Heritage tree diameter requirements (38 inches or greater) and for native trees within 6 inches of the Heritage tree diameter requirement (44 inches or greater).

A number of trees on the Quarry property have multiple trunks that split from the tree within 24 inches above the grade. Z&Z staff consulted City of Pacifica staff to determine the appropriate way to measure these trees and determined that in cases of multi-trunk trees, the biologist should measure the largest trunk and compare it to the Heritage Tree definition.

The results of the tree survey were overlaid with the Quarry reclamation plan by WRA, Inc. to determine which heritage trees will be preserved on the Quarry property and which heritage trees must be removed. Heritage trees located outside of the reclamation boundary depicted in Appendix A will not be impacted by the project and will be preserved. Though several trees lining the ingress access route of the project site may require light trimming to ensure safe vehicular access to the western parcel, such trees will not be removed and will be protected via

a tree protection plan. The western parcel (where reclamation activities will occur) will be accessed using existing alignments that are devoid of heritage trees.

III. Results

Two hundred and seventeen trees (217) were tagged on the Quarry property, including both heritage and non-heritage trees. The following tree species were identified on the project site: Arroyo willow (*Salix lasiolepis*), Brazilian pepper tree (*Schinus terebinthifolius*), lollypop tree (*Myoporum laetum*), Monterey cypress (*Cupressus macrocarpa*), Monterey pine (*Pinus radiata*), and Sitka willow (*Salix sitchensis*).

Arroyo willow and Sitka willow are the only two native tree species present on the Quarry property. Although Monterey pine and Monterey cypress are native to California, Pacifica is outside of their native range and the California Invasive Plan Council classifies these species as non-native in the area. Brazilian pepper tree and lollypop tree are non-native species.

One hundred forty (140) of these trees meet the City of Pacifica’s Heritage tree definition. Appendix A displays the survey results.

1. Preserved trees

One hundred and twenty nine (129) of the 140 heritage trees will be preserved on the Rockaway Quarry property. Table 1 below shows the trees that will be preserved.

Table 1: Preserved Heritage Trees

Tree number	Species		Circumference (inches)	Tree Number	Species		Circumference (inches)
	Common Name	Latin Name			Common Name	Latin Name	
40	Monterey cypress	Cupressus macrocarpa	116.2	85	Monterey cypress	Cupressus macrocarpa	83.3
41	Monterey cypress	Cupressus macrocarpa	53.4	86	Monterey cypress	Cupressus macrocarpa	86.4
42	Monterey cypress	Cupressus macrocarpa	116.2	87	Monterey cypress	Cupressus macrocarpa	77.8
44	Monterey cypress	Cupressus macrocarpa	69.1	89	Monterey cypress	Cupressus macrocarpa	51.8
46	Monterey cypress	Cupressus macrocarpa	64.4	90	Monterey cypress	Cupressus macrocarpa	59.7
50	Monterey cypress	Cupressus macrocarpa	67.5	91	Monterey cypress	Cupressus macrocarpa	91.1
52	Monterey cypress	Cupressus macrocarpa	72.3	92	Monterey cypress	Cupressus macrocarpa	88
53	Monterey cypress	Cupressus macrocarpa	81.7	93	Monterey cypress	Cupressus macrocarpa	52.6
57	Monterey cypress	Cupressus macrocarpa	56.5	94	Monterey cypress	Cupressus macrocarpa	56.5
58	Monterey cypress	Cupressus macrocarpa	53.4	96	Monterey cypress	Cupressus macrocarpa	74.6

