# Forest Management Plan

# George Washington Park

**JULY 2022**

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# Acronyms and Abbreviations

| Acronym/Abbreviation | Definition |
|---|---|
| City | City of Pacific Grove |
| FMP | Forest Management Plan |
| Park | George Washington Park |

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# Executive Summary

This Forest Management Plan (FMP) describes the management strategies that the City of Pacific Grove will take in the approximately 17-acre forested area of George Washington Park (Park) over the 5-year FMP timeframe to reduce wildfire hazard to the homes surrounding the Park and to restore healthy forest conditions to the interior of the Park. This FMP was developed to meet the City of Pacific Grove's goals of reducing the risk of a destructive wildfire spreading in the Park and to improve the overall forest health within the forested area of the Park.

Development of this FMP included a forest inventory, which was used to describe the current vegetative conditions within the forest, determine the wildfire hazards in the areas near the surrounding homes, and map the trail system in the forested area. The data collected during the inventory was used to identify and map conditions, such as composition, health, and disease, throughout the forested area of the Park.

George Washington Park is a 20-acre urban park with a 17-acre Monterey pine–coast live oak forest. The forested area of the Park is unique in that it contains relatively natural forest conditions in an urban area and that it contains a Monterey pine (*Pinus radiata*)–dominated forest, a forest type with a range limited to the California coastal area. The composition of the forest overstory is in the process of transitioning away from Monterey pine dominance to oak dominated because of limited pine reproduction and a dense layer of surface and understory vegetation. The dense layer of surface vegetation, mainly non-native grasses, also creates a wildfire hazard by forming a continuous layer of readily ignitable fuel on the forest floor.

The forested areas of the Park are threatened by several factors that are driving the transition from a pine forest to an oak forest, decreasing overall forest health, and increasing the risk of destructive wildfire. Drought and the closely related wildfire risk are the most prevalent in the forested areas, but they impact all the vegetation. Insect infestations and disease infections are most directly impactful to the Monterey pine in the forest, degrading tree health and killing mature trees. Invasive vegetation is indirectly impactful on the entire forest overstory and understory vegetation by competing for moisture in the soil and preventing tree and shrub reproduction on the forest floor.

This FMP describes management strategies for the forested area of the Park to address the decline in Monterey pine trees in the forest overstory and to reduce of the risk of destructive wildfire spreading through the Park. It recommends vegetation management activities applied to overstory, understory, and surface vegetation. Specific recommendations are divided into to two categories. The first recommendation is to conduct vegetation management actions in an area around the perimeter of the forested area of the Park to reduce the risk of a destructive wildfire by reducing the overall volume of surface vegetation and to reduce the risk of fire moving from the surface to the tree canopy by trimming or removing vegetation on the forest surface. The second recommendation is for vegetation management within the Park interior to create conditions that are conducive to the reproduction and development of new trees. In addition to the recommendations, a timeline is provided that describes the forest management activities and when they should occur over the FMP's 5-year timeline.

George Washington Park is a unique natural feature of Pacific Grove. The strategies described in this FMP are intended to help maintain the forested area of the Park in a healthy and safe condition for the enjoyment of nearby residents and the community.

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# 1 Introduction

George Washington Park (Park) is a 20-acre park located on the west side of Pacific Grove, California. The Park is composed of an approximately 3-acre developed recreation area and an approximately 17-acre natural forest area. The developed area of the Park is largely covered with well-spaced mature oak trees, and the forested area contains a Monterey pine–coast live oak forest. The Park is surrounded by a residential neighborhood (see Figure 1, Project Location).

The forested area of the Park is changing in composition and tree size, moving from a pine tree–dominant forest to an oak tree–dominant forest. Forest management activities in the forested areas of the Park have been primarily focused on removing dead or hazardous trees and reducing the buildup of flammable vegetation. Because the Monterey pine (*Pinus radiata*) element of the forest is reliant on disturbance for regeneration (e.g., low-intensity fire), there has been a gradual transition away from a forest where pine trees are the dominant trees to a forest where oak trees are the dominant trees as the mature pines die without suitable replacement. The forested area of the Park is also at risk from threats that are increasing stress on all the trees, regardless of species, such as drought, insects, and disease. Ongoing drought, combined with an overall warmer, dryer climate, not only threatens the health of the forest, but also increases the risk of a destructive wildfire occurring within the Park.

This Forest Management Plan (FMP) identifies general practices and Plan-specific management recommendations to address the City of Pacific Grove's goal of creating a safe and healthy forest in George Washington Park. The goals, objectives, and recommendations identified in this FMP are based on existing conditions observed in the Park and have been designed to reduce the risk of a destructive wildfire spreading out of the Park and to promote overall forest health in the Park, because a healthier forest is more resilient to threats. Finally, this FMP includes a treatment prescription and timetable for the City of Pacific Grove (City) to create its desired conditions within the Park.

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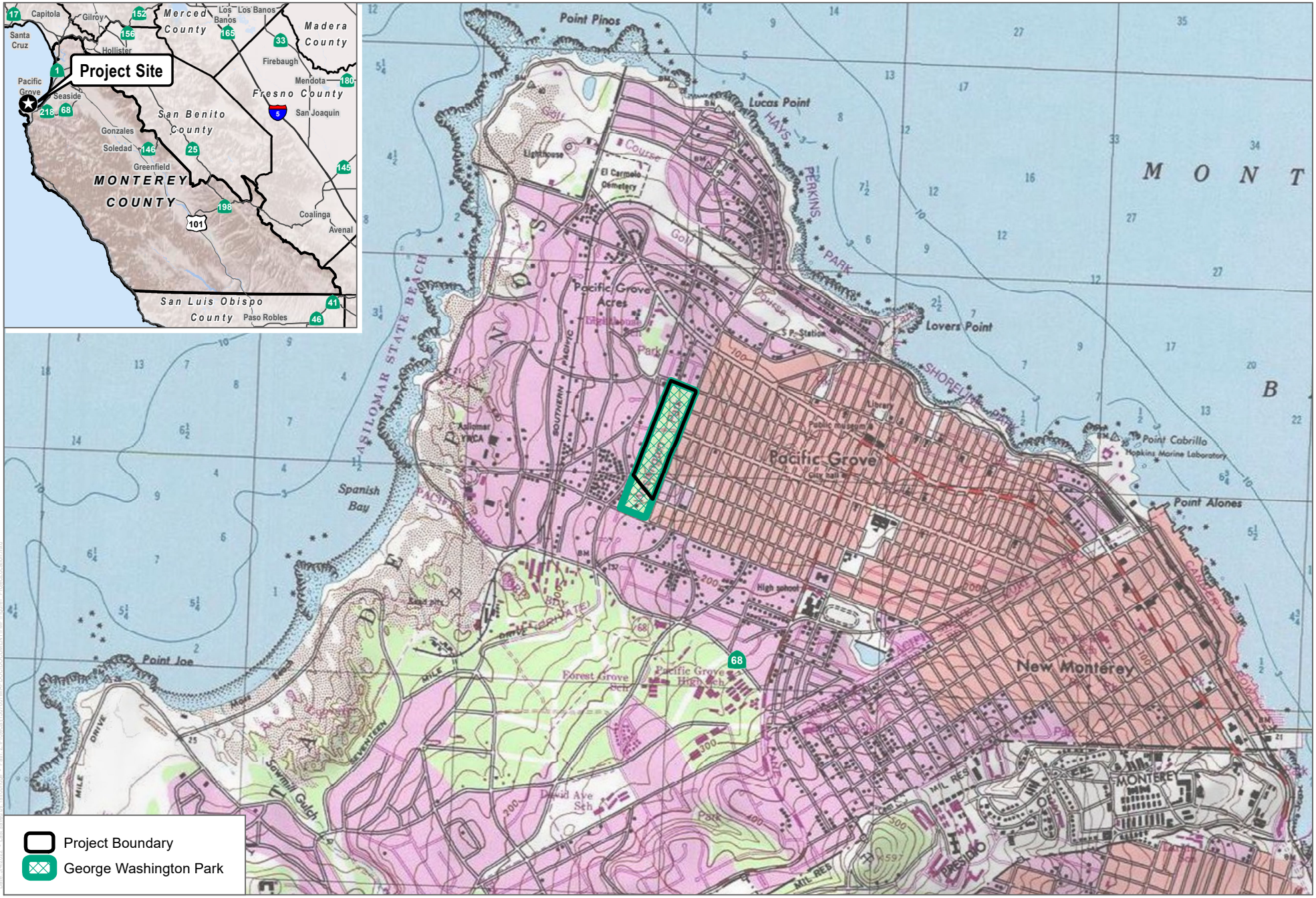


SOURCE: USGS 7.5-Minute Series Monterey Quadrangle

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**FIGURE 1**

Project Location

George Washington Park Forest Management Plan

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# 2 Overview of Objectives, Scope, and Goals

## 2.1 Objectives

The City of Pacific Grove desires to have a safe and healthy forest in George Washington Park, one that can be sustainably maintained by the City. To achieve this goal, three objectives were developed for the management of the forested areas within the Park:

1. Reduce the risk of wildfire to the surrounding community by reducing or removing flammable vegetation in the Park that is within 100 feet of homes.
2. Improve forest health and foster a forest with a healthy distribution of trees ages and sizes by reducing competition from surface vegetation and encouraging tree regeneration.
3. Improve the safety of Park users and residents by removing trees that have a high likelihood of failing and causing injury or property damage.

This FMP provides direction for achieving these three objectives.

## 2.2 Scope

The scope of this FMP covers the forested area of George Washington Park that begins north of the baseball diamond and ends at the border of the Park along Short Street. The management recommendations in this FMP are divided into two strategies relating to location in the Park and the objective to be achieved. The first strategy is to create a wildfire risk reduction zone along the perimeter of the forested area where the goal is to maintain the vegetation in a condition that minimizes the risk of a high-intensity wildfire spreading throughout the Park. The second strategy is to create a forest restoration zone in the interior of the forested area where the goal is to maintain conditions to support a healthy Monterey pine–oak forest. The recommendations described for each zone are specific to the management objectives for the zone.

The timeframe for the FMP is 5 years, which is suitable to accomplish the FMP's management recommendations for wildfire risk reduction and to establish the conditions required for successful forest restoration. The goals, objectives, and recommendations contained in this FMP should be reviewed at the end of the 5-year timeframe, following a re-evaluation of the Park's forested areas and an evaluation of the success of the management activities recommended in this FMP. Following such a review, revisions to FMP goals, objectives, and/or recommendations may be necessary to reflect forest conditions within the Park at that time.

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# 3 Methods

## 3.1 Forest Inventory

### 3.1.1 Inventory Plots and Plot Location

To assess the composition and condition of the forest in George Washington Park, Dudek foresters conducted an inventory of the trees and vegetation in the forested area of the Park. The foresters measured approximately 20% of the forested area of the Park. The measured area was divided evenly among 14 measurement plots, with each plot covering an area of approximately 0.25 acres. Working with Dudek GIS specialists, the 14 plots were laid out on a map of the Park, with the plots evenly spaced and well-distributed across the entire forested area, and located a minimum of 50 feet from the edge of the Park, road, or developed area of the Park. Figure 2, Forest Inventory Plot Locations, is a map of the plot locations.

## 3.2 Field Visits

Dudek's foresters conducted an inventory of the forest on October 5 and 8, 2021. Each of the 14 pre-determined plots was visited during the inventory. At each plot, Dudek foresters pinned the plot center with a marking pin and measured out 59 feet from the pin to the north, east, west, and south to establish the plot's borders. Within the plot boundaries, Dudek foresters measured all of the trees that were larger than 3 inches in diameter at standard height (4.5 feet above the ground). For each measured tree Dudek foresters recorded the following data:

- **Diameter:** Tree diameter at standard height was measured at 4.5 feet above the ground using a diameter tape. Tree diameters were visually estimated when trunks were inaccessible due to poison oak (*Toxicodendron diversilobum*) vines.
- **Height:** Tree height was measured with a clinometer at a baseline of 66 feet from the tree trunk. Tree heights were visually estimated for nearby trees when a similar-sized tree had been measured with the clinometer.
- **Condition:** Tree condition was assessed based on the overall health of the tree (e.g., live crown ratio, presence of disease or infestation) and overall structure. Trees were graded on a scale from "Excellent" to "Dead."
- **Species:** Tree species was recorded.

In addition, Dudek foresters recorded the following data at each plot:

- **Tree Regeneration Information:** Trees that were smaller than 3 inches in diameter were counted and had their species identified.
- **Forest Surface Composition:** Plant species composition and the percentage of the surface area of the plot they covered were taken.
- **Flammable Vegetation:** Flammable vegetation types and estimates of fuel loads were recorded.
- **Photographs:** Photos were taken facing north, east, south, and west.

During a separate site visit on September 23, 2021, Dudek foresters walked the perimeter of the forested zones of the Park to identify dead or trees with significant defects that could potentially fail and strike one of the surrounding roads or nearby structures.

## 3.3 Data Analysis

After the 14 plots were inventoried, the data collected was analyzed to obtain the following forest characteristics:

- **Basal area** is a measure of the cross-sectional area (in square feet) of the trees on a unit of land. For this FMP, basal area is provided as the cross-sectional area of the trees per acre. Basal area is a useful measurement for determining forest density, and forest density is an indicator of forest health and productivity.
- **Quadratic mean diameter** is the average diameter of the trees measured on a per-acre basis. Quadratic mean diameter is preferred in forestry because it better represents the average diameter of the trees in a forest, particularly when the forest is composed of larger, mature trees.
- **Trees per acre** is the count of the number of trees per acre. Trees per acre is another measurement of forest density.
- **Average tree height** is the average height of the trees in the forest on a per-acre basis. Average height is a useful measurement of tree age, and when organized by species, helps to understand the structure of a forest.
- **Species composition** measures the unique tree species observed and a count of each tree by species at each plot. This data is then used determine the composition of the forest by zone by comparing the number of trees observed by species to the number of trees counted.
- **Regeneration** is the number of seedlings counted at each plot. The data collected at each plot is summed with the regeneration data from the three adjacent plots to get the number of seedlings per acre.
- **Forest surface** composition was determined based on the plant species identified and recorded for each plot during the inventory, and by the data recorded during the biological resource assessment.
- **Fire behavior fuel models** were determined by visual estimation and photographic comparison with the fuel mode descriptions in the Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model (Brugan and Scott 2005).


SOURCE: Bing Maps 2021, Monterey County

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**FIGURE 2**

Forest Inventory Plot Locations

George Washington Park Forest Management Plan

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# 4 Summary of Current Forest Conditions

## 4.1 General Description

George Washington Park is located within Pacific Grove and is situated between 140 and 180 feet above sea level. The Park is bordered by Short Street to the north, Alder Street to the east, Sinex Avenue to the south, and Melrose Street/17 Mile Drive to the west. The Park is rectangular in shape, covering 20 acres. The Park is divided by Pine Street, an east/west street that separates the Park into a north and south section, with the south section being the larger of the two. The Park has been divided by the City into four zones (1–4) (Figure 3, Project Site), with Zone 1 being the southern zone and Zone 4 being the northern zone. The zones vary in size; Zone 4 is the largest, Zones 2 and 3 are roughly equal in size, and Zone 1 is the smallest. Zone 1 contains developed recreation sites, including a playground, ballfield, picnic facilities, and restrooms. Zones 2, 3, and 4 are generally unimproved forest land. There are several trails that run roughly south to north through the forested area, as well as benches and trash cans along the perimeter of the forested area.

Adjacent land uses consist of residential development composed entirely of single-family homes. Most of the homes are separated from the Park by a public street, with the exception of two rows of homes on the west side of the Park: one near the northern border of the Park and the other at the southern border of the Park.

## 4.2 History

The current forest that covers George Washington Park has its origins in the 1850s when the area that comprises the Park was last logged and burned. Cattle were grazed on the site following logging until they were removed sometime before the end of the century. By 1925, when the City purchased the land containing the present-day boundaries of the Park, the property supported a Monterey pine forest with an expanding understory of oak trees. In 1948, the City passed an ordinance to limit the use of the property to a recreational park (City of Pacific Grove 1999).

Recent management of the forested area of the Park has been focused on maintaining a safe environment for Park users and nearby residents. Management activities performed by the City include the removal of downed trees, slash (i.e., the treetops, limbs, and other woody material left behind after tree work), and logs. Standing dead trees have been removed that are within striking distance of the structures near the Park or trails within the Park. On an annual basis, surface vegetation within 50 feet of the Park borders is weed-whacked or mowed. The City has planted new trees at several locations throughout the forested area of the Park in the last 20 years, including a cluster of Monterey pine trees on the east side of Zone 4 and a cluster of Canary Island pine (*Pinus canariensis*) trees near the south border of Zone 2.

In addition to managing the vegetation in the forest, the City has also maintained the trail system that traverses the Park. Designated trails have been reconstructed in areas of excessive wear and vegetation, particularly poison oak, that has encroached on a designated trail has been cut back. Old trails and unofficial trails that impact the forest have been decommissioned and blocked with logs or piled cut material.

The City's forest management work has been supplemented by volunteer activities. Volunteer gardeners have completed several vegetation management projects within the forested area, including establishment of a native plant area and several successful Monterey pine plantings (or transplanting).

# 4.3 Geology, Topography, and Soils

## 4.3.1 Geology

The underlying geologic units of the Park are quaternary alluvium and marine deposits from the Pliocene to Holocene epoch, between the present time and 1.6 million years ago. The quaternary alluvium deposits are generally young and made up of unconsolidated sand, silt, and clay-bearing material. The Park is located on a marine terrace (CGS 2021).

## 4.3.2 Topography

The Park property occupies a portion of the west-facing slope and the ridgeline of a gentle (2% to 8%), low-elevation ridge that runs from Huckleberry Hill to the ocean. The Park has a predominantly west-facing aspect, and elevations in the Park generally run from lowest to highest moving from west to east. However, there is a hill located in the middle of the Park near the corner of Pine Street and Alder Street. This hill creates a noticeable "hump" on the terrain when moving from south to north through the Park, and near the hill the aspect changes from west-facing to north- or south-facing, depending on which side of the hill a viewer is on.

## 4.3.3 Soils

Soils within the Park are composed of three soil types, all characterized as being predominantly sandy soils and being of a similar parent material: clayey marine deposits derived from sedimentary rock or stabilized sands (NRCS 2021). A detailed description of the soil types found within the Park can be found in Appendix A.

# 4.4 Climate

Pacific Grove, California, is in a warm-summer Mediterranean climate that is defined by temperate, wet winters, and warm or hot dry summers (Seager et al. 2019). Pacific Grove has an average daytime high temperature of 69°F in the summer and 60°F in the winter. Average daytime low temperatures are 54°F in the summer and 44°F in the winter. Precipitation averages approximately 20 inches per year, with January being the wettest month of the year. Prevailing winds are out the west and west-northwest (WRCC 2021).


SOURCE: Bing Maps 2021, Monterey County

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0 200 400 Feet

**FIGURE 3**

Project Site

George Washington Park Forest Management Plan

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# 4.5 Vegetation Forest Types and Wildlife Habitat Relationships

## 4.5.1 Forest Description

The forested areas of George Washington Park contain one forest or vegetation type: a Monterey pine forest. Within the forested zones of the Park, Monterey pine exists as the dominant tree, with mature pine trees forming an open, discontinuous canopy in the forest overstory. Below the pine trees is a generally continuous mid-story canopy, predominantly made up of coast live oak (*Quercus agrifolia*) trees with scattered smaller Monterey pines and several other tree species.[1] As a result of the combined pine and oak canopies, the forested area of the Park is a predominantly closed canopy forest. Areas of open canopy forest are present, notably in the portions of the forest where there has been recent mature pine tree loss. The understory and surface vegetation in the forested area varies, ranging from minimal surface vegetation in heavily shaded areas, to areas of continuous grass and thickets of native vines and low shrubs (poison oak, California blackberry [*Rubus ursinus*], wild cucumber [*Cucumis anguria*]) in forest canopy openings. Areas of non-native grasses are the most common component of the understory throughout the forest. Dead and down trees are present throughout the forested zones of the Park, with two areas of concentrated dead and down trees: near the south border of Zone 2 and near the corner of Pine Avenue and Melrose Street in Zone 4.

## 4.5.2 Wildlife

Wildlife species observed or expected to occur in the Park are those that are adapted to forested lands, Monterey cypress–Monterey pine stands, and urban landscapes with moderate human activity. Western fence lizard (*Sceloporus occidentalis*) was the only amphibian or reptile species observed during the site visit, although common species such as Sierran tree frog (*Pseudacris sierra*), gopher snake (*Pituophis catenifer*), and western rattlesnake (*Crotalus oreganus*) are also likely to occur. Common bird species observed included black phoebe (*Sayornis nigricans*), red-shouldered hawk (*Buteo lineatus*), Anna's hummingbird (*Calypte anna*), California scrub-jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), dark-eyed junco (*Junco hyemalis*), and California towhee (*Melozone crissalis*). Black-tailed deer (*Odocoileus hemionus*) were observed in the Park during the forest inventory. The Park is within the historic overwintering range for monarch butterfly (*Danaus plexippus*), which were observed during the site visits.

Tables 1 and 2 describe the special-status plant and animal species native to the region that have the potential to occur within the Park. A detailed description of the special-status plants and wildlife with the potential to be present within the Park is provided in Appendix B.

[1] Other tree species observed included toyon (*Heteromeles arbutifolia*), coast redwood (*Sequoia sempervirens*), and acacia. These tree species make up a very minor component of the forest.

## Table 1. Potential to Occur: Special-Status Plants

| Scientific Name | Common Name | Habitat/Blooming Period/Elevation (feet) | Potential to Occur |
|---|---|---|---|
| *Allium hickmanii* | Hickman's onion | Closed-cone coniferous forest, Chaparral (maritime), coastal prairie, coastal scrub, valley and foothill grassland/ perennial bulbiferous herb/Mar–May/ 16–655 | **Moderate potential to occur.** The closest known occurrences is within 1.3 miles of George Washington Park (Park). Bulb species can persist in understory for a long time. There is suitable habitat. |
| *Arctostaphylos hookeri* ssp. *hookeri* | Hooker's manzanita | Closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub; sandy/ perennial evergreen shrub/Jan–June/ 197–1,755 | **Moderate potential to occur.** The closest known occurrences is within 0.1 miles of the Park. There is suitable habitat. |
| *Arctostaphylos pumila* | sandmat manzanita | Closed-cone coniferous forest, chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub; sandy, openings/ perennial evergreen shrub/Feb–May/ 10–675 | **High potential to occur.** There are three known locations of this species within 0.5 miles of the Park. There is suitable habitat for this species. |
| *Castilleja ambigua* var. *insalutata* | pink Johnny-nip | Coastal prairie, coastal scrub/annual herb (hemiparasitic)/ May–Aug/0–330 | **Low potential to occur**. California Natural Diversity Database (CNDDB) Occ. No. 12 for the Monterey Quad overlaps the Park, and the population is noted as presumed extant. However, the Park does not contain much suitable habitat. |
| *Chorizanthe pungens* var. *pungens* | Monterey spineflower | Chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland; sandy/annual herb/ Apr–June(July–Aug)/ 10–1,475 | **Low potential to occur**. CNDDB Occ. No. 17 for the Monterey Quad overlaps the Park and the population is noted as presumed extant. However, the Park does not contain much suitable habitat. |
| *Clarkia jolonensis* | Jolon clarkia | Chaparral, cismontane woodland, coastal scrub, riparian | **Low potential to occur**. CNDDB Occ. No. 13 for the Monterey Quad overlaps the Park, but the population is extirpated. The closest extant |

## Table 1. Potential to Occur: Special-Status Plants

| Scientific Name | Common Name | Habitat/Blooming Period/Elevation (feet) | Potential to Occur |
|---|---|---|---|
| | | woodland/annual herb/Apr–June/ 66–2,165 | population is more than 7.5 miles from the Park. |
| *Collinsia multicolor* | San Francisco collinsia | Closed-cone coniferous forest, coastal scrub; sometimes serpentinite/ annual herb/ (Feb)Mar–May/ 98–902 | **High potential to occu**r. CNDDB Occ. No. 1 for the Monterey Quad overlaps the Park, and the population is noted as presumed extant. There is suitable habitat. |
| *Cordylanthus rigidus* ssp. *littoralis* | seaside bird's-beak | Closed-cone coniferous forest, chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub; sandy, often disturbed sites/annual herb (hemiparasitic)/Apr–Oct/0–1,685 | **Low potential to occur.** The Park does have suitable habitat. However, the closest known extant occurrences are more than 5.3 miles away. |
| *Delphinium hutchinsoniae* | Hutchinson's larkspur | Broadleafed upland forest, chaparral, coastal prairie, coastal scrub/ perennial herb/Mar–June/0–1,400 | **Low potential to occu**r. CNDDB Occ. No. 9 for the Monterey Quad overlaps the Park, and the population is noted as presumed extant. However, the Park does not contain much suitable habitat. |
| *Ericameria fasciculata* | Eastwood's goldenbush | Closed-cone coniferous forest, chaparral (maritime), coastal dunes, coastal scrub; sandy, openings/perennial evergreen shrub/July–Oct/98–900 | **Low potential to occur.** The Park does have suitable habitat. The closest known occurrences are 0.5 miles away. |
| *Gilia tenuiflora* ssp. *arenaria* | Monterey gilia | Chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub; sandy, openings /annual herb/Apr–June/0–150 | **Moderate potential to occur.** There are four known occurrences within 0.5 miles of the Park. However, suitable habitat would be most likely in forest canopy openings. |
| *Hesperocyparis macrocarpa* | Monterey cypress | Closed-cone coniferous forest/ | **Not expected to occur.** This species is present in the Park but is not naturalized. This species only occurs in two natural stands in Monterey |

## Table 1. Potential to Occur: Special-Status Plants

| Scientific Name | Common Name | Habitat/Blooming Period/Elevation (feet) | Potential to Occur |
|---|---|---|---|
| | | perennial evergreen tree/N.A./33–100 | County (not in the Park). The species is widely planted and naturalized elsewhere on the coast and beyond. |
| *Horkelia cuneata* var. *sericea* | Kellogg's horkelia | Closed-cone coniferous forest, chaparral (maritime), coastal dunes, coastal scrub; sandy or gravelly, openings/ perennial herb/Apr–Sep/33–655 | **Moderate potential to occur**. CNDDB Occ. No. 8 for the Monterey Quad overlaps the Park, and the population is noted as presumed extant. There is suitable habitat, especially along forest edges and in canopy openings. |
| *Layia carnosa* | beach layia | Coastal dunes, coastal scrub (sandy)/annual herb/ Mar–July/0–195 | **Low potential to occur**. There are two known occurrences within 0.5 miles of the Park. However, the Park does not contain much suitable habitat. |
| *Lupinus tidestromii* | Tidestrom's lupine | Coastal dunes/ perennial rhizomatous herb/Apr–June/ 0–330 | **Low potential to occur**. There are seven known occurrences within 1 mile of the Park. However, the Park does not contain much suitable habitat. |
| *Malacothamnus palmeri* var. *involucratus* | Carmel Valley bush-mallow | Chaparral, cismontane woodland, coastal scrub/ perennial deciduous shrub/Apr–Oct/ 98–3,605 | **Moderate potential to occur**. CNDDB Occ. No. 20 for the Monterey Quad overlaps the Park, and the population is noted as presumed extant. However, the Park does not contain much suitable habitat. |
| *Microseris paludosa* | marsh microseris | Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland/ perennial herb/Apr–June(July)/16–1,160 | **High potential to occur**. CNDDB Occ. No. 3 for the Monterey Quad overlaps the Park, and the population is noted as presumed extant. There is suitable habitat for this species. |
| *Monardella sinuata* ssp. *nigrescens* | northern curly-leaved monardella | Chaparral (SCR Co.), coastal dunes, coastal scrub, lower montane coniferous forest (SCR Co., ponderosa pine sandhills); sandy/ annual herb/ (Apr)May–July(Aug–Sep)/0–985 | **High potential to occur**. CNDDB Occ. No. 4 for the Monterey Quad overlaps the Park, and the population is noted as presumed extant. There is suitable habitat for this species. |

## Table 1. Potential to Occur: Special-Status Plants

| Scientific Name | Common Name | Habitat/Blooming Period/Elevation (feet) | Potential to Occur |
|---|---|---|---|
| *Pinus radiata* | Monterey pine | Closed-cone coniferous forest, cismontane woodland/ perennial evergreen tree/N.A./82–605 | **Present.** This species is present in the Park and is within the CNDDB occurrence of its estimated historic range on the Monterey peninsula. The species is widely planted and naturalized elsewhere. |
| *Piperia yadonii* | Yadon's rein orchid | Coastal bluff scrub, closed-cone coniferous forest, chaparral (maritime); sandy/perennial herb/(Feb)May–Aug/33–2,475 | **Present.** CNDDB Occ. No. 4 for the Monterey Quad states that there is a known population in the Park. |
| *Potentilla hickmanii* | Hickman's cinquefoil | Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps (vernally mesic), marshes and swamps (freshwater)/perennial herb/Apr–Aug/33–490 | **Moderate potential to occur**. There is a known occurrence within 0.6 miles of the Park. There is suitable habitat. |
| *Ramalina thrausta* | angel's hair lichen | North coast coniferous forest; on dead twigs and other lichens/fruticose lichen (epiphytic)/ N.A./246–1,410 | **Moderate potential to occur**. There is a known occurrence within 1.4 miles of the Park. There is suitable habitat. |
| *Rosa pinetorum* | pine rose | Closed-cone coniferous forest, cismontane woodland/ perennial shrub/ May,July/7–3,100 | **Moderate potential to occur**. There are two known occurrence within 0.6 miles of the Park. There is suitable habitat. |
| *Trifolium hydrophilum* | saline clover | Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools/annual herb/ Apr–June/0–985 | **Low potential to occur**. CNDDB Occ. No. 20 for the Monterey Quad overlaps the Park. This based on a 1907 herbarium collection. However, the Park does not contain much suitable habitat. |
| *Trifolium polyodon* | Pacific Grove clover | Closed-cone coniferous forest, coastal prairie, meadows and seeps, valley and foothill grassland; mesic, | **Moderate potential to occur**. There is a known occurrence within 0.5 miles of the Park. There is suitable habitat. |

## Table 1. Potential to Occur: Special-Status Plants

| Scientific Name | Common Name | Habitat/Blooming Period/Elevation (feet) | Potential to Occur |
|---|---|---|---|
| | | sometimes granitic/ annual herb/Apr–June (July)/16–1,390 | |
| *Trifolium trichocalyx* | Monterey clover | Closed-cone coniferous forest (sandy, openings, burned areas)/annual herb/Apr–June/98–1,000 | **Moderate potential to occur**. There are several known occurrences within 2 miles of the Park. There is suitable habitat. |

**Source**: CDFW 2021

## Table 2. Potential to Occur: Special-Status Animals

| Row Labels | Common Name | Potential to Occur |
|---|---|---|
| **Amphibians** | | |
| *Taricha torosa* (Monterey Co. south only) | California newt | **Low potential to occur**. Although George Washington Park (Park) contains suitable oak forest habitat to support this species, there is no aquatic breeding features to support this species. Additionally, there are no California Natural Diversity Database (CNDDB) occurrences for this species within 5 miles of the Park (CDFW 2021). |
| **Reptiles** | | |
| *Anniella pulchra* | northern California legless lizard | **High potential to occur**. The Park contains suitable woodland habitat with sandy soils to support this species. This species was documented within the southwest corner of the Park in 2017 (Occ. No. 375) (CDFW 2021). |
| **Birds** | | |
| *Elanus leucurus* (nesting) | white-tailed kite | **Moderate potential to nest on site**. The Park contains several suitable nesting trees for this species (e.g., *Quercus* spp., *Pinus* spp.), but foraging habitat is limited and the Park is surrounded by residential development. There are no CNDDB occurrences for this species within 5 miles of the Park (CDFW 2021). |
| *Corynorhinus townsendii* | Townsend's big-eared bat | **Moderate potential to occur**. Although the Park contains suitable coniferous and deciduous forest habitat, limestone caves, lava tubes, and built structures are absent from the site for roosting. However, the species may forage on the site from time to time. There are no documented CNDDB occurrences of this species within 5 miles of the Park (CDFW 2021). |
| *Lasiurus blossevillii* | western red bat | **High potential to occur**. The numerous trees on the Park are suitable for roosting by this species. |

**Table 2. Potential to Occur: Special-Status Animals**

| Row Labels | Common Name | Potential to Occur |
|---|---|---|
| **Invertebrates** | | |
| *Danaus plexippus* pop. 1 | monarch butterfly | **Present.** The Park contains suitable habitat for this species, and the species was observed on site during the October 2021 site visit. Additionally, numerous observations of this species has been made from 1960–2014 (Occ. No. 89) (CDFW 2021). |

# 4.6 Current Forest Conditions

On October 5 and October 8, 2021, Dudek foresters performed an inventory of the forested areas in Zones 2, 3, and 4. Measurements were taken at 14 pre-determined inventory plots that were evenly distributed throughout the three forest zones. The data recorded during the inventory and the conclusions drawn from this data are the basis for the management strategies described in Chapter 6 of this FMP. Below is a description of the current forest conditions.

## 4.6.1 Forest Composition

The overall species composition of the forest in the Park consists of Monterey pine, accounting for 32% of the trees, and cost live oak, accounting for 67% of the trees. The other tree species present account for only 1% of the trees in the forest. Species composition varies by zone. In Zone 2, Monterey pine comprises 39% of the forest, coast live oak comprises 56%, and other tree species comprise 5% of the forest. Zone 2 is the only zone where tree species other than Monterey pine or coast live oak were recorded. In Zone 3, Monterey pine comprises 41% of the forest, and coast live oak comprises 59% of the forest. Zone 4 is noticeably different from the other two zones, with Monterey pine composing only 21% of the forest and coast live oak composing 79% of the forest (Table 3).

**Table 3. Forest Composition by Zone**

| Species | Total Number | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| All | 414 | 109 | 123 | 182 |
| Pine | 132 | 43 | 50 | 39 |
| Oak | 277 | 61 | 73 | 143 |
| Other | 5 | 5 | 0 | 0 |

## 4.6.2 Tree Age and Size

All age and size classes are represented within the forested zones of the Park. The distribution of age and size classes differs between the pine and oak trees. Pine trees within the Park are represented evenly across the different age and size classes, while most of the oak trees are in the smaller age and size classes (Tables 4a–4c). Regeneration[2] is present throughout the forest, occurring in scattered patches. Oak regeneration is more abundant and appears to be the result of natural seeding. Pine regeneration is less abundant and appears to be the result of

[2] Trees less than 3 inches in diameter were classified as regeneration.

deliberate planting or transplanting efforts[3] (Table 5). All the observed regeneration occurred in openings in the forest canopy where sunlight can reach the forest floor.