59	Monterey cypress	Cupressus macrocarpa	75.4	97	Monterey cypress	Cupressus macrocarpa	66.8
61	Monterey cypress	Cupressus macrocarpa	80.1	98	Monterey cypress	Cupressus macrocarpa	56.5
62	Monterey cypress	Cupressus macrocarpa	58.1	99	Monterey cypress	Cupressus macrocarpa	55
63	Monterey cypress	Cupressus macrocarpa	55	100	Monterey cypress	Cupressus macrocarpa	58.1
65	Monterey cypress	Cupressus macrocarpa	59.7	101	Monterey cypress	Cupressus macrocarpa	53.4
66	Monterey cypress	Cupressus macrocarpa	119.4	102	Monterey cypress	Cupressus macrocarpa	53.4
67	Monterey cypress	Cupressus macrocarpa	86.4	103	Monterey cypress	Cupressus macrocarpa	73.8
68	Monterey cypress	Cupressus macrocarpa	50.3	104	Monterey cypress	Cupressus macrocarpa	59.7
69	Monterey cypress	Cupressus macrocarpa	93.5	105	Monterey cypress	Cupressus macrocarpa	67.5
70	Monterey cypress	Cupressus macrocarpa	166.5	106	Monterey cypress	Cupressus macrocarpa	70.7
72	Monterey cypress	Cupressus macrocarpa	135.1	107	Monterey cypress	Cupressus macrocarpa	59.7
73	Monterey cypress	Cupressus macrocarpa	75.4	108	Monterey cypress	Cupressus macrocarpa	67.5
74	Monterey cypress	Cupressus macrocarpa	78.5	109	Monterey cypress	Cupressus macrocarpa	70.7
75	Monterey cypress	Cupressus macrocarpa	92.7	110	Monterey cypress	Cupressus macrocarpa	91.1
77	Monterey cypress	Cupressus macrocarpa	69.1	112	Monterey cypress	Cupressus macrocarpa	59.7
78	Monterey cypress	Cupressus macrocarpa	110	113	Monterey cypress	Cupressus macrocarpa	121
79	Monterey cypress	Cupressus macrocarpa	99	114	Monterey cypress	Cupressus macrocarpa	56.5
80	Monterey cypress	Cupressus macrocarpa	138.2	115	Monterey cypress	Cupressus macrocarpa	91.1
81	Monterey cypress	Cupressus macrocarpa	75.4	181	Lollypop tree	Myoporum laetum	56.5
82	Monterey cypress	Cupressus macrocarpa	73	201	Monterey cypress	Cupressus macrocarpa	157.1
83	Monterey cypress	Cupressus macrocarpa	64.4	202	Monterey cypress	Cupressus macrocarpa	204.2
84	Monterey cypress	Cupressus macrocarpa	58.1	38	Monterey pine	Pinus radiata	*
119	Monterey cypress	Cupressus macrocarpa	86.4	167	Monterey cypress	Cupressus macrocarpa	56.5
120	Monterey cypress	Cupressus macrocarpa	100.5	168	Monterey cypress	Cupressus macrocarpa	94.2
121	Monterey cypress	Cupressus macrocarpa	62.8	169	Monterey cypress	Cupressus macrocarpa	72.3

122	Monterey cypress	Cupressus macrocarpa	80.1	173	Monterey cypress	Cupressus macrocarpa	53.4
123	Monterey cypress	Cupressus macrocarpa	130.4	174	Monterey cypress	Cupressus macrocarpa	100.5
127	Monterey cypress	Cupressus macrocarpa	108.4	178	Monterey cypress	Cupressus macrocarpa	50.3
131	Monterey cypress	Cupressus macrocarpa	113.1	179	Monterey cypress	Cupressus macrocarpa	62.8
132	Lollypop tree	Myoporum laetum	53.4	182	Monterey cypress	Cupressus macrocarpa	113.1
136	Monterey cypress	Cupressus macrocarpa	67.5	183	Monterey cypress	Cupressus macrocarpa	210.5
138	Monterey cypress	Cupressus macrocarpa	58.1	184	Monterey cypress	Cupressus macrocarpa	53.4
141	Lollypop tree	Myoporum laetum	50.3	185	Lollypop tree	Myoporum laetum	51.8
142	Monterey cypress	Cupressus macrocarpa	88.0	187	Monterey cypress	Cupressus macrocarpa	133.5
144	Monterey cypress	Cupressus macrocarpa	56.5	192	Monterey cypress	Cupressus macrocarpa	263.9
145	Lollypop tree	Myoporum laetum	72.3	194	Monterey cypress	Cupressus macrocarpa	210.5
147	Monterey cypress	Cupressus macrocarpa	88.0	195	Monterey cypress	Cupressus macrocarpa	88.0
148	Monterey cypress	Cupressus macrocarpa	132.7	196	Monterey cypress	Cupressus macrocarpa	125.7
149	Monterey cypress	Cupressus macrocarpa	163.4	197	Monterey cypress	Cupressus macrocarpa	91.1
150	Monterey cypress	Cupressus macrocarpa	81.7	198	Monterey cypress	Cupressus macrocarpa	72.3
151	Monterey cypress	Cupressus macrocarpa	164.9	199	Monterey cypress	Cupressus macrocarpa	144.5
152	Monterey cypress	Cupressus macrocarpa	185.4	200	Monterey cypress	Cupressus macrocarpa	100.5
153	Monterey cypress	Cupressus macrocarpa	213.6	203	Monterey cypress	Cupressus macrocarpa	108.4
154	Monterey cypress	Cupressus macrocarpa	169.6	204	Monterey cypress	Cupressus macrocarpa	182.2
155	Monterey cypress	Cupressus macrocarpa	95.8	205	Monterey cypress	Cupressus macrocarpa	103.7
156	Monterey cypress	Cupressus macrocarpa	59.7	206	Monterey cypress	Cupressus macrocarpa	207.3
157	Monterey cypress	Cupressus macrocarpa	62.8	209	Monterey cypress	Cupressus macrocarpa	84.8
159	Monterey cypress	Cupressus macrocarpa	122.5	211	Monterey cypress	Cupressus macrocarpa	229.3
160	Monterey cypress	Cupressus macrocarpa	119.4	212	Monterey cypress	Cupressus macrocarpa	51.8
161	Monterey cypress	Cupressus macrocarpa	56.5	213	Monterey cypress	Cupressus macrocarpa	213.6
162	Monterey cypress	Cupressus macrocarpa	74.6	214	Monterey cypress	Cupressus macrocarpa	55.0

163	Monterey cypress	Cupressus macrocarpa	100.5	215	Monterey cypress	Cupressus macrocarpa	56.5
164	Monterey cypress	Cupressus macrocarpa	116.2	216	Monterey cypress	Cupressus macrocarpa	158.7
165	Monterey cypress	Cupressus macrocarpa	100.5	217	Monterey cypress	Cupressus macrocarpa	155.5
166	Monterey cypress	Cupressus macrocarpa	138.2				

*No circumference reported but a diameter of 22.0 inches

2. Removed trees

Eleven (11) heritage trees will be removed on the Rockaway Quarry property as a result of reclamation activities. Table 2 below shows the trees that will be removed.

Table 2: Removed Heritage Trees

Tree number	Species		Diameter (inches)	Tree number	Species		Diameter (inches)
	Common	Latin			Common	Latin	
4	Monterey cypress	Cupressus macrocarpa	19.5	19	Monterey cypress	Cupressus macrocarpa	24.0
5	Monterey cypress	Cupressus macrocarpa	16.0	21	Monterey cypress	Cupressus macrocarpa	16.5
6	Monterey cypress	Cupressus macrocarpa	16.8	25	Monterey cypress	Cupressus macrocarpa	16.0
7	Monterey cypress	Cupressus macrocarpa	16.0	26	Monterey cypress	Cupressus macrocarpa	27.0
16	Monterey cypress	Cupressus macrocarpa	17.0	37	Monterey cypress	Cupressus macrocarpa	16.5
18	Monterey cypress	Cupressus macrocarpa	25.0				

IV. Tree Protection Plan

The goal of the tree protection plan is to protect trees through reclamation project implementation and to ensure the tree's continued health for the following years. The response of individual trees will depend on the work in the vicinity and the care with which demolition and construction within the vicinity is undertaken. Impacts to protected trees will be reduced to the greatest extent practicable by minimizing and monitoring all construction activities within each tree's dripline hereafter referred to as the Tree Protection Zone.

One hundred and twenty nine (129) heritage trees will be preserved on the Rockaway Quarry Property. Information on these protected trees can be found in the sections above, and in Appendix A. The following actions will help reduce impacts to protected trees throughout project implementation.

- *Drip line protection.* The applicant is responsible to use his or her best efforts to preserve all trees which are to remain on the project site. With respect to heritage trees, the following specific construction practices shall apply:

- Each heritage tree or group of trees to be preserved shall be protected by marking and fencing the entire dripline area prior to grading, paving, movement of heavy equipment, or other construction activity as described below. Exceptions may be approved by the Director.
- The existing ground surface within the dripline of any heritage tree should not be cut, filled, compacted, or paved unless there is no other reasonable design alternative.
- All cuts or trenching within the dripline of a heritage tree and all root cuttings are to be made by hand. No backhoes or graders shall be used. Appropriate measures shall be taken to prevent soil upon exposed roots from drying out.
- Prior to beginning project activities, orange construction fencing shall be placed around each protected tree to clearly identify the Tree Protection Zone. Fences are to remain intact and in good condition until all grading and construction has been completed.
- No backhoes or graders shall be used within the Tree Protection Zone.
- Any root pruning required for construction purposes shall receive prior approval from and be supervised by the consulting arborist.
- If injury to any protected tree occurs during construction, it should be evaluated by the consulting arborist so that appropriate treatments can be applied.
- If a protected tree's roots are injured, measures to prevent the surrounding soils and roots from drying must be taken.
- No excess soils, chemicals, debris, equipment, or materials shall be dumped or stored within the Tree Protection Zone.
- If protected trees must be trimmed for construction purposes, a certified arborist must perform the pruning.