### Table 4a. Tree Diameter Class (Quadratic Mean Diameter): Zone 2

| Species | 3 to 8 (Diameter in Inches) | 9 to 14 (Diameter in Inches) | 15 to 20 (Diameter in Inches) | 21 to 26 (Diameter in Inches) | 27 to 32 (Diameter in Inches) | >32 (Diameter in Inches) |
|---|---|---|---|---|---|---|
| All | 45 | 31 | 17 | 12 | 2 | 2 |
| Pine | 11 | 7 | 12 | 9 | 2 | 1 |
| Oak | 33 | 23 | 3 | 1 | 0 | 1 |
| Other | 1 | 1 | 1 | 2 | 0 | 0 |

### Table 4b. Tree Diameter Class (Quadratic Mean Diameter): Zone 3

| Species | 3 to 8 (Diameter in Inches) | 9 to 14 (Diameter in Inches) | 15 to 20 (Diameter in Inches) | 21 to 26 (Diameter in Inches) | 27 to 32 (Diameter in Inches) | >32 (Diameter in Inches) |
|---|---|---|---|---|---|---|
| All | 43 | 41 | 19 | 14 | 5 | 1 |
| Pine | 9 | 15 | 9 | 12 | 4 | 1 |
| Oak | 34 | 26 | 10 | 2 | 1 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 |

### Table 4c. Tree Diameter Class (Quadratic Mean Diameter): Zone 4

| Species | 3 to 8 (Diameter in Inches) | 9 to 14 (Diameter in Inches) | 15 to 20 (Diameter in Inches) | 21 to 26 (Diameter in Inches) | 27 to 32 (Diameter in Inches) | >32 (Diameter in Inches) |
|---|---|---|---|---|---|---|
| All | 60 | 68 | 23 | 16 | 10 | 5 |
| Pine | 9 | 3 | 7 | 8 | 9 | 3 |
| Oak | 51 | 65 | 16 | 8 | 1 | 2 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 |

### Table 5. Forest Regeneration – Tree Seedlings Observed by Species

| Species | All Zones | Zone 2 | Zone 3 | Zone 4 | Per Acre |
|---|---|---|---|---|---|
| Pine | 48 | 16 | 26 | 6 | 3 |
| Oak | 177 | 127 | 37 | 13 | 10 |
| Other | 0 | 0 | 0 | 0 | 0 |

[3] Based on personal communications with City staff and residents encountered during the inventory.

### 4.6.3 Tree Health

Overall tree health for the forested zones of the Park is generally fair to good, with approximately 67% of the pines and 82% of the oaks being observed to be in fair or good condition. Trees in poor condition account for 17% of both the pine and oak trees. Dead standing trees account for 17% of the pine trees inventoried and 1% of the oak trees. Tree health varies by zone, with pine trees in fair or good condition composing 86% of the forest in Zone 2, but decreasing to 80% in Zone 3, and 75% in Zone 4. Oak tree health is more varied than pine, with oak trees in fair to good condition composing 87% in Zone 2, increasing to 96% in Zone 3, and then decreasing to 75% in Zone 4. Dead trees are evenly distributed across the three forested zones (Tables 6a–6d). The reasons for the distribution of tree health and a specific discussion of the threats to the forest is provided in Chapter 5, Summary of Potential Forest Threats, of this FMP. Photographs of pine and oak trees for health condition categories are included in Appendix C.

**Table 6a. Forest Tree Health by Zone: All Zones**

| Species | Good Condition | Fair Condition | Poor Condition | Dead |
|---|---|---|---|---|
| Pine | 44 | 45 | 22 | 21 |
| Oak | 88 | 139 | 47 | 3 |
| Other | 5 | 0 | 0 | 0 |

**Table 6b. Forest Tree Health by Zone: Zone 2**

| Species | Good Condition | Fair Condition | Poor Condition | Dead |
|---|---|---|---|---|
| Pine | 14 | 18 | 6 | 5 |
| Oak | 25 | 27 | 8 | 1 |
| Other | 5 | 0 | 0 | 0 |

**Table 6c. Forest Tree Health by Zone: Zone 3**

| Species | Good Condition | Fair Condition | Poor Condition | Dead |
|---|---|---|---|---|
| Pine | 16 | 17 | 10 | 7 |
| Oak | 38 | 32 | 3 | 0 |
| Other | 0 | 0 | 0 | 0 |

**Table 6d. Forest Tree Health by Zone: Zone 4**

| Species | Good Condition | Fair Condition | Poor Condition | Dead |
|---|---|---|---|---|
| Pine | 14 | 10 | 6 | 9 |
| Oak | 25 | 80 | 36 | 2 |
| Other | 0 | 0 | 0 | 0 |

### 4.6.4 Stand Density

The number of trees growing in a forest at any point in time shapes the look and character of a forest. Competition among trees has a powerful effect on the growth, health, resiliency, and character of a forest. It affects trees individually, but also as a forest, of which each tree is a part. Therefore, it is important to be aware of the degree of competition influencing trees within a stand. Stand density is a good indicator of this competition being based on tree diameter and the number of trees per acre (Maguire and Withrow-Robinson 2018).

Stand density for the forested zones varies based on tree species. Zones 2 and 3 have relatively similar stand density for pine trees (43–50 trees per acre) and oak trees (61–73 trees per acre). Zone 4 differs, with a lower stand density for pine trees (26 trees per acre) and a higher stand density for oak trees (95 trees per acre). A typical mature Monterey pine stand has a stand density of 32 to 49 trees per acre, and oak trees constitute 25% to 50% of trees in the stand (McDonald and Laacke 1990). Young Monterey pine trees are a component in a typical mature pine forest, but are noticeably absent from the forested zones in the Park, particularly in Zone 4 (see Table 7).

**Table 7. Average Trees Per Acre by Species and Zone**

| Species | All Zones | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| Pine | 38 | 43 | 50 | 26 |
| Oak | 79 | 61 | 73 | 95 |
| Other | 1 | 5 | 0 | 0 |

## 4.7 Summary of Conditions

The trees in the forested areas of the Park are generally in fair to good condition. The forest overstory is predominantly Monterey pine for most of the forested area; however, many of these mature pines are at the end of the typical lifespan, and are in decline due to multiple environmental stresses, including insects, disease, and climate. Pine trees are generally absent from the mid-story and understory, so there are no maturing pine trees to replace the mature trees that die and fall out of the crown. This is particularly noticeable in Zone 4, where mature pines are a scattered and widely separated component of the overstory. In the absence of pine regeneration, the oak tree component in the mid-story is becoming the dominant forest canopy tree. Oak trees are abundant and well represented across all age and size classes, and have a healthy distribution, with more small young trees than older trees. The oak tree component appears less impacted by insect and disease threats than the pine component.

Tree regeneration within the forested areas of the Park is limited. Natural pine regeneration appears to be rare, and, based on conversations with City staff and residents, is supplemented by City and Park volunteer tree planting projects. Natural oak regeneration is more abundant than pine, but is limited to small patches in the Park, mainly in Zones 2 and 3. There appears to be an adequate seed source on the mature trees for natural regeneration of both pine and oak trees. Competition from surface vegetation, particularly the dense layer of grass, inhibits the establishment of new trees.

#### Overall Forest Condition Summary

- Monterey pine overstory is made up of trees reaching the end of their natural lifespan
- Monterey pine is generally absent from the mid-story and is absent in regeneration
- Monterey pine trees per acre/stocking levels are near the bottom of their typical range and are dropping because of lack of regeneration

- Relatively open stands of mature pine is typical for the species, but it is accompanied by young pine trees growing in the openings
- Oak trees are becoming the dominant tree cover in the Park
- Oak trees are well represented across all age classes and shows a more healthy distribution, with more young small trees than older trees
- Oak tree health and vigor are overall good, and in many areas there is a high density of trees
- Oak tree regeneration is better than pine, but still limited to patches
- Surface vegetation, particularly non-native grasses, outcompete tree seedlings and prohibit regeneration on the forest floor

Forest inventory data tables that display the individual tree measurements and tree data summaries for each zone are provided in Appendix D.

# 4.8 Fire Environment

## 4.8.1 Fire History

Information about fires in the Park and the surrounding area was obtained from the Monterey Fire Department and by reviewing CAL FIRE's Fire and Resource Assessment Program (FRAP) database. Monterey Fire Department has not recorded any vegetation fires within the Park in the last 2 years (Personal Communication MFD 2021). A search of the FRAP database revealed no recorded wildfires have occurred within the Park since 1900 (CAL FIRE 2018).

## 4.8.2 Fuel Model and Fuel Loads

Forests are assessed for their wildfire potential by looking at the dominant vegetation cover present on the forest surface and in the forest canopy. When assessing wildfire potential, all vegetation present that could burn is described as fuel. The assessment is made by estimating which vegetation would be the most important to the spread of the fire (the primary carrier), and the volume of this type of vegetation that is present. The observed primary carrier and the estimated fuel volume are then compared to fire behavior models created by the U.S. Forest Service to provide a description of the anticipated wildfire potential.

The primary carriers of a wildfire are the small, flashy fuels present on the surface. Within the forested area of the Park there are two primary surface fuels that would allow a wildfire to spread when conditions permitted fire growth: the areas with continuous annual herbaceous plant and grass cover, and the areas with continuous pine needle cast and hardwood leaf litter. These two fuel types are described below.

### TU1 – Low Load Dry Climate Timber–Grass–Shrub

The primary carrier of fire in the TU1 model is a low load of grass and/or shrub with litter. Spread rate is low; flame length low. TU1 represents the heavily shaded areas within the forested zones of the Park where fallen leaf litter and pine needles cover most of the forest floor.

### GR4 – Moderate Load, Dry Climate Grass

The primary carrier of fire in the GR4 model is continuous, dry-climate grass; fuel bed depth (height of grass) is about 2 feet. Spread rate is moderate; flame length is low. GR4 represents the open and shade-dappled areas of the forested zones where a continuous layer of grass or other annual herbaceous plants cover most of the forest floor.

Of the two fuel models, GR4 was the most common in the Park, with 13 out of the 14 plots (Plots 1–13) supporting a dominant annual grass cover. Plot 14 was the only plot meeting the criteria for TU1.

Standing dead and fallen dead trees would contribute to a wildfire but are not well described by the standard fuel models. Throughout the forested zones of the Park there are standing and fallen dead trees, sometimes occurring individually, but more often occurring in clumps. From forester observations during the inventory, the fallen dead trees can be divided into two categories: the large pine trees that have already lost all their needles and branches are generally in an advanced stage of decomposition and lying on the ground, and the smaller fallen oak trees (or large broken pieces of the tree's crown) that are smaller in diameter but have retained their branches except for the smallest branches; these trees and portions of trees are generally less decayed and are in loose piles. Accumulations of dead and fallen trees were observed in Plots 2, 12, and 16.

### 4.8.3 Field Assessment

It is expected that the continuous grass layer on the forest surface will allow a wildfire to spread across the forested zones of the Park. The public streets around the perimeter of the Park, and Pine Street that cuts through Zones 3 and 4 are expected to present barriers to the spread of surface fire in the Park. Throughout all three forested zones, there is a limited understory of woody vegetation and there is adequate space between the tree crowns and the surface vegetation to prevent a surface fire from moving into the tree crowns. Occasional torching is possible where piles of deadwood or fallen trees lie beneath a standing tree.

### 4.8.4 Fire Hazards

Potential ignition sources for a wildfire include cigarettes; arson; sparks from automobiles, lawnmowers, and landscaping equipment; and unattended cooking fires. High-voltage powerlines are present along the west side of the Park, and a downed wire or equipment failure are potential ignition sources near these wires.

### 4.8.5 Fire Hazard Severity Zones

The Park and the surrounding neighborhoods are not within a CAL FIRE designated High Fire Hazare Severity Zone. The nearest High Fire Hazard Severity Zone begins approximately 0.3 miles to the southwest by the Rip Van Winkle Open Space area (CAL FIRE 2018). Between the Park and nearest High Fire Hazard Severity Zone is a developed residential area without the continuous flammable vegetation that could spread a wildfire to the Park.

## 4.9 Recreation

Zone 1, the developed area at the south end of the Park, contains most of the built structures, including picnic tables, barbecue grills, restrooms, a large play structure, and a baseball field. The forested zones of the Park contain some changes, including a trail system that runs south/north, several benches around the perimeter of the forested area of the Park, and several native habitat restoration enclosures. The trail system consists of two main trails that run the south to north length of the Park, and several accessory trails that connect the main trails to each other or connect a main trail to one of the adjacent streets. Several unofficial or casual trails are present in forested areas, mainly forming connections between the two main trails.

# 5 Summary of Potential Forest Threats

The trees within the forested zones of George Washington Park are subject to a variety of threats. The impact of each threat on forest health varies by tree species, age, and size, and existing condition of the tree. The condition of the trees in the forested areas are generally the result of several threats whose impacts are cumulative. As a result, there is not a single dominant threat to the forested area of the Park.

## 5.1 Climate

### 5.1.1 Drought

Drought is a recurring feature of California's climate. Recent drought events include a 5-year drought in 2012–2016, and a 3-year drought in 2007–2009, as well as the current drought event that began in 2020. Monterey County is currently experiencing severe drought (D2) conditions (NIDIS 2022).

Drought is the most prevalent threat to the trees within the Park. Drought or water stress results in reduced photosynthesis, which reduces a tree's growth rate, reduces the ability of the tree to make and store energy reserves, reduces the tree's ability to compartmentalize wounds, and reduces the amount of energy the tree has for defense, predisposing it to infestation or infection by damaging insects and diseases.

The effects of drought are visible on Park trees by leaf or needle drooping, a sparse crown, branch tip dieback, and leaf drop. Pine and oak trees within the Park are both being affected by drought, with 18% of the pines showing signs of significant drought stress and 10% of the oaks showing signs of significant drought stress.

Drought conditions also increase the risk of a destructive wildfire spreading in the forested areas of the Park.

### 5.1.2 Wildfire

Wildfire is another recurring feature of California's climate. Increases in wildfire frequency and severity are correlated to periods of drought. No recorded wildfires have occurred within the Park; however, several large wildfires have occurred nearby and have burned through similar vegetation as present in the Park.

Conditions that would support the spread of a wildfire in the Park occur after the annual grass and herbaceous plants have cured, generally in the late spring and persisting until the area receives significant rainfall in the fall. During drought years, the time of year available for wildfire to spread lengthens.

## 5.2 Insects

#### Red Turpentine Beetle

Red turpentine beetle (*Dendroctonus valens*) is a bark beetle that attacks several species of pine trees, including Monterey pine. Red turpentine beetles attack trees by tunneling into the inner bark of the tree where they then mate and lay eggs, and the offspring feed on tree as well. Red turpentine beetles occasionally kill Monterey pine trees; more commonly, the beetle attacks trees that are already stressed or in poor health and so are at an increased risk of dying (Owen 2003).

Pine trees infested with red turpentine beetles are identifiable by the pitch tubes, which are piles of pink and white granular material present on the lower half of the trunk. Beetle infestations are assessed by looking at the overall tree health and the number of fresh or active pitch tubes on the trunk. Old pitch tubes, ones that are yellow or brown, are a sign of a successful resistance to the attack by the tree and are not a concern.

Evidence of red turpentine beetle infestation was observed on 20 (15%) pine trees during the inventory, with Zone 2 having the most frequent occurrence of infestations. Of the trees that were observed to be infested, 15% appeared to be heavily infested. Red turpentine beetle does not infest coast live oak.

Red turpentine beetles are also a vector for Pitch Canker disease, described below.

## 5.3 Disease

### Dwarf Mistletoe

Dwarf mistletoe is a small, leafless plant that parasitizes the stems of pine trees, extracting water and nutrients from the host tree. Dwarf mistletoe suppresses growth and reduces vigor in infected trees, and can kill pine trees outright. Mortality from mistletoe is more common in younger trees than mature trees; however, infected mature trees rarely overcome the parasite (Sinclair and Lyon 2005).

Pine trees infested with mistletoe are identifiable by the yellowish aerial shoots growing out the branches in the tree crowns and on the tree trunk. Other signs are swellings on the small, infected branches and branch dieback. Many of the pines infected with mistletoe in the Park have aerial shoots growing out of the trunk near ground level.

Evidence of dwarf mistletoe infection was observed on 20 (15%) pine trees during the inventory, with Zone 3 having the greatest number of infected trees. Dwarf mistletoe infestation is limited to the Monterey pine trees and does not infect coast live oak.

### Pitch Canker

Pitch Canker is fungal disease that infects several species of pine trees in California. The disease was first identified in native Monterey pine forests in the mid-1980s, where it quickly spread. Pitch Canker infections attack trees by creating cankers around the circumference of branches and stems, girdling them, and ultimately leading to dieback in the portions of the tree above the canker. Monterey pines have varying levels of susceptibility to the disease, with some trees being seriously harmed or killed while others can persist. Because Pitch Canker has been present in the area for more than 30 years, it is likely that the most susceptible trees in the Park have already succumbed to the disease, and the remaining pines have some degree of resistance (Sinclair and Lyon 2005). The California State Board of Forestry has designated a zone of Pitch Canker infestation that includes most of coastal California including the area the park is located in (UC IPM 2021).

Pitch Canker disease is identifiable by the large swollen areas (the canker) on the trunk and branches, plus the copious amount of pitch that is exuded by the canker. Brown needles and dieback in the branch tips are other signs of an infection.

Evidence of Pitch Canker infection was observed on 8 (6%) pine trees during the inventory, with Zones 2 and 4 having the greatest number of infected trees. Pitch Canker disease is limited to species of pine, and does not infect coast live oak trees.

## 5.4 Invasive Plants

### Grasses

The surface vegetation within the forested zones of the Park is dominated by several species of non-native, invasive annual grasses, including rattlesnake grass (*Briza maxima*), ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), and panic veldt grass (*Ehrharta erecta*). These grasses have formed a continuous and dense layer of surface vegetation that outcompetes pine and oak seedlings for space and resources. The dense layer of grass also inhibits the germination of seedlings. These are annual grasses whose stems go dormant and dry out during the summer, creating a large volume of flammable vegetation.

Non-native grasses are easily identified during the summer months by their yellowish-brown stems and their abundance on the forest floor. Non-native grasses were observed at all 14 measurement plots and generally covered 75% or more of the forest surface.

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# 6 Management and Maintenance Recommendations for Promoting Forest Health and Minimizing Risk Over the Next 5 Years

Management activities within the forested areas of the Park are divided into two categories: management actions for reducing flammable vegetation and management actions for improving forest health/restoring a healthy distribution of pine tree age classes/improving tree regeneration. A description of trail management activities is also provided in this section.

## 6.1 Fire Hazard Reduction

Fire hazard reduction activities will be conducted within 100 feet of the homes surrounding the Park. The management area is "U"-shaped and generally forms a 30- to 40-foot-wide strip around the perimeter of the Park, beginning on the east side of the Park at Gibson Avenue, wrapping around the north end of the Park, and ending on the west side of the Park near the intersections of 17 Mile Drive and Melrose Drive. The width of the strip widens to 100 feet at the northwest corner of the Park where there is a strip of homes that back up to the Park boundary (Figure 4). Within this strip, vegetation management actions will be performed that adhere to CAL FIRE's defensible space requirements. These include the following:

- Cutting or mowing tall annual grasses and annual herbaceous vegetation to 4 inches in height or less
- Removing dead trees and woody shrubs
- Removing fallen dead trees and tree parts that are 6 inches in diameter or smaller
- Cutting up and scattering fallen dead trees or tree parts larger than 6 inches in diameter
- Trimming off lower branches on mature trees to create 10 feet of space between the ground and lower branches
- Removing shrubs, bushes, and thickets within the dripline of a mature tree

Some small oak tree removal is recommended to improve horizontal spacing.

The condition of the vegetation within 100 feet of the adjacent homes should be evaluated on an annual basis. Mowing annual grasses will be needed yearly; however, other activities will be needed on an as-needed basis. Fire hazard reduction activities should be performed in the later spring/early summer, preferably after the annual vegetation has started to cure but before the hottest and driest times of the year.

## 6.2 Forest Restoration

Forest restoration activities will be conducted in the interior of the Park, on the inside on the fire hazard reduction zone (Figure 5). The management area is composed of two rectangles divided by Pine Street. The rectangles are approximately 300 feet wide. Within this area, management activities will be focused on creating conditions favorable for tree regeneration. Treatment actions will be performed on 12 to 16 plots, each with a radius of 60 feet (0.25-acre plot). Treatment sites will be selected based on the surface vegetation, crown closure, and the availability of nearby mature trees to serve as seed sources. The ideal site will have predominantly grass or annual vegetation on the surface, a canopy with less than 50% closure, and several mature pine and oak trees nearby. Treatment sites will be separated from each other by at least 100 feet. Figure 6 shows the recommended reforestation and tree planting sites (Figure 6). Treatment actions include the following:

- Felling dead and dying overstory trees
- Removing concentrations of dead and down logs (individual logs can remain); removal off site is an option, or logs can be cut up and scattered on site
- Mowing grass and herbaceous cover and removing understory woody surface vegetation
- Raking and removing/reducing the pine needle and leaf litter layer to expose mineral soil

All of the reforestation actions described above will be performed on the initial treatment on each plot to prepare the site for tree planting or to allow natural regeneration from nearby mature trees. The site preparation work will be done in the late spring/early summer to have the site ready for cone and acorn drop later in the year. Tree plantings can be used on sites that may be ideal for pine or oak regeneration but lack a seed source, or if the City desires to improve the odds of successful regeneration. Tree plantings should take place January through March when the soil is moist. Twenty-five to 50 trees planted at each site is ideal (MacLaren 1993); it is acceptable to plant fewer trees at each site, but more than the recommended amount will likely result in overcrowding.

Follow up treatments will consist of annual weed whacking/mowing and supplemental water during unusually dry or hot weather. Deer cages, fences, or other protective measures may be needed to protect new trees from grazing.

Section 6.4 of this FMP provides general timetables for completing the recommended management actions throughout the year and over a period of 5 years.


SOURCE: Bing Maps 2021, Monterey County

DUDEK

0 200 400 Feet

**FIGURE 4**

Fire Hazard Reduction Zone

George Washington Park Forest Management Plan

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SOURCE: Bing Maps 2021, Monterey County

DUDEK

0 200 400 Feet

**FIGURE 5**

Reforestation Zones

George Washington Park Forest Management Plan

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SOURCE: Bing Maps 2021, Monterey County

DUDEK

0 200 400 Feet

**FIGURE 6**

Tree Planting Locations

George Washington Park Forest Management Plan

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## 6.3 Trails Management

A trails management strategy and trail maintenance will be performed on the trail systems within the forested areas of the Park. The City has identified the two south/north trails that begin at the baseball field and end on the north side of the Park at Short Street as the Park's official main trails. A connector trail, that begins at Alder Street and runs west to one of the main trails, is also part of the official trail system. The forested area of the Park contains several casual or unofficial trails created by Park users. These trails serve as connectors between the two main trails or connectors to the roads surrounding the Park. Unofficial trails will not be maintained by the City and may be blocked if continued use is detrimental to the soil or vegetation along the trail. The official main trails are shown in Figure 7.

Trail maintenance work will be performed with the goal of maintaining the current main trail location and a width that permits use by pedestrians and cyclists, with a minimum width of 4 feet. Maintenance activities will consist of the following:

- Removing fallen trees and branches that are blocking a trail.
- Cutting back tree branches, shrubs, and vines that encroach the trail.
- Repairing the trail surface. This includes leveling the trail surface, installing water diversion features, or adding new trail surface material. When available, wood chips produced by the removal of woody vegetation during fire hazard reduction or forest restoration work can be repurposed for use on the trails and spread onto the trail, particularly on areas of excessive wear.
- Blocking unofficial trail connections with downed or cut logs.
- Felling dead or hazardous trees that are likely to fall onto the trail.

Trail maintenance work will be performed on an as-needed basis and based on comments or requests from trail users. Dudek recommends that City staff walk the trail system at least once per year to assess trail conditions and determine if there is a need to block an unofficial trail.

## 6.4 Five-Year Management and Maintenance Schedule

### Annual Work Schedule

Annual goals for fire risk reduction and forest restoration are provided in the annual work schedule and in Table 8.

| Action | Description | Target Date Range |
|---|---|---|
| Inspection | Walkthrough of the fire risk reduction area | March–May |
| Grass and Annual Removal | Mowing or cutting annual plants and grasses | May–June |
| Dead Tree Removal | Felling standing dead trees | January–June |
| Tree Trimming | Trimming lower branches of trees and woody shrubs | May–July |
| Woody Debris Removal | Removing fallen trees and piles of broken branches and safely disposing them | January–June |

| Action | Description | Target Date Range |
|---|---|---|
| Understory Thinning | Removing woody shrubs and thickets beneath midstory trees | January–June |
| Dead Vegetation Removal | Removing dead woody vegetation, shrubs, bushes, thickets, and small trees | January–June |

| Actions | Description | Target Date Range |
|---|---|---|
| Inspection | Walking through the forest and identifying restoration sites | January–May |
| Plot Layout | Laying out and mapping forest restoration sites | January–May |
| Site Preparation | Removing surface vegetation and raking soil. Trimming lower branches of trees and woody shrubs | May–September |
| Planting | Installing new seedlings or planting prepared seeds | January–March |
| Site Maintenance | Controlling grass and annual vegetation, supplemental water, protection from grazing | April–October |

## Five-Year Work Schedule

The 5-year timetable for Goals 1 and 2 is provided in Table 8.

### Table 8. Goals 1 and 2 Five-Year Timetable

| Goal | Action | Zone 2 | Zone 3 | Zone 4 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Reduction** | | | | | | | | | | |
| Wildfire Risk Reduction | Inspection | X | X | X | X | X | X | X | X | X |
| Wildfire Risk Reduction | Mowing | X | X | X | X | X | X | X | X | X |
| Wildfire Risk Reduction | Tree Felling | | | X | X | | | | | |
| Wildfire Risk Reduction | Woody Debris Removal | X | X | X | X | | | | | |
| Wildfire Risk Reduction | Tree Trimming | X | X | X | X | | | | | X |
| Wildfire Risk Reduction | Brush Removal | | X | | X | | | | X | |

## Table 8. Goals 1 and 2 Five-Year Timetable

| Goal | Action | Zone 2 | Zone 3 | Zone 4 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Restoration** | | | | | | | | | | |
| Reforestation | Inspection | X | X | X | X | X | X | X | X | X |
| Reforestation | Plot Layout | X | X | X | X | | | | | |
| Reforestation | Site Preparation | X | X | X | X | X | | X | | X |
| Reforestation | Tree Planting | X | X | X | X | X | | X | | X |
| Reforestation | Site Maintenance | X | X | X | X | X | X | X | X | X |

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SOURCE: Bing Maps 2021, Monterey County

DUDEK

0 200 400 Feet

**FIGURE 7**

Main Trail System

George Washington Park Forest Management Plan

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# 7 Materials and Labor Needed to Reach Management and Maintenance Recommendations Over the Next 5 Years

## 7.1 Treatment Methods

Several treatment methods are available to achieve the management goals described in Chapter 6 of this FMP. A combination of treatment methods is not only acceptable but is likely the optimal choice because it allows the City to pick the most effective method for each task and allows some flexibility if one option is not available.

Described below are treatments methods suited to the conditions in the forested zones and the goals. Also included is a recommended treatment plan based on observations of the forest and of treatment methods that have been successful elsewhere in Monterey County.

### 7.1.1 Mechanical

Only light mechanical equipment is recommended for operating in the forested zones because of the conditions in the Park and the location of the Park in a residential neighborhood. A tracked or rubber-wheel skid steer (e.g., bobcat) is small enough to operate efficiently within the Park. Skid steers can equip a variety of attachments that enable them to complete many of the treatment actions, including a mulcher or masticator head for removing brush and small trees plus processing the cut material, a grapple for carrying cut material, and a mower for cutting annuals and grass. The equipment operator will need be briefed on proper work procedures, cut material disposal, and equipment cleaning because the Park lies in a Pitch Canker Zone of Infestation where the intent is to minimize the likelihood that the disease (or the beetle that aids in its transmission) would be transported to area where the infection is not present.

#### Pros

- Quickly able to treat heavy fuel loads over large areas
- One piece of equipment can complete many of the management actions
- Poison oak is not an issue

#### Cons

- Expensive
- Can create soil compaction and soil damage, particularly if used when the soil is wet
- Needs a large, safe working space
- Hand crews needed to perform tree trimming, tree felling, and cutting up large logs

### Neutral

- The most cost-effective use of mechanical equipment is to perform all the fire hazard reduction and forest restoration site preparation at the same time; however, this would result in performing some of the work at a less-than-ideal time of year.

## 7.1.2 Manual

Hand crews will be equipped with powered equipment such as chain saws, mowers, and weed whips, as well as hand tools such as hand saws, pruners, loppers, and shears. Hand crews can perform all the treatment actions described in the FMP, and will likely be used even if other methods are selected. Hand crews will need to work with a chipper parked on the nearest street while they are performing fire hazard reduction work. Crews will need to be briefed on proper processing, disposal of chips, and equipment cleaning because the Park lies in a Pitch Canker Quarantine Zone and because of the presence of bark beetles.

### Pros

- Minimal damage to soil and remaining vegetation
- Can perform all the treatment actions
- Generally, not disruptive to other Park uses

### Cons

- Areas of poison oak may not be treated or may cost significantly more to treat
- May require multiple hand crew contractors to complete all the treatment actions
- Expensive

## 7.1.3 Biological

Grazing is an effective method for treating surface vegetation and low-growing woody vegetation. Goat grazing is used in California for resource management and the most widely available in the area. Goats will graze on a variety of vegetation, including grasses, annual herbaceous plants, and small woody shrubs. They will also eat poison oak. Grazing will not address the tree trimming or down woody debris removal needs. Grazing also takes the longest to complete, sometimes taking a week or longer to complete what mechanical methods could complete in 1 day.

### Pros

- Low impact on the soils and mature trees
- Will consume nearly all the herbaceous, grass, and woody shrubs species present
- Effective at controlling surface vegetation on large areas
- Animal movement and grazing exposes mineral soil

### Cons

- Logistical needs, including fencing, access to water, and trailer access to treatment areas
- Goats will eat tree seedlings and other desirable plants if not protected

- Have a specific time window for when they will consume different types of plants
- Goats will graze on small trees and shrubs, but hand crews are still needed to perform tree trimming, tree felling, and cutting up large logs
- Grazing contractors have a minimum acreage requirement

### 7.1.4 Chemical

Selective and non-selective herbicides are useful for controlling the growth of undesirable vegetation. Properly applied herbicides are effective at controlling understory vegetation, particularly when dealing with aggressive invasive grasses and annuals. Herbicide use is not recommended for fire hazard reduction because it does not accomplish fuel reduction objectives, but it could be used on as-needed basis for forest restoration site preparation and maintenance to control the abundant non-native grasses present throughout the Park. A licensed pesticide applicator is required to perform any treatment application.

#### Pros

- Cost effective
- Provides effective control of aggressive invasive plants

#### Cons

- Considerable social stigma associated with herbicide use, even when done properly
- Other treatment methods still required for fire hazard reduction work and woody debris removal

### 7.1.5 Prescribed Fire

Monterey pine cones are serotinous, opening and releasing their seeds in the heat generated from a fire or high air temperatures. Fire also prepares an ideal seed bed for the new trees to become establish (Cope 1993). Low-intensity fire is also effective at controlling understory vegetation. Finally, a well-performed prescribed fire substantially reduces the risk of wildfire occurring for several years.

#### Pros

- Accomplishes multiple treatment actions in one treatment
- Most effective method for reducing fire hazard and reducing woody debris

#### Cons

- Carries the risk of fire escape
- Requires a great deal of planning to properly carry out
- Some site preparation is needed pre and post burn
- Has specific personnel, equipment, and environmental requirements that must be met to be performed

### 7.1.6 Recommendations

Dudek's recommended treatment method is to use a combination of hand crews to remove the large dead trees and downed trees (6 inches in diameter or greater) and then use goats to remove the surface and small understory vegetation. Goats are highly effective at consuming surface and understory vegetation, and in combination with the hand crews, removing the larger woody material will create an effective buffer around the Park while minimizing soil disruption. The main drawback of relying on goats is timing, because goats graze different vegetation types at different times of year, and goats need several days to several weeks to cover an entire treatment area. If there is limited time to complete the fire hazard reduction work, then the recommended treatment method is to use mechanical treatments for performing the fire hazard reduction work within the Park. The ideal treatment strategy is to have the surface and understory chipped or masticated by a lightweight skid steer or mini-excavator. Hand crews would then be used to cut and remove large, downed trees (typically over 9 inches in diameter or greater) or standing dead trees. Hand crews would also need be used in the monarch butterfly and sensitive habitat areas.

The ideal treatment method for the forest restoration work is to have the site preparation work be completed with a combination of hand crews to remove the large dead trees and downed trees, and then use goats to remove the surface and small understory vegetation. The goats would be allowed to graze the areas surrounding each plot and within the plot boundaries to help control the encroachment of competing vegetation within each tree planting site. The tree planting and follow up tree care work would be performed by hand crews.

## 7.2 Treatment Plan

### 7.2.1 Fire Hazard Reduction

Fire hazard reduction work will begin with an assessment of the vegetation within the fire hazard reduction zone, followed by a walkthrough with a vendor, if one is used. This assessment should be done in the spring; April is ideal, but there is some flexibility for earlier or later in the season depending on the weather. The treatment actions begin with the mowing/cutting of grass and annuals as soon as they cure, usually in April or May. Tree felling, tree trimming, and cut material removal is performed next. While mid-summer is the preferred time to trim coast live oak trees and winter is the preferred time to trim pine trees, it is acceptable to trim both the pines and oaks in the early summer for fire hazard reduction. Fire hazard reduction work should be completed prior to the onset of hot, dry conditions and the arrival of high fire danger. The initial treatment will likely require the most work to meet the defensible space requirements. Follow-up treatments for most years will be limited to mowing/cutting the grass and annuals, with tree trimming needed every 5 to 10 years. Dead tree removal and brush/small tree removal will likely be performed during the initial treatment and then on an as-needed basis.

Fire hazard reduction will be accomplished with a combination of hand crews and grazing. Hand crews will be used to perform all the treatment actions within 100 feet of the homes on Melrose Street that back up to the Park. This method is preferred because it ensures that the work can be scheduled and performed regardless of the condition of the vegetation for grazing or when the onset of hot and dry weather occurs. Hand crews will perform the tree trimming, dead tree removal, and woody debris removal on the remainder of the wildfire hazard reduction zone. Cut woody material will be chipped and used on site, but not spread within 30 feet of a wooden fence. All flammable vegetation will be raked away from private property fences. A permit will need to be obtained prior to trimming or removing trees within the Park.

Grazing will be used to control the surface vegetation and thickets of poison oak, blackberry, and wild cucumber.

### 7.2.2 Forest Restoration

Forest restoration will be accomplished using hand crews and grazing. Hand crews will be used to remove standing dead trees, raking accumulated leaf litter, and planting trees. Hand crew work will be limited to the area within the plot or, in the case of dead tree felling, the trees that have a high potential to fall into the reforestation plot. Cut woody material will be left on site, provided it is resting on the ground and not obstructing a plot or trail. Grazing will be performed over the entire forest reforestation zone, with the exception of the areas specified for exclusion (wildlife habitat, native plant restoration sites, existing reforestation sites).

Forest restoration work will begin with an assessment of the forest restoration zone. This includes determining the plot locations and mapping their location for the reforestation actions. The assessment should be followed up with a walkthrough of the zone with the tree service vendor and grazing vendor. If supplemental tree planting will be performed, then the trees should be ordered in the spring to ensure there is sufficient stock available. Appendix E contains a list of local nurseries that stock or can order Monterey pine. Treatment action will begin with the site preparation work. Depending on contractor availability, either the hand crews or grazing can begin first. Site preparation is not as time sensitive as the fire hazard reduction work, but it may be more cost effective to have the hand crews perform all the work at one time. Tree planting will take place in the fall after the first sufficient rainfall.

The initial site preparation will likely require the most work. Follow up treatments will depend on whether trees are being allowed to regenerate naturally or if trees will be planted. On natural regeneration sites, follow-up site maintenance will be limited to controlling surface vegetation and raking the topsoil to keep the seed bed in optimal condition. On planted sites or after natural regeneration has occurred, follow-up site maintenance will include controlling surface vegetation and installing protection from browsing; supplemental watering may be needed throughout the summer if drought conditions persist.

Initial forest restoration treatments do not need to be completed for all the plots in the same year. It is acceptable to perform treatment actions on a few of the plots each year over a period of several years until all the plots have been treated. However, it is not recommended to partially treat one plot, specifically not to partially plant a plot over a period of several years because the oldest trees have a high probability of outcompeting and overtopping the later plantings, limiting the growth potential or killing the younger trees.