V. Conclusion

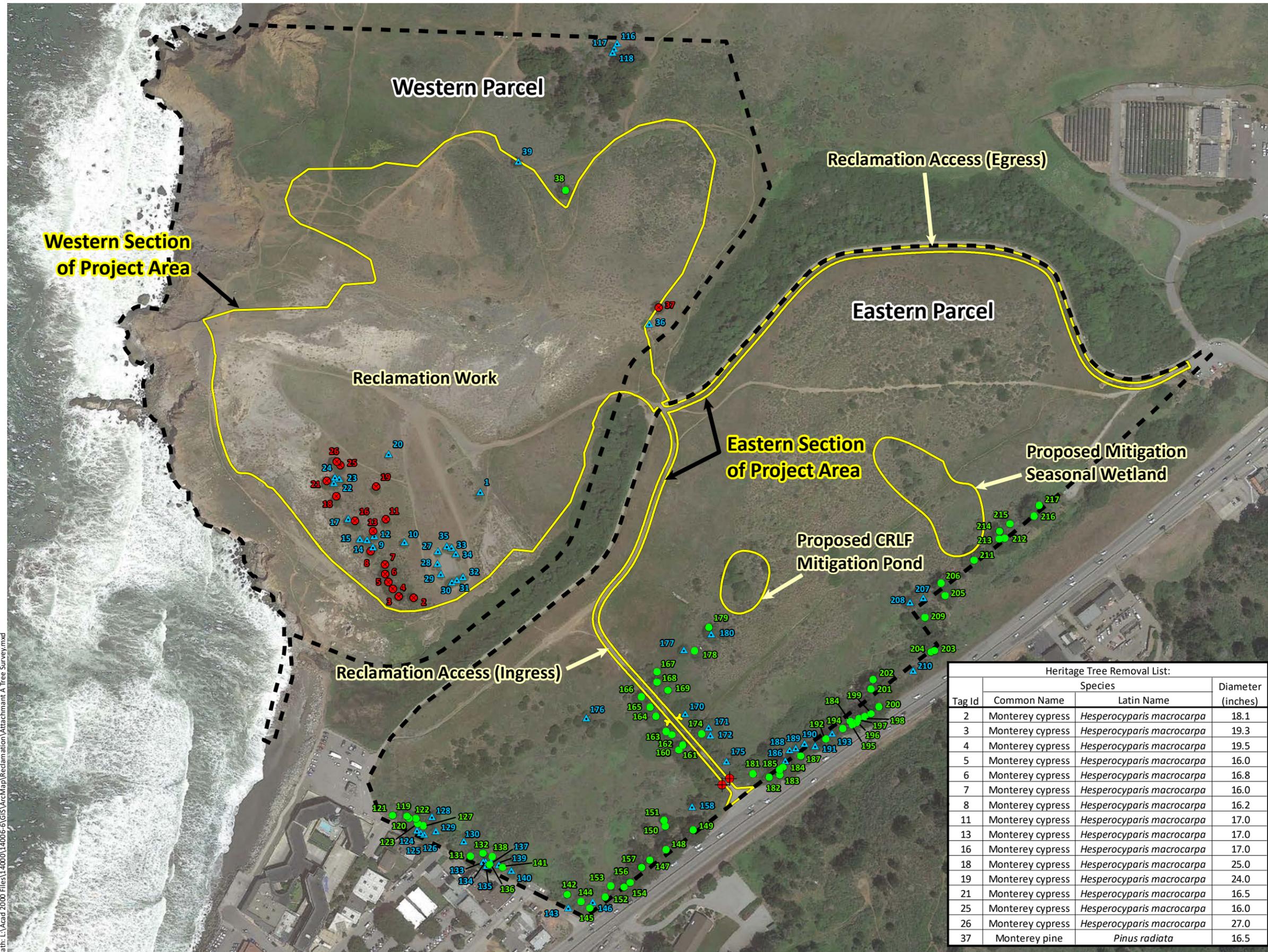
There are 217 trees on the Quarry Property. Of these 217 trees, 140 are heritage trees on the Quarry Property. In total, 129 heritage trees will be preserved and 11 heritage trees will be removed from the Rockaway Quarry property as a result of the quarry reclamation project.

Appendix A

Rockaway Quarry Heritage Tree Survey Results

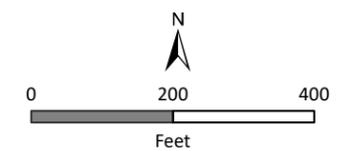
Attachment A. Heritage Tree Survey

Reclamation Plan
Rockaway Quarry Reclamation Project
Pacifica, San Mateo County, California



- Property Boundary - 86.20 ac.
- Project Area - 27.42 ac.
- Culverts
- Non-Heritage Tree
- Heritage Tree to Remain
- Heritage Tree to be Removed from Reclamation

Heritage Tree Removal List:			
Tag Id	Species		Diameter (inches)
	Common Name	Latin Name	
2	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	18.1
3	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	19.3
4	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	19.5
5	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	16.0
6	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	16.8
7	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	16.0
8	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	16.2
11	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	17.0
13	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	17.0
16	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	17.0
18	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	25.0
19	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	24.0
21	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	16.5
25	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	16.0
26	Monterey cypress	<i>Hesperocyparis macrocarpa</i>	27.0
37	Monterey pine	<i>Pinus radiata</i>	16.5



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