### 7.2.3 Biological Resource Protection

As previously described, there are three special-status plants and four special-status wildlife species that are known to be present within the forested area of the Park or have the potential to occur within the Park or in the vicinity. Forest treatment actions will be implemented in a manner that either avoids impacting the special-status species or minimizes unavoidable impacts to special-status species. Described below are protection measures for each special-status species or special-status group.

#### 7.2.3.1 Special-Status Plants

To protect special-status plant species, it is recommended that appropriately timed surveys be conducted prior to vegetation removal activities by a qualified botanist at the appropriate period when these species are evident and identifiable. If special-status plant species are observed during the surveys, it is recommended that the individuals

or populations be flagged with high-visibility flagging and completely avoided. If avoidance is not feasible, a species-specific mitigation plan should be prepared that describes the measures to be implemented to reduce and mitigate unavoidable impacts to special-status plants.

A detailed description of the protective measures to be implemented for each identified species is provided the Biological Constraints report that is attached to this FMP (Appendix B).

# 8 Conclusion

George Washington Park is a community park within a residential neighborhood. Approximately three-quarters of the Park is covered with a natural Monterey pine–coast live oak forest. This forested area is trending toward a decline of Monterey pine as the dominant tree in the overstory. Monterey pine decline is due to several accumulative factors (e.g., drought, insects, disease) and the lack of young pines in the understory to replace the mature pines as they die. Coast live oak trees are more abundant than the pine trees and have a better distribution of trees sizes and age. Oak trees are filling in the gaps in the tree canopy created by the loss of mature pine trees; however, these replacement oaks do not reach the diameter or height of the pines they are replacing. There are four main threats affecting the forested zones in the Park, with drought being the most widespread and having the greatest impact. Drought has an added impact in that it increases the risk of a destructive wildfire spreading through the forested area of the Park. Disease and insects are also damaging agents, but their impact is primarily on the pine trees. Competition from surface vegetation is impacting the structure and composition of the forest by limiting natural regeneration but is not impacting the health of existing trees.

The City is interested in improving the health and safety of the forested area, and has created two management goals for the forested area: first is to maintain the vegetation along the perimeter of the Park to reduce the risk of a destructive wildfire in the Park spreading to nearby homes, and second is to encourage the development of a healthy forest on the interior of the Park by creating conditions that are optimal for the growth of new trees.

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# 9 References


Brugan, Robert E., and Joe H. Scott. 2005. Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model (General Technical Report RMRS-GTR-153). USDA Forest Service, Rocky Mountain Research Station.

CAL FIRE. 2018. Fire and Resource Assessment Program (FRAP) database Fire Perimeters. https://frap.fire.ca.gov/mapping/pdf-maps/.

CDFW (California Department of Fish and Wildlife). 2021. California Natural Diversity Database. CDFW, Biogeographic Data Branch. Accessed October 2021. https://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp.

CGS (California Geological Survey). 2021. Department of Conservation Maps Data Viewer: California Geology. California Department of Conservation. https://maps.conservation.ca.gov/geology/#webmaps.

City of Pacific Grove. 1999. Master Plan for George Washington Park. Natural Resources Committee and City Forester, Frank Ono. July 1999.

Cope, Amy B. 1993. "Pinus radiata." In: Fire Effects Information System [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Accessed June 6, 2022. https://www.fs.fed.us/database/feis/plants/tree/pinrad/all.html.

MacLaren, J.P. 1993. Radiata Pine Growers' Manual. New Zealand Ministry of Forestry, FRI Bulletin No. 184.

Maguire and Withrow-Robinson. 2018. Competition and Density in Woodland Stands. Oregon State University; Forestry & Natural Resources Extension. EM 9206. June 2018. https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/em9206.pdf.

McDonald, Philip M., and Robert J. Laacke. 1990. "Pinus radiata D. Don Monterey Pine Silvics of North America." Volume 1 Conifers Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC. vol. 2, 877 p.

MFD (Monterey Fire Department). 2021. Personal communication via phone conversation with a member of the Fire Prevention Department.

NIDIS (National Integrated Drought Information System). 2022. Drought Information By Location-States-California. National Oceanic and Atmospheric Administration (NOAA) 2022. https://www.drought.gov/states/california.

NRCS (National Resource Conservation Service). 2021. Web Soil Survey. U.S. Department of Agriculture. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

Owen, Donald R. 2003. The Red Turpentine Beetle. California Department of Forestry and Fire Protection. Tree Notes #9.

Seager, R., T. Osborn, Y. Kushnir, I. Simpson, J. Nakamura, and H. Liu. 2019. "Climate Variability and Change in Mediterranean-Type Climates." Journal of Climate, 32(10), 2887–2915. https://doi.org/10.1175/JCLI-D-18-0472.1.

Sinclair, W.A., and H.H. Lyon. 2005. Diseases of Trees and Shrubs. 2nd ed. Ithaca, NY: Cornell University Press. 659 p.

University of California Statewide IPM Program 2013 Pitch Canker Integrated Pest Management For Home Gardeners and Landscape Professionals University of California Agriculture and Natural Resources Statewide Integrated Pest Management Program (IPM). Pest Notes Publication 74107

WRCC (Western Regional Climate Center). 2021. Monterey, California (045795). Monthly Climate Summary. Accessed October 2021. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5795.

# Appendix A
Soil Types

# Soils in George Washington Park

Soils present within the park a primarily composed of sand and are typical of the soils that were formed from sedimentary rock. Below is a description of the soil types present within the park. This information was obtained from the Natural Resource Conservation Service (NRCS) Web Soil Survey (WSS).

**Baywood sand, 2 to 15 percent slopes (BbC)**-Consists of somewhat excessively drained soils that formed in stabilized sand dunes. In a representative profile the surface layer is dark grayish brown and brown, slightly acid and medium acid sand 21 inches thick. Below this is pale brown, slightly acid sand 6 inches thick. It is underlain by very pale brown, slightly acid sand that extends to a depth of more than 60 inches.

Permeability is rapid, and the available water capacity is 2.5 to 3 inches. Roots penetrate to a depth of more than 60 inches.

Baywood sand soils in the park are limited to a small area on the west side of the park near the ballfield and account for 13% of the soils in the park by area.

**Narlon loamy fine sand, 2 to 9 percent slopes (NcC)**- This is a gently sloping and moderately sloping soil on dissected marine terraces. The Narlon series consists of somewhat poorly drained soils that formed on uplands in soft marine sediments. In a representative profile the surface layer is gray, medium acid loamy fine sand about 3 inches thick. The subsurface layer is white, mottled, medium acid and slightly acid loamy fine sand 10 inches thick. The subsoil is light brownish gray, gray, and light gray, mottled, very strongly acid clay 40 inches thick. The substratum is mottled white, extremely acid weathered sandstone. Permeability is very slow, and the available water capacity is 2 to 3 inches. Most roots penetrate to a depth of 12 to 24 inches, but some tree roots penetrate very deeply into cracks.

Narlon loamy fine sand, 2 to 9 percent slopes soils are the dominant soil type and account for 51% of the soils in the park by area.

**Narlon loamy fine sand, 15 to 30 percent slopes (NcE)**- This is a strongly sloping and moderately steep soil on uplands. The Narlon series consists of somewhat poorly drained soils that formed on uplands in soft marine sediments. In a representative profile the surface layer is gray, medium acid loamy fine sand about 3 inches thick. The subsurface layer is white, mottled, medium acid and slightly acid loamy fine sand 10 inches thick. The subsoil is light brownish gray, gray, and light gray, mottled, very strongly acid clay 40 inches thick. The substratum is mottled white, extremely acid weathered sandstone. Permeability is very slow, and the available water capacity is 2 to 3 inches. Most roots penetrate to a depth of 12 to 24 inches, but some tree roots penetrate very deeply into cracks.

Narlon loamy fine sand, 15 to 30 percent slopes soils occur in two bands near the hilltop located at the corner of Pine St. and Alder St. These soils account for 36% of the soils in the park by area.

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# Appendix B
Biological Constraints Report

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OAKLAND, CALIFORNIA 94612
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May 10, 2022 13676

Office of the City Clerk
City of Pacific Grove
300 Forest Avenue
Pacific Grove, California 93950

*Subject:* *Biological Resources Constraints Assessment for the Proposed Management Plan for Forested Area of George Washington Park, Pacific Grove, Monterey County, California*

Dear Sir or Madam:

At the request of the City of Pacific Grove, Dudek conducted a biological resources assessment for the approximately 17-acre proposed Forest Management Plan (Plan) site within George Washington Park (project site or site) in the City of Pacific Grove, California. In October 2021, Dudek biologists conducted a literature review of various resource databases and followed up with reconnaissance-level field surveys to identify and describe existing biological resources, including natural vegetation communities, aquatic resources (e.g., wetlands), sensitive natural communities, and potential habitat for special-status plant and wildlife species. This letter report summarizes our findings and identifies potential biological resource constraints to Plan activities. Recommendations to avoid or minimize impacts to biological resources are also provided.

# Project Site Location and Description

The project site is approximately 17-acres of undeveloped parks land within the George Washington Community Park east of 17 Mile Drive in the central limits of the City of Pacific Grove (Figure 1, Project Location and Figure 2, Project Site).

The project site is in Sections 13 and 14 of Township 18S and Range 1W of the Monterey U.S. Geological Survey 7.5-minute quadrangle. The approximate center of the project site corresponds to 36.620564 north latitude, and 121.928463 west longitude.

At the time of the site visits, the project site consisted largely of undeveloped parkland with the exception of a community baseball field, restroom facility, and playground at the southern boundary of the site. A review of historical Google Earth imagery shows that the site has historically remained undisturbed. The site is currently surrounded by residential development in all directions. The Rip Van Winkle Open Space is located south of the project site, and the Monarch Butterfly Sanctuary is located northwest of the project site.

Topography of the project site is gently sloping, with the steepest section at the northeast corner averaging 180 feet above mean sea level. Monterey County experiences a Mediterranean climate with warm, dry summers and cool, wet winters. The average annual daytime temperature in the general vicinity of the site is 65°F, and the average minimum temperature is approximately 48°F (WRCC 2021). Average annual precipitation in the general vicinity of the site is 19.73 inches, nearly all of which falls from October to April (WRCC 2021). Coastal fog and fog drip contributes to a small amount of precipitation in the months between May and October.

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# Methods

## Literature Review

Special-status species potentially present on the project site were identified through a literature search of the following sources: U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) (USFWS 2021), California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2021a), and the California Native Plant Society's Inventory of Rare and Endangered Plants of California (CNPS 2021). Searches of the above-referenced databases were completed for the Monterey and four surrounding U.S. Geological Survey 7.5-minute quadrangles: Seaside, Soberanes Point, Marina, and Mt. Carmel.

For this report, special-status plant and wildlife species are defined as those that are (1) listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act; (2) listed or candidates for listing as threatened or endangered under the California Endangered Species Act; (3) designated as Fully Protected under the California Fish and Game Code; (4) designated as a California Species of Special Concern by CDFW; or (5) assigned a California Rare Plant Rank (CRPR) of 1A, 1B, 2A or 2B by the California Native Plant Society. The CRPR system includes six rarity and endangerment ranks for categorizing plant species of concern, as follows:

- CRPR 1A – Plants presumed to be extinct in California
- CRPR 1B – Plants that are rare, threatened, or endangered in California and elsewhere
- CRPR 2A – Plants presumed to be extinct in California, but more common elsewhere
- CRPR 2B – Plants that are rare, threatened, or endangered in California, but more common elsewhere
- CRPR 3 – Plants about which more information is needed (a review list)
- CRPR 4 – Plants of limited distribution (a watch list)

Plants with CRPR 1A, 1B, 2A, or 2B may qualify as endangered, rare, or threatened species within the definition of California Environmental Quality Act (CEQA) Guidelines Section 15380. CDFW recommends that potential impacts to CRPR 1 and 2 species be evaluated in CEQA review documents. In general, CRPR 3 and 4 species do not meet the definition of endangered, rare, or threatened pursuant to CEQA Guidelines Section 15380, but these species may be evaluated on a case-by-case basis.

## Field Reconnaissance

Following the literature review, Dudek Urban Forestry Specialist Michele Laskowski and Biologist Emily Scricca determined the potential for special-status species to occur within the project site. Determinations were based on a review of habitat types, soils, and elevation preferences, as well as the known geographic range of each species. For example, if the project site is within the elevation range of a particular plant species, but a specific soil type for that species was not present, the species was determined to have "low potential to occur" on the project site. Species were considered "not expected to occur" when the project site was clearly outside the known geographic range of the species or when potential habitat was absent from the project site.

Ms. Laskowski performed a tree inventory and special-status plant habitat assessment on the project site on October 5, 2021, from 9 a.m. to 4 p.m. and on October 8, 2021, from 9:00 a.m. to 4:00 p.m. Weather during the

site visits was overcast with an ambient temperature of approximately 65°F. The survey consisted of walking the entire site on foot and recording field notes on observed vegetation and wildlife species and habitat suitability for special-status plants.

Ms. Scricca performed a biological field reconnaissance of the project site on October 21, 2021, from 10:30 a.m. to 12:30 p.m. Weather during the site visit was partly cloudy, with an ambient temperature of approximately 65°F at the start and 72°F at the completion of the field visit. The site visit included mapping vegetation communities and land cover types present on the project site and assessing habitat for special-status wildlife species. The visit was conducted on foot to ensure visual coverage of the entire project site. Field notes and an aerial photograph (Google Earth Pro 2021) with an overlay of the project boundary were used to map vegetation communities and record any sensitive biological resources while in the field. Representative project site photographs are included in Attachment A.

All plant species were identified to the lowest taxonomic group possible. Nomenclature for plant species follow the Jepson Manual, Vascular Plants of California, Second Edition (Jepson Flora Project 2021).

Wildlife species detected by sight, calls, tracks, scat, or other signs were recorded into a field notebook. The project site was scanned with and without binoculars to aid in the identification of wildlife. Wildlife species not observed but expected to use the project site were identified based on known habitat preferences and regional distribution.

No formal wetland delineation or focused surveys for special-status plant or animal species were conducted. The field visit was sufficient to generally describe aquatic features on the project site that could be subject to regulation by the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and/or CDFW.

# Existing Conditions

## Vegetation Communities and Land Cover Types

The project site is mostly undeveloped parkland except for a community baseball field, restroom facility, and playground at the southern boundary of the site. This area is surrounded by dirt pedestrian trails and scattered picnic tables mixed amongst individual coast live oak (*Quercus agrifolia),* Monterey cypress (*Hesperocyparis macrocarpa*), Monterey pine (*Pinus radiata*), and coast redwood (*Sequoia sempervirens*) trees.

The remainder of the site is dominated by the Monterey cypress – Monterey pine stands (*Hesperocyparis macrocarpa – Pinus radiata* Forest & Woodland Semi-Natural Alliance) (Figure 3, Vegetation Communities and Land Cover Types). This vegetation community is dominated by a Monterey cypress and Monterey pine overstory with a lower canopy dominated by coast live oak. Common understory vegetation includes a shrub layer that is sparse to intermittent and an herbaceous layer that is sparse to grassy. Monterey cypress – Monterey pine stands have been planted as windbreaks, groves, or individual trees and are naturalized in coastal areas. Because of their artificial origin, they do not contain a global or state rarity ranking.

## Soils and Hydrology

According to the U.S. Department of Agriculture Natural Resources Conservation Service (USDA 2021), three soil types occur within the project site: Baywood sand, 2 to 15 percent slopes; Narlon loamy fine sand, 2 to 9 percent slopes; and Narlon loamy fine sand, 15 to 30 percent slopes (see Figure 4, Soils). The project site mostly consists of the Narlon loamy fine sand complex; the Baywood sand soil type is found along the southwestern boundary of the site, north of the baseball field. The Narlon loamy fine sand complexes are considered to be poorly drained hydric soils with a very high runoff class. Baywood sand in non-hydric, although hydric inclusions may occur. None of the soil types are known to support edaphic special-status plant species (i.e., the soils of the site are neither serpentine nor alkaline).

The project site lies within the Soberanes Creek-Frontal Pacific Ocean Hydrologic Unit (HUC 12 180600060203) (Figure 5, Hydrologic Setting). An unnamed drainage is located approximately 0.25 miles south of the project site, originating from within the Rip Van Winkle Open Space, and ultimately drains into the Pacific Ocean, a traditional navigable water of the United States. According to the U.S. Geological Survey National Hydrography Dataset (USGS 2021), predefined waters of the United States or state are absent from the project site.

## Plant and Wildlife Species Observed

Most vegetation on the project site consists of native or naturalized species; 47 species of plants (28 native [60%] and 19 non-native [40%] species) were recorded on the site (see Attachment B). The field visit was conducted late in the growing season when many plants are not evident or identifiable. As such, floristic surveys conducted at the appropriate time of the growing season would likely yield a greater number of identifiable species. The understory vegetation observed on the project site included annual grasses such as ripgut brome (*Bromus hordeaceus),* big quakinggrass (*Briza maxima*), wild oats (*Avena barbata/fatua*), perennial rye grass (*Festuca perennis*), mouse barley (*Hordeum murinum)* and others. Perennials, subshrubs and shrubs include blackberry (*Rubus ursinus*), toyon (*Heteromeles arbutifolia*), poison oak (*Toxicodendron diversilobum*), monkey flower (*Diplacus aurantiacus*), western brakenfern (*Pteridium aquilinum*), English ivy (*Hedera helix*), hedgenettle (*Stachys bullata*), broom (*Cytisus scoparius*), vining honeysuckle (*Lonicera hispidula*), and others.

Wildlife species observed or expected to occur on the project site are those that are adapted to forested parklands, Monterey cypress – Monterey pine stands, and urban landscapes with moderate human activity. Western fence lizard (*Sceloporus occidentalis*) was the only amphibian or reptile species observed during the site visit, although common species such as Sierran tree frog (*Pseudacris sierra*), gopher snake (*Pituophis catenifer*), and western rattlesnake (*Crotalus oreganus*) are also likely to occur. Common bird species observed included black phoebe (*Sayornis nigricans*), red-shouldered hawk (*Buteo lineatus*), Anna's hummingbird (*Calypte anna*), California scrub-jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), dark-eyed junco (*Junco hyemalis*), and California towhee (*Melozone crissalis*). Scat belonging to black-tailed deer (*Odocoileus hemionus*) was observed throughout the project site. A full list of wildlife species observed during the site visit is included in Attachment C.

# Results

## Special-Status Plant and Wildlife Species

### Special-Status Plant Species

Results of the CNDDB, California Native Plant Society, and IPaC database searches revealed 75 special-status plant species as historically or potentially occurring in the site vicinity (Attachment D, Special-Status Plant Species Potential to Occur). Of these, 31 were eliminated from consideration because they were CRPR rankings of 3 and 4. This narrowed the list to include plants that are state and federally listed and/or with a CRPR of 1 or 2.

Each of the remaining 44 species were evaluated based on suitable habitat or edaphic conditions (i.e., alkaline or serpentine soils), or the sites' location outside of their known range and the proximity of known populations to the project areas. The site supports planted Monterey cypress but is outside the range of naturally occurring stands at Cypress Point and Point Lobos State Park near Carmel with a CRPR of 1B.2; therefore, this species is not expected to occur. Two special-status plant species are known to occur on or near the project site: Monterey pine (*Pinus radiata*) and Yadon's rein orchid (*Piperia yadonii*). Four species were determined to have a high potential to occur in the project site. Those include sandmat manzanita (*Arctostaphylos pumila*), San Francisco collinsia (*Collinsia multicolor*), marsh microseris (*Microseris paludosa*), northern curly-leaved monardella (*Monardella sinuata* ssp. *nigrescens*). The status of these species is briefly discussed below.

Marsh microseris has a CRPR of 1B.2 and is a perennial herb with a high potential to occur on the site. It occurs in closed-cone coniferous forest, cismontane woodland, and coastal scrub habitat. The project site overlaps an area of known occurrence of this species. A historical occurrence comprised of four collections at unspecified locations in "Pacific Grove" from 1906 to 1956 overlaps much of Pacific Grove, including the project site (Occ. No. 3; CDFW 2021a).

Native Monterey cypress has a CRPR of 1B.2 and is limited to two stands at Cypress Point and Point This species occurs on the project site but is naturalized and therefore the on-site trees are not considered special-status plants. The species is widely planted and naturalized elsewhere on the coast and beyond.

Native Monterey pine has a CRPR of 1B.1 and is present on the project site. The trees in this location are within the estimated historic range of this species as mapped by the CNDDB (Occ. No. 4) (CDFW 2021a) and are naturally occurring. The species is widely planted and naturalized elsewhere. Records provided by the City of Pacific Grove indicate that this stand of Monterey pine has been present on the site since the beginning of the twentieth century.

Northern curly-leaved monardella has a CRPR of 1B.2 and is a perennial herb with a high potential to occur on the site. This species occurs in chaparral, lower montane coniferous forest, coastal scrub, and coastal dunes. The collection source for the CNDDB occurrence of this species in the area is from 1932, so the location description is based on a best guess (Occ. No. 4) (CDFW 2021a). It is likely to be found on stabilized dunes in the vicinity.

Sandmat manzanita has a CRPR of 1B.2 and is a perennial evergreen shrub with a high potential to occur on the site. This species has three known populations within 0.5 miles of the project site. Within those locations the species has been extensively mapped and a noted increase in population density from 2004 to 2015 (Occ. Nos. 9, 14, and 20) (CDFW 2021a).

San Francisco collinsia has a CRPR or 1B.2 and is an annual herb with a high potential to occur on the site. This species occurs in closed-cone coniferous forest and coastal scrub habitat. A historical occurrence composed of a 1903 collection at an unspecified location overlaps a 1-mile-radius area centered on Pacific Grove, including the project site (Occ. No. 3; CDFW 2021a). The site provides high-quality habitat for this species.

Yadon's rein orchid is federally endangered with the CRPR or 1B.1. It is a perennial herb that is known to occur in closed cone coniferous forest, coastal bluff scrub and chaparral. It is known to occur on the project site (Occ. No. 4) (CDFW 2021a) and there are multiple occurrences in the vicinity. It has been noted as occurring in the understory of Monterey pine within patchy but dense *Calamagrostis nutkaensis* (CDFW 2021a). It was noted that the roadside mowing and vehicles parking along the road are a threat to this species.

Because the site visits were conducted outside of the blooming period for the above-mentioned plant species, most of these species would not have been evident or identifiable during the site visit.

## Special-Status Wildlife Species

Based on the results of the CNDDB and IPaC database searches and field reconnaissance, Dudek identified 33 special-status wildlife species as occurring or potentially occurring in the region of the project site (Attachment E, Special-Status Wildlife Species Potential to Occur). Of these, 28 species were eliminated from consideration due to the absence of suitable habitat and/or the project site's location outside of their known range. The remaining species have some potential to occur within or near the project site and are described in more detail below.

### Northern California Legless Lizard

Northern California legless lizard (*Anniella pulchra*) is a California species of special concern. This species is a fossorial (i.e., burrowing) animal and is found primarily in areas with sandy or loose soils, where they typically are found beneath leaf litter and in the soil (Holland and Goodman 1998; Morey 2000). This species may be found in sparsely vegetated areas in a variety of habitats, including beach dunes; chaparral; California sagebrush scrub; oak woodlands; pine forests; pine–oak woodland; sandy washes; and stream terraces with sycamores, cottonwoods, or oaks (Morey 2000; Stebbins 2003; Holland and Goodman 1998).

This species was documented within sandy soil within the southwest corner of the project site in 2017 (Occ. No. 375) (CDFW 2021a). The project site contains suitable woodland habitat with sandy soils to support this species. This species was not observed in the study area during the site survey; however, there is high potential for it to be present.

### White-Tailed Kite

The white-tailed kite (*Elanus leucurus*) is a California Fully Protected species. It generally occurs in low-elevation grassland, wetland, oak woodland, low shrub, open woodlands, or savannah habitats. This species also uses fencerows, irrigation ditches with residual vegetation, and freeway edges and medians. Nests are constructed in a variety of trees, with coast live oak perhaps the most common, and placed high in the crown on thin branches (Peeters and Peeters 2005).

White-tailed kite has a moderate potential to nest within the project site. The project site contains suitable nest trees (*Quercus* spp., *Pinus* spp., etc.); however, foraging habitat is marginal due to the lack of open habitat and

density of trees on the site, and the site is immediately surrounded by residential development. This species was not observed during any of Dudek's site visits and has not been documented in the CNDDB within 5 miles of the project site (CDFW 2021a). However, there are several recent eBird observations of this species within and adjacent to the project site from 2015 to 2021, including one observation from 2019 within the middle of the project site (eBird 2021).

### Special-Status Bats

Townsend's big-eared bat *(Corynorhinus townsendii*) is a California Species of Special Concern that is known to roost in limestone caves and lava tubes, man-made structures, and tunnels. This species inhabits deciduous forests and riparian habitat. The project site does not contain suitable roosting habitat for this species due to the lack of human-made structures and caves on site. However, there is moderate potential for this species to occasionally forage on site and roost within the structures adjacent to the project site. Because the project site is surrounded by urban development and subject to frequent human disturbance, Townsend's big-eared bat is unlikely to occur in large numbers, if present.

The numerous trees on the site provide suitable roosting habitat for special-status (e.g., western red bat) and common foliage-roosting bat species. Additionally, many of the trees on site contain hollowed-out cavities in which common bat species may roost.

Signs of roosting bat occupancy (i.e., guano or staining) were not observed within the project site during the field visit.

### Special-Status Butterflies

The monarch butterfly (*Danaus plexippus pop. 1*) is a candidate species for listing under the federal Endangered Species Act. This species is known to inhabit wind-protected tree groves with nectar sources and nearby water sources.

The project site contains suitable habitat for this species, and there are numerous documented occurrences of this species within the site from 1960 to 2014 (Occ. No. 89) (CDFW 2021a). Additionally, this species was observed within the project site during the October site visits.

This project site is within the historic overwintering range for this species. There is a growing body of research that examines the characteristics that create suitable overwintering habitat for this species. Loss of overwintering habitat is one among several identified stressors that may be driving the monarch population decline. The Xerces Society recognizes the Pacific Grove Sanctuary, approximately 900 feet northwest of the site, among the top ten highest priority overwintering sites remaining in California (Xerces Society 2020).

## Nesting and Migratory Birds

In California, all native active bird nests (with eggs or young) are protected by provisions in the federal Migratory Bird Treaty Act of 1918 and Sections 3503 and 3503.5 of the California Fish and Game Code. The trees and shrubs within and adjacent to the project site provide suitable nesting habitat for several native local and migratory bird species.

## Potentially Jurisdictional Aquatic Resources

The project site does not support any aquatic resource features that may be regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act, San Francisco Bay Regional Water Quality Control Board under

Section 401 of the Clean Water Act or California Porter-Cologne Act, and/or CDFW under Section 1602 of the California Fish and Game Code.

## Sensitive Natural Communities

Sensitive natural communities are vegetation communities that are of limited distribution statewide or within a county or region. A list of sensitive natural communities in California is maintained by CDFW (2021b) based on rarity of and threats to these communities in California. Impacts on high-quality occurrences of sensitive natural communities are typically considered significant under CEQA.

The project site consists of one vegetation community—Monterey cypress – Monterey pine stands—which is not listed as a sensitive vegetation community under the California Natural Community List (CDFW 2021b).

## Protected Trees

Chapter 12.20.020 of the City of Pacific Grove's municipal code describes five categories of protected trees:

(1) Native Trees. All Gowen cypress, regardless of size; all Coast live oak, Monterey cypress, Shore pine, Torrey pine, and Monterey pine six inches or greater in trunk diameter, measured at 54 inches above native grade.

(2) All Other Private Trees. In addition to subsection (a)(1) of this section, all other Trees on private property, regardless of species, 12 inches or greater in trunk diameter, measured at 54 inches above native grade.

(3) Monarch Butterfly Habitat Trees. All Trees in or within 100 yards of designated Monarch sanctuaries. For the purposes of this title, the following sites are designated as Monarch sanctuaries, serving as official Pacific Grove Monarch butterfly over-wintering sites:

  (A) Monarch Grove Sanctuary. That portion of land bordered on the east and west by Ridge Road and Grove Acre Avenue, respectively, on the south by Short Street, and on the north by the northerly boundary of assessor's parcel numbers 006-361-30-031, -032, -033, and -034, extended from Grove Acre easterly to Ridge Road.

  (B) Washington Park Site. That portion of land bordered on the east and west by Alder Street and Melrose Avenue, respectively, on the north by Pine Avenue, and on the south by the imaginary extension of Junipero Avenue westerly from Alder to Melrose.

(4) Public Trees. All Trees on Public Property six inches or greater in trunk diameter, measured at 54 inches above native grade, and all Street Trees, regardless of size.

(5) Designated Trees. All Trees that are otherwise Protected and will be impacted as a result of Development, both proposed for Pruning or Removal and where the Development will impact the Critical Root Zone of the Tree that requires protection during construction, and all Trees otherwise identified—during Development or otherwise—for special protection by the property owner. Trees that are proposed to be Removed as part of a Development project shall be processed as part of the community.

Based on the forest inventory conducted by Dudek foresters, about two-thirds of the trees present within the project site would qualify as a protected tree by being a native tree (category 1), a public tree (category 2) or a Monarch Butterfly Habitat Tree (category 3) and being over 6 inches in diameter.

# Summary of Site Constraints and Recommendations

The implementation of the proposed project could potentially be constrained by the following biological resources present or potentially present within or immediately adjacent to the project site.

## Special-Status Plants

As described above, two special-status plants are known to occur within the project site: Monterey pine and Yadon's rein orchid. Additionally, four special-status plants have a high potential to occur in within the project site: sandmat manzanita, San Francisco collinsia, marsh microseris, and northern curly-leaved monardella. Vegetation removal activities associated with project implementation could directly impact these species, if present. To protect special-status plant species, Dudek recommends that a qualified botanist conduct appropriately timed special-status plant surveys prior to vegetation removal activities at the appropriate period when these species are evident and identifiable. If any special-status plants are identified, they should be flagged with high-visibility flagging and completely avoided. If avoidance is not feasible, a species-specific mitigation plan should be prepared that describes the measures to be implemented to reduce and mitigate unavoidable impacts to special-status plants.

## Special-Status Wildlife

Four special-status wildlife species—Northern California legless lizard, white-tailed kite, Townsend's big-eared bat, and monarch butterfly—have potential to occur on or in the vicinity of the project site.

**Northern California Legless Lizard.** As previously described, the project site provides suitable habitat for Northern California legless lizard, and this species has historically been documented within the project site. Proposed vegetation removal activities could disturb habitat for this species, and potentially impact individual Northern California legless lizards. To prevent impacts to Northern California legless lizards, Dudek recommends that a qualified biologist conduct a pre-activity survey for this species no more than 7 days prior to the start of project activities. The survey shall consist of gently raking any loose soil, sand, or leaf litter with a wooden rake until all Northern California legless lizards are found. Any Northern California legless lizards found within the project site shall be relocated to similar habitat outside of the area of impact.

**White-Tailed Kite and Other Nesting and Migratory Birds.** As previously described, the project site provides suitable nesting habitat for white-tailed kite and other native bird species. If project activities occur during the nesting season (typically defined by CDFW as February 15 to September 1), direct impacts to white-tailed kite and nesting and migratory birds could occur through destruction of active nests. Additionally, prolonged loud vegetation removal noise and increases in human activity could disturb nesting birds, resulting in nest abandonment or failure. To protect white-tailed kite and nesting and migratory birds, Dudek recommends that a pre-activity nesting bird survey be conducted by a qualified biologist within 10 days prior to vegetation removal or ground-disturbance activities to determine if any native birds are nesting on or near the site (including a 250-foot buffer for white-tailed kite and other raptors). If any active nests are observed during surveys, a suitable avoidance buffer will be determined by the qualified biologist based on species, location, and planned project activity. These nests would be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist.

**Townsend's Big-eared Bat and Other Roosting Bats.** As previously described, the project site provides suitable foraging habitat for Townsend's big-eared bat, and suitable roosting habitat for foliage-roosting, and cavity-roosting

bat species. If project activities require the removal of trees during peak activity timeframes when young or overwintering bats may be present (generally March through April and August through October), such activities could directly impact active bat roosts. To avoid impacts to active bat roosts, Dudek recommends that tree removals occur outside peak activity timeframes to the extent practicable. Additionally, it is recommended that daily restrictions on the timing of any work activities should be limited to daylight hours to reduce disturbance to roosting (and foraging) bat species.

Finally, Dudek recommends that a biologist with demonstrated experience conducting bat habitat assessments and roost surveys conduct a focused survey of subject trees within 30 days of the commencement of vegetation management activities. The survey should include a determination on whether active bat roosts are present on or within 50 feet of the project site. If Townsend's big-eared bat is detected to be roosting within the project site, CDFW should be contacted for additional instruction. If a non-breeding and non-wintering common bat colony is found, the individuals shall be evicted under the direction of a qualified biologist to ensure their protection and avoid unnecessary harm. If a maternity colony or overwintering colony is found within the project site, then the qualified biologist shall establish a suitable work-free buffer around the location. The buffer shall remain in place until the qualified biologist determines that the nursery is no longer active.

Monarch Butterfly. As previously described, Monarch butterfly has been documented within the project site, and the species may use the project site for overwintering, nectar foraging and possible larval rearing should host plants occur within the site. Because the Monarch butterfly is a candidate species for listing under the federal Endangered Species Act (ESA), it does not currently receive any legal protection under Section 9 of the ESA but any direct impacts to individuals or their host plants would be considered significant under CEQA. However, the City would be required to adhere to the management restrictions for tree removal inside of and within 100 yards of a Monarch Sanctuary. This would include limiting removals to the prescriptions in the approved Monarch Habitat Management plan and prohibiting the removal or pruning of trees during the months of October through April. Therefore, direct impacts to any Monarch butterflies potentially overwintering on the site are not expected.

## Protected Trees

Approximately two-thirds of the trees on the site meet the criteria for protection under Chapter 12.20 of the City's municipal code. The City would not be required to obtain a permit to remove trees within the park as part of City-approved forest management plan. However, the City would be required to adhere to the management restrictions for tree removal inside of and within 100 yards of a Monarch Sanctuary. This would include limiting removals to the prescriptions in the approved Monarch Habitat Management plan and prohibiting the removal or pruning of trees during the months of October through April. Tree pruning on protected trees is permitted provided no more than 25% of the live crown is removed during any treatment.

All tree pruning and removal work would be required to take place outside of the nested periods of listed threatened, endangered, or special status species as specified by CDFW or U.S. Fish and Wildlife Service.

Please contact me if you have any questions regarding the content of this report.

Sincerely,

Emily Scricca
Biologist

*Att.:* *Figures 1-5*
*Attachment A, Representative Photographs of the Project Site*
*Attachment B, Plant Species Compendium*
*Attachment C, Wildlife Species Compendium*
*Attachment D, Special-Status Plant Species Potential to Occur*
*Attachment E, Special-Status Wildlife Species Potential to Occur*

*cc:* *Matt Ricketts, Dudek*
*Jeremy Cawn, Dudek*

# References Cited

CDFW (California Department of Fish and Wildlife). 2021a. California Natural Diversity Database (CNDDB). RareFind (Commercial Subscription). Sacramento, California: CDFW, Biogeographic Data Branch. Accessed October 2021. https://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp.

CDFW. 2021b. California Natural Communities List. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline.

CNPS (California Native Plant Society). 2021. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Accessed October 2021. http://www.rareplants.cnps.org.

eBird. 2021. eBird: An Online Database of Bird Distribution and Abundance [web application]. Ithaca, New York: Cornell Lab of Ornithology. Accessed October 2021. http://www.ebird.org.

Google Earth Pro. . 2021. Search query: 36° 62' 05.64"N, 121° 92' 84.63"W. Borders and labels; places layers. Google Earth 7.3.3.7699 [64-bit]). May 5, 2018. Accessed October 2021. http://www.google.com/earth/index.html.

Holland, D.C., and R.H. Goodman Jr. 1998. *A Guide to the Amphibians and Reptiles of MCB Camp Pendleton, San Diego County, California*. Prepared for AC/S Environmental Security, Resource Management Division, MCB Camp Pendleton. Contract M00681-94-C-0039. Fallbrook, California: Camp Pendleton Amphibian and Reptile Survey. November 6, 1998.

Jepson Flora Project. 2021. *Jepson eFlora*. Berkeley, California: University of California. Accessed October 2021. https://ucjeps.berkeley.edu/eflora/.

Morey, S. 2000. "California Legless Lizard, *Anniella pulchra*." In *Life History Accounts and Range Maps—California Wildlife Habitat Relationships System*, edited by R. Duke. California Department of Fish and Game, California Interagency Wildlife Task Group. Updated September 2000. http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx.

Peeters, H., and P. Peeters. 2005*. Raptors of California.* Berkeley: University of California Press.

Stebbins, R.C. 2003. *A Field Guide to Western Reptiles and Amphibians*. 3rd ed. Peterson Field Guide. New York, New York: Houghton Mifflin Company.

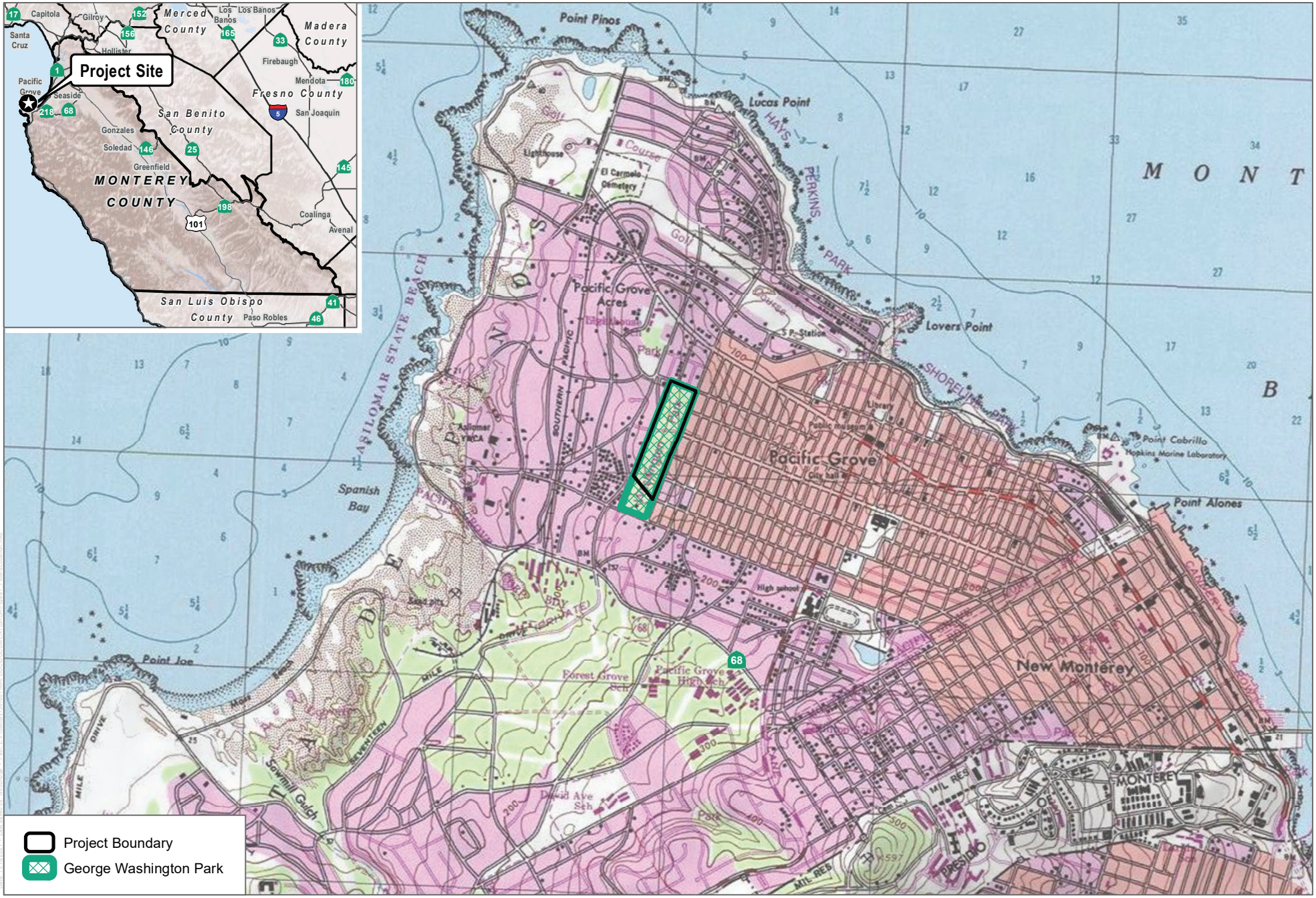
USDA (U.S. Department of Agriculture). 2021. Web Soil Survey. USDA, Natural Resources Conservation Service, Soil Survey Staff. http://websoilsurvey.nrcs.usda.gov/.

USFWS (U.S. Fish and Wildlife Service). 2021. IPaC (Information for Planning and Consultation) [database]. Accessed October 2021. https://ipac.ecosphere.fws.gov/.

USGS (U.S. Geological Survey). 2021. National Hydrography Dataset: GIS Online viewer. Accessed October 2021. http://nhd.usgs.gov/.

WRCC (Western Regional Climate Center). 2021. Monterey, California (045795). Monthly Climate Summary. Accessed October 2021. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5795

Xerces Society. 2020. *State of the Monarch Butterfly Overwintering Sites in California*. Report to the U.S. Fish and Wildlife Service. Prepared by Xerces Society. Accessed December 20, 2021. https://xerces.org/sites/default/files/2018-05/16015_01_XercesSoc_State-of-Monarch-Overwintering-Sites-in-California_web.pdf.




SOURCE: USGS 7.5-Minute Series Monterey Quadrangle

DUDEK

0 1,000 2,000 Feet

**FIGURE 1**

Project Location

Biological Resources Constraints Assessment for the Proposed Management Plan for Forested Area of George Washington Park, Pacific Grove, Monterey County, California


SOURCE: Bing Maps 2021, Monterey County

DUDEK

0 200 400 Feet

**FIGURE 2**

Project Site

Biological Resources Constraints Assessment for the Proposed Management Plan for Forested Area of George Washington Park, Pacific Grove, Monterey County, California


SOURCE: Bing Maps 2021, Monterey County

DUDEK

0 200 400 Feet

**FIGURE 3**

Vegetation Communities and Land Cover Types

Biological Resources Constraints Assessment for the Proposed Management Plan for Forested Area of George Washington Park, Pacific Grove, Monterey County, California


SOURCE: Bing Maps 2021, USDA NRCS, Monterey County

DUDEK

0 200 400 Feet

**FIGURE 4**

Soils


SOURCE: Bing Maps 2021, NHD, Monterey County

DUDEK

0 500 1,000 Feet

**FIGURE 5**

Hydrology

Biological Resources Constraints Assessment for the Proposed Management Plan for Forested Area of George Washington Park, Pacific Grove, Monterey County, California

# Attachment A

Representative Photographs of the Project Site

View of the project site from the southwest corner of the site, facing northwest

View of the project site from the center of the site, facing northeast

View of the project site from the center of the site, facing north

Acorn woodpecker granary tree within the project site

View of the project site from the center of the site, facing north

Sandy soil within the project site that is suitable for Northern California legless lizard

Old, inactive stick bird nest within a coast live oak tree within the project site

Potential bat roosting habitat within a cavity of an oak tree within the project site

# Attachment B

Plant Species Compendium

# Vascular Species

## Eudicots

### ANACARDIACEAE – SUMAC OR CASHEW FAMILY

*Toxicodendron diversilobum* – poison oak

### ARALIACEAE – GINSENG FAMILY

* *Hedera helix* – English ivy

### ASTERACEAE – SUNFLOWER FAMILY

* *Arctotheca prostrata* – no common name

*Artemisia douglasiana* – Douglas' sagewort

* *Carduus pycnocephalus* – Italian plumeless thistle
* *Delairea odorata* – Cape-ivy

*Erigeron canadensis* – Canadian horseweed

*Pseudognaphalium stramineum* – cottonbatting plant

### BORAGINACEAE – BORAGE FAMILY

* *Borago officinalis* – common borage
* *Echium candicans* – pride of Madeira

*Phacelia ramosissima* – branching phacelia

### BRASSICACEAE – MUSTARD FAMILY

* *Brassica rapa* – field mustard

### CAPRIFOLIACEAE – HONEYSUCKLE FAMILY

*Lonicera hispidula* – pink honeysuckle

### CARYOPHYLLACEAE – PINK FAMILY

*Cardionema ramosissimum* – sandcarpet

### CUCURBITACEAE – GOURD FAMILY

*Marah fabacea* – California man-root

### FABACEAE – LEGUME FAMILY

* *Acacia melanoxylon* – blackwood
* *Cytisus scoparius* – broom

*Lathyrus vestitus* – Pacific pea

### FAGACEAE – OAK FAMILY

*Quercus agrifolia* – coast live oak

### GROSSULARIACEAE – GOOSEBERRY FAMILY

*Ribes malvaceum* – chaparral currant

### LAMIACEAE – MINT FAMILY

*Clinopodium douglasii* – yerba buena

*Stachys bullata* – California hedgenettle

### PHRYMACEAE – LOPSEED FAMILY

*Diplacus aurantiacus* – bush monkeyflower

### RHAMNACEAE – BUCKTHORN FAMILY

*Ceanothus thyrsiflorus* – blue blossom

*Frangula californica* – California coffee berry

### ROSACEAE – ROSE FAMILY

*Heteromeles arbutifolia* – toyon

*Rubus ursinus* – California blackberry

### RUBIACEAE – MADDER FAMILY

*Galium aparine* – stickywilly

### SCROPHULARIACEAE – FIGWORT FAMILY

* *Myoporum laetum* – myoporum

### VISCACEAE – MISTLETOE FAMILY

*Arceuthobium campylopodum* – western dwarf mistletoe

## Ferns and Fern Allies

### DENNSTAEDTIACEAE – BRACKEN FAMILY

*Pteridium aquilinum* – western brackenfern

## Gymnosperms and Gnetophytes

### CUPRESSACEAE – CYPRESS FAMILY

*Hesperocyparis macrocarpa* – Monterey cypress

*Sequoia sempervirens* – redwood

### PINACEAE – PINE FAMILY

*Pinus radiata* – Monterey pine

# Monocots

## AMARYLLIDACEAE – AMARYLLIS FAMILY

* *Amaryllis belladonna* – belladonna lily

## CYPERACEAE – SEDGE FAMILY

*Carex praegracilis* – clustered field sedge

## JUNCACEAE – RUSH FAMILY

*Juncus lescurii* – salt rush

## POACEAE – GRASS FAMILY

* *Avena barbata* – slender oat
* *Avena fatua* – wild oat
* *Briza maxima* – big quakinggrass
* *Bromus diandrus* – ripgut brome
* *Bromus hordeaceus* – soft brome
* *Ehrharta erecta* – panic veldtgrass

*Elymus condensatus* – giant wild rye

*Elymus triticoides* – creeping ryegrass

* *Festuca perennis* – perennial rye grass
* *Hordeum murinum* – mouse barley

* signifies introduced (non-native) species

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# Attachment C

Wildlife Species Compendium

# Wildlife Species – Birds

## Bushtits

### Aegithalidae—Long-Tailed Tits and Bushtits

*Psaltriparus Minimus*—Bushtit

## Creepers

### Certhiidae—Creepers

*Certhia Americana*—Brown Creeper

## Flycatchers

### Tyrannidae—Tyrant Flycatchers

*Sayornis Nigricans*—Black Phoebe

## Hawks

### Accipitridae—Hawks, Kites, Eagles, and Allies

*Buteo Lineatus*—Red-Shouldered Hawk

## Hummingbirds

### Trochilidae—Hummingbirds

*Calypte Anna*—Anna's Hummingbird

## Jays, Magpies and Crows

### Corvidae—Crows and Jays

*Aphelocoma Californica*—California Scrub-Jay

*Corvus Brachyrhynchos*—American Crow

*Cyanocitta Stelleri*—Steller's Jay

## Pigeons and Doves

### Columbidae—Pigeons and Doves

*Zenaida Macroura*—Mourning Dove

## Titmice

### Paridae—Chickadees and Titmice

*Poecile Rufescens*—Chestnut-Backed Chickadee

## Wood Warblers and Allies

### Parulidae—Wood-Warblers

*Setophaga Townsendi*—Townsend's Warbler

## Woodpeckers

### Picidae—Woodpeckers and Allies

*Melanerpes Formicivorus*—Acorn Woodpecker

*Dryobates Nuttallii*—Nuttall's Woodpecker

*Dryobates Pubescens*—Downy Woodpecker

## New World Sparrows

### Passerellidae—New World Sparrows

*Junco Hyemalis*—Dark-Eyed Junco

*Melozone Crissalis*—California Towhee

*Zonotrichia Atricapilla*—Golden-Crowned Sparrow

# Invertebrates

## Butterflies

### Nymphalidae—Brush-Footed Butterflies

*Adelpha Bredowii*—California Sister

*Danaus Plexippus*—Monarch

*Vanessa Annabella*—West Coast Lady

# Mammals

## Hares and Rabbits

### Leporidae—Hares and Rabbits

*Sylvilagus Bachmani*—Brush Rabbit

## Squirrels

### SCIURIDAE—SQUIRRELS

*Sciurus Griseus*—Western Gray Squirrel

* *Sciurus Niger*—Eastern Fox Squirrel*

## Ungulates

### Cervidae—Deers

*Odocoileus Hemionus*—Mule Deer

# Reptiles

## Lizards

### Phrynosomatidae—Iguanid Lizards

*Sceloporus Occidentalis*—Western Fence Lizard

* Signifies Introduced (Non-Native) Species

# Attachment D

Special-Status Plant Species Potential to Occur

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Agrostis lacuna-vernalis* | vernal pool bent grass | None/None/1B.1 | Vernal pools (mima mounds)/annual herb/Apr–May/ 377–475 | **Not expected to occur.** The site is outside of the species' known elevation range. | N |
| *Allium hickmanii* | Hickman's onion | None/None/1B.2 | Closed-cone coniferous forest, Chaparral (maritime), Coastal prairie, Coastal scrub, Valley and foothill grassland/perennial bulbiferous herb/ Mar–May/16–655 | **Moderate potential to occur.** The closest known occurrences is within 1.3 miles of the project site. Bulb species can persist in understory for a long time. There is suitable habitat. | M |
| *Arctostaphylos edmundsii* | Little Sur manzanita | None/None/1B.2 | Coastal bluff scrub, Chaparral; sandy/ perennial evergreen shrub/Nov–Apr(May)/ 33–345 | **Not expected to occur.** Closest known occurrence to a project site is over 7.25 miles away. The project site does not contain suitable habitat. | N |
| *Arctostaphylos hookeri* ssp. *hookeri* | Hooker's manzanita | None/None/1B.2 | Closed-cone coniferous forest, Chaparral, Cismontane woodland, Coastal scrub; sandy/ perennial evergreen shrub/Jan–June/197–1,755 | **Moderate potential to occur.** The closest known occurrences is within 0.1 miles of the project site. There is suitable habitat. | M |
| *Arctostaphylos montereyensis* | Toro manzanita | None/None/1B.2 | Chaparral (maritime), Cismontane woodland, Coastal scrub; sandy/perennial evergreen shrub/ Feb–Mar/98–2,395 | **Not expected to occur.** Closest known occurrence to a project site is over 4.8 miles from theproject site. There is no suitable habitat. | N |

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Arctostaphylos pajaroensis* | Pajaro manzanita | None/None/1B.1 | Chaparral (sandy)/ perennial evergreen shrub/Dec–Mar/ 98–2,490 | **Not expected to occur.** While there is a known occurrence within 1 mile of the project site. There is no suitable habitat for this species. | N |
| *Arctostaphylos pumila* | sandmat manzanita | None/None/1B.2 | Closed-cone coniferous forest, Chaparral (maritime), Cismontane woodland, Coastal dunes, Coastal scrub; sandy, openings/ perennial evergreen shrub/Feb–May/ 10–675 | **High potential to occur.** There are three known locations of this species within 0.5 miles of the project site. There is suitable habitat for this species. | H |
| *Arenaria paludicola* | marsh sandwort | FE/SE/1B.1 | Marshes and swamps (freshwateror brackish); sandy, openings/perennial stoloniferous herb/ May–Aug/10–560 | **Not expected to occur.** The project sites do not contain suitable habitat. | N |
| *Astragalus tener* var. *titi* | coastal dunes milk-vetch | FE/SE/1B.1 | Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie (mesic); often vernally mesic areas/annual herb/Mar–May/ 3–165 | **Not expected to occur.** The project sites do not contain suitable habitat. | N |
| *Castilleja ambigua* var. *insalutata* | pink Johnny-nip | None/None/1B.1 | Coastal prairie, Coastal scrub/annual herb (hemiparasitic)/ May–Aug/0–330 | **Low potential to occu**r. CNDDB Occ. No. 12 for the Monterey Quad overlaps the project site and the population is noted as presumed extant. However, the project site does not contain much suitable habitat. | L |

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Centromadia parryi* ssp. *congdonii* | Congdon's tarplant | None/None/1B.1 | Valley and foothill grassland (alkaline)/ annual herb/May–Oct(Nov)/0–755 | **Not expected to occur**. The project sites do not contain suitable habitat. The closest occurrence is over 10 miles away. | N |
| *Chorizanthe minutiflora* | Fort Ord spineflower | None/None/1B.2 | Chaparral (maritime), Coastal scrub; Sandy openings/annual herb/Apr–July/ 180–490 | **Not expected to occur**. The project sites do not contain suitable habitat. The closest occurrence is over 7 miles away. | N |
| *Chorizanthe pungens* var. *pungens* | Monterey spineflower | FT/None/1B.2 | Chaparral (maritime), Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland; sandy/ annual herb/Apr–June(July–Aug)/ 10–1,475 | **Low potential to occur**. CNDDB Occ. No. 17 for the Monterey Quad overlaps the project site and the population is noted as presumed extant. However, the project site does not contain much suitable habitat. | L |
| *Clarkia jolonensis* | Jolon clarkia | None/None/1B.2 | Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland/annual herb/Apr–June/ 66–2,165 | **Low potential to occur**. CNDDB Occ. No. 13 for the Monterey Quad overlaps the project site however the population is extirpated. The closest extant population is over 7.5 miles from the project site. | L |
| *Collinsia multicolor* | San Francisco collinsia | None/None/1B.2 | Closed-cone coniferous forest, Coastal scrub; sometimes serpentinite/annual herb/(Feb)Mar–May/ 98–902 | **High potential to occur**. CNDDB Occ. No. 1 for the Monterey Quad overlaps the project site and the population is noted as presumed extant. There is suitable habitat. | H |

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Cordylanthus rigidus* ssp. *littoralis* | seaside bird's-beak | None/SE/1B.1 | Closed-cone coniferous forest, Chaparral (maritime), Cismontane woodland, Coastal dunes, Coastal scrub; sandy, often disturbed sites/annual herb (hemiparasitic)/ Apr–Oct/0–1,685 | **Low potential to occur.** The project sites does have suitable habitat. However the closest known extant occurnaces are over 5.3 miles. | L |
| *Delphinium californicum* ssp. *interius* | Hospital Canyon larkspur | None/None/1B.2 | Chaparral (openings), Cismontane woodland (mesic), Coastal scrub/perennial herb/ Apr–June/640–3,590 | **Not expected to occur.** The site is outside of the species' known elevation range. | N |
| *Delphinium hutchinsoniae* | Hutchinson's larkspur | None/None/1B.2 | Broadleafed upland forest, Chaparral, Coastal prairie, Coastal scrub/ perennial herb/ Mar–June/0–1,400 | **Low potential to occur**. CNDDB Occ. No. 9 for the Monterey Quad overlaps the project site and the population is noted as presumed extant. However, the project site does not contain much suitable habitat. | L |
| *Ericameria fasciculata* | Eastwood's goldenbush | None/None/1B.1 | Closed-cone coniferous forest, Chaparral (maritime), Coastal dunes, Coastal scrub; sandy, openings/perennial evergreen shrub/ July–Oct/98–900 | **Low potential to occur.** The project sites does have suitable habitat. The closest known occurrences are 0.5 mile away. | L |
| *Eriogonum nortonii* | Pinnacles buckwheat | None/None/1B.3 | Chaparral, Valley and foothill grassland; sandy, often on recent burns/annual herb/(Apr)May–Aug(Sep)/984–3,195 | **Not expected to occur.** The site is outside of the species' known elevation range. | N |

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Erysimum ammophilum* | sand-loving wallflower | None/None/1B.2 | Chaparral (maritime), Coastal dunes, Coastal scrub; sandy, openings/perennial herb/Feb–June/ 0–195 | **Not expected to occur.** There is not suitable habitat for this species | N |
| *Erysimum menziesii* | Menzies wallflower | FE/SE/1B.1 | Coastal dunes/ perennial herb/ Mar–Sep/0–115 | **Not expected to occur.** While there are a few known occurrences within 0.5 mile of the project site. This species has specific habitat requirements and the project site does not contain suitable habitat. | N |
| *Fritillaria liliacea* | fragrant fritillary | None/None/1B.2 | Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland; Often serpentinite/perennial bulbiferous herb/ Feb–Apr/10–1,345 | **Not expected to occur.** This species has specific habitat requirements and the project site does not contain suitable habitat. | N |
| *Gilia tenuiflora* ssp. *arenaria* | Monterey gilia | FE/ST/1B.2 | Chaparral (maritime), Cismontane woodland, Coastal dunes, Coastal scrub; sandy, openings/ annual herb/ Apr–June/0–150 | **Moderate potential to occur.** There are 4 known occurrences within 0.5 mile of the project site. However, suitable habitat would be most likely in forest canopy openings. | M |
| *Hesperocyparis goveniana* | Gowen cypress | FT/None/1B.2 | Closed-cone coniferous forest, Chaparral (maritime)/ perennial evergreen tree/N.A./98–985 | **Not expected to occur.** Closest known occurrence to a project site is over 3.7 miles from the project site. This species is an evergreen tree so would be easily detected if it was present. | N |

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Hesperocyparis macrocarpa* | Monterey cypress | None/None/1B.2 | Closed-cone coniferous forest/ perennial evergreen tree/N.A./33–100 | **Not expected to occur.** This species is present in the project site but is naturalized. This species only occurs in two natural stands in Monterey County (not in the project site). The species is widely planted and naturalized elsewhere on the coast and beyond. | N |
| *Horkelia cuneata* var. *sericea* | Kellogg's horkelia | None/None/1B.1 | Closed-cone coniferous forest, Chaparral (maritime), Coastal dunes, Coastal scrub; sandy or gravelly, openings/ perennial herb/ Apr–Sep/33–655 | **Moderate potential to occu**r. CNDDB Occ. No. 8 for the Monterey Quad overlaps the project site and the population is noted as presumed extant. There is suitable habitat especially along forest edges and in canopy openings. | M |
| *Horkelia marinensis* | Point Reyes horkelia | None/None/1B.2 | Coastal dunes, Coastal prairie, Coastal scrub; sandy/ perennial herb/ May–Sep/16–2,475 | **Not expected to occur.** The project sites do not contain suitable habitat and there are no known occurrences nearby. | N |
| *Lasthenia conjugens* | Contra Costa goldfields | FE/None/1B.1 | Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools; mesic/ annual herb/ Mar–June/0–1,540 | **Not expected to occur.** The project sites do not contain suitable habitat and there are no known occurrences nearby. | N |
| *Layia carnosa* | beach layia | FE/SE/1B.1 | Coastal dunes, Coastal scrub (sandy)/annual herb/ Mar–July/0–195 | **Low potential to occu**r. There are two known occurrences within 0.5 miles of the project site. However, the project site does not contain much suitable habitat. | L |
| *Lupinus tidestromii* | Tidestrom's lupine | FE/SE/1B.1 | Coastal dunes/ perennial rhizomatous herb/Apr–June/ 0–330 | **Low potential to occu**r. There are seven known occurrences within 1.0 mile of the project site. However, the project site does not contain much suitable habitat. | L |

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Malacothamnus palmeri* var. *involucratus* | Carmel Valley bush-mallow | None/None/1B.2 | Chaparral, Cismontane woodland, Coastal scrub/perennial deciduous shrub/ Apr–Oct/98–3,605 | **Moderate potential to occu**r. CNDDB Occ. No. 20 for the Monterey Quad overlaps the project site and the population is noted as presumed extant. However, the project site does not contain much suitable habitat. | M |
| *Microseris paludosa* | marsh microseris | None/None/1B.2 | Closed-cone coniferous forest, Cismontane woodland, Coastal scrub, Valley and foothill grassland/ herb/Apr–June(July)/ 16–1,160 | **High potential to occu**r. CNDDB Occ. No. 3 for the Monterey Quad overlaps the project site and the population is noted as presumed extant. There is suitable habitat for this species. | H |
| *Monardella sinuata* ssp. *nigrescens* | northern curly-leaved monardella | None/None/1B.2 | Chaparral (SCR Co.), Coastal dunes, Coastal scrub, Lower montane coniferous forest (SCR Co., ponderosa pine sandhills); Sandy./ annual herb/(Apr)May–July(Aug–Sep)/0–985 | **High potential to occu**r. CNDDB Occ. No. 4 for the Monterey Quad overlaps the project site and the population is noted as presumed extant. There is suitable habitat for this species. | H |
| *Pinus radiata* | Monterey pine | None/None/1B.1 | Closed-cone coniferous forest, Cismontane woodland/perennial evergreen tree/ N.A./82–605 | **Present.** This species is present in the project site and is within the CNDDB occurrence of its estimated historic range on the Monterey peninsula.The species is widely planted and naturalized elsewhere. | P |
| *Piperia yadonii* | Yadon's rein orchid | FE/None/1B.1 | Coastal bluff scrub, Closed-cone coniferous forest, Chaparral (maritime); sandy/perennial herb/(Feb)May–Aug/33–2,475 | **Present.**CNDDB Occ. No. 4 for the Monterey Quad states that there is a known population in the project site. | P |

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Potentilla hickmanii* | Hickman's cinquefoil | FE/SE/1B.1 | Coastal bluff scrub, Closed-cone coniferous forest, Meadows and seeps (vernally mesic), Marshes and swamps (freshwater)/perennial herb/Apr–Aug/ 33–490 | **Moderate potential to occur**. There is a known occurrence within 0.6 miles of the project site. There is suitable habitat. | M |
| *Ramalina thrausta* | angel's hair lichen | None/None/2B.1 | North Coast coniferous forest; On dead twigs and other lichens/fruticose lichen (epiphytic)/ N.A./246–1,410 | **Moderate potential to occur**. There is a known occurrence within 1.4 miles of the project site. There is suitable habitat. | M |
| *Rosa pinetorum* | pine rose | None/None/1B.2 | Closed-cone coniferous forest, Cismontane woodland/perennial shrub/May,July/ 7–3,100 | **Moderate potential to occur**. There are two known occurrence within 0.6 miles of the project site. There is suitable habitat. | M |
| *Trifolium buckwestiorum* | Santa Cruz clover | None/None/1B.1 | Broadleafed upland forest, Cismontane woodland, Coastal prairie; gravelly, margins/annual herb/ Apr–Oct/344–2,000 | **Not expected to occur**. The site is outside of the species' known elevation range. | N |
| *Trifolium hydrophilum* | saline clover | None/None/1B.2 | Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools/annual herb/ Apr–June/0–985 | **Low potential to occur**. CNDDB Occ. No. 20 for the Monterey Quad overlaps the project site. This based on a 1907 herbarium collection. However, the project site does not contain much suitable habitat. | L |

| Scientific Name | Common Name | Status (Federal/State) | Habitat | Potential to Occur | PTO |
|---|---|---|---|---|---|
| *Trifolium polyodon* | Pacific Grove clover | None/SR/1B.1 | Closed-cone coniferous forest, Coastal prairie, Meadows and seeps, Valley and foothill grassland; mesic, sometimes granitic/ annual herb/Apr–June(July)/16–1,390 | **Moderate potential to occu**r. There is a known occurrence within 0.5 miles of the project site. There is suitable habitat. | M |
| *Trifolium trichocalyx* | Monterey clover | FE/SE/1B.1 | Closed-cone coniferous forest (sandy, openings, burned areas)/annual herb/Apr–June/ 98–1,000 | **Moderate potential to occu**r. There is are several known occurances within 2 miles of the project site. There is suitable habitat. | M |

# Attachment E

Special-Status Wildlife Species Potential to Occur

| Row Labels | Common Name | Status (Federal/State) | Habitat | Potential to Occur |
|---|---|---|---|---|
| **Amphibians** | | | | |
| *Ambystoma californiense* pop. 1 | California tiger salamander - central California DPS | FT/ST, WL | Annual grassland, valley–foothill hardwood, and valley–foothill riparian habitats; vernal pools, other ephemeral pools, and (uncommonly) along stream courses and man-made pools if predatory fishes are absent | **Not expected to occur.** The project site lacks grassland, vernal pool, and ephemeral pool habitat to support this species. There are no California Natural Diversity Database (CNDDB) occurrences for this species within 5 miles of the project site (CDFW 2021). |
| *Rana boylii* | foothill yellow-legged frog | None/SSC, SE | Rocky streams and rivers with open banks in forest, chaparral, and woodland | **Not expected to occur.** The project site lacks rocky streams and rivers to support this species. The nearest CNDDB occurrence for this species is approximately 1.5 miles southwest of the project site in Sawmill Gulch (CDFW 2021). |
| *Rana draytonii* | California red-legged frog | FT, BCC/SSC | Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands | **Not expected to occur.** The project site lacks suitable stream wetland, livestock pond and emergent vegetated habitat to support this species. The nearest CNDDB occurrence is approximately 2.4 miles southwest of the project site in Seal Rock Creek (CDFW 2021). |
| *Taricha torosa* (Monterey Co. south only) | California newt | None/SSC | Wet forests, oak forests, chaparral, and rolling grassland | **Low potential to occur.** Although the project site contains suitable oak forest habitat to support this species, there is no aquatic breeding features to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| **Reptiles** | | | | |
| *Actinemys marmorata* | northwestern pond turtle | None/SSC | Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter | **Not expected to occur**. The project site lacks stream, pond, lake and reservoir habitat to support this species. The nearest CNDDB occurrence is approximately 0.8 miles southeast of the project site in Pacific Grove Reservoir (CDFW 2021). |

| Row Labels | Common Name | Status (Federal/State) | Habitat | Potential to Occur |
|---|---|---|---|---|
| *Anniella pulchra* | northern California legless lizard | None/SSC | Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils | **High potential to occur.** The project site contains suitable woodland habitat with sandy soils to support this species. This species was documented within the southwest corner of the project site in 2017 (Occ. No. 375) (CDFW 2021). |
| *Phrynosoma blainvillii* | Blainville's horned lizard | None/SSC | Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats | **Not expected to occur.** The project site does not contain suitable open sandy and coastal scrub habitat to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| **Birds** | | | | |
| *Agelaius tricolor* (nesting colony) | tricolored blackbird | None/SSC, ST | Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberrry; forages in grasslands, woodland, and agriculture | **Not expected to nest or forage.** The project site lacks freshwater emergent wetland nesting habitat and grassland foraging habitat for this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| *Athene cunicularia* (burrow sites & some wintering sites) | burrowing owl | None/SSC | Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows | **Not expected to nest or forage.** The project site lacks grassland and open scrub habitat for this species. The nearest CNDDB occurrence is approximately 3.5 miles southeast of the project site (CDFW 2021). |
| *Brachyramphus marmoratus* (nesting) | marbled murrelet | FT/SE | Nests in old-growth coastal forests, forages in subtidal and pelagic habitats | **Not expected to nest or forage.** The project site lacks old-growth forest to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |

| Row Labels | Common Name | Status (Federal/State) | Habitat | Potential to Occur |
|---|---|---|---|---|
| *Charadrius alexandrinus nivosus* (nesting) | western snowy plover | FT/SSC | On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds | **Not expected to nest or forage.** The project site lacks sandy marine and estuarine shore habitat to support this species. The nearest CNDDB occurrence for this species is approximately 4.6 miles east of the project site (CDFW 2021). |
| *Coturnicops noveboracensis* | yellow rail | None/SSC | Nesting requires wet marsh/sedge meadows or coastal marshes with wet soil and shallow, standing water | **Not expected to nest or forage.** The project site lacks wet marsh/sedge meadow habitat to support this species. The nearest CNDDB occurrence for this species is approximately 0.9 miles northwest of the project site (CDFW 2021). |
| *Cypseloides niger* (nesting) | black swift | None/SSC | Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats | **Not expected to nest or forage.** The project site lacks moist crevices, caves and cliffs behind waterfalls to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| *Elanus leucurus* (nesting) | white-tailed kite | None/FP | Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands. | **Moderate potential to nest on site.** The project site contains several suitable nesting trees for this species (*Quercus* spp., *Pinus* spp., etc.), however, foraging habitat is limited and the project site is surrounded by residential development. There are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| *Empidonax traillii extimus* (nesting) | southwestern willow flycatcher | FE/SE | Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration | **Not expected to nest or forage.** The project site lacks dense riparian habitat to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |

| Row Labels | Common Name | Status (Federal/State) | Habitat | Potential to Occur |
|---|---|---|---|---|
| *Gymnogyps californianus* | California condor | FE/FP, SE | Nests in rock formations, deep caves, and occasionally in cavities in giant sequoia trees (Sequoiadendron giganteus); forages in relatively open habitats where large animal carcasses can be detected | **Not expected to nest or forage.** The project site lacks rock formations, deep caves, and open habitat to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| *Laterallus jamaicensis coturniculus* | California black rail | None/FP, ST | Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations | **Not expected to nest or forage.** The project site lacks tidal marsh and wet meadow habitat to support this species. The nearest CNDDB occurrence for this species is approximately 1.2 miles southwest of the project site (CDFW 2021). |
| *Oceanodroma homochroa* (nesting colony) | ashy storm-petrel | None/SSC | Nests on rocky offshore islands on talus slopes, rock walls, sea caves, cliffs, and under piles of driftwood; they do not excavate their own nesting burrows | **Not expected to nest or forage.** The project site lacks rocky talus slope habitat to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| *Pelecanus occidentalis californicus* (nesting colonies & communal roosts) | California brown pelican | FPD/FP, SCD | Forages in warm coastal marine and estuarine environments; in California, nests on dry, rocky offshore islands | **Not expected to nest or forage.** The project site lacks coastal marine and estuarine habitat to support this species. The nearest CNDDB occurrence for this species is approximately 1.2 miles southwest of the project site (CDFW 2021). |
| *Riparia riparia* (nesting) | bank swallow | None/ST | Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration | **Not expected to nest or forage.** The project site lacks riparian, lacustrine and coastal habitat to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |

| Row Labels | Common Name | Status (Federal/State) | Habitat | Potential to Occur |
|---|---|---|---|---|
| *Sternula antillarum browni* (nesting colony) | California least tern | FE/FP, SE | Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats | **Not expected to nest or forage.** The project site lacks shallow estuary and lagoon habitat to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| *Vireo bellii pusillus* (nesting) | least Bell's vireo | FE/SE | Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season | **Not expected to nest or forage.** The project site lacks dense riparian habitat to support this species. Additionally, there are no CNDDB occurences for this species within 5 miles of the project site (CDFW 2021). |
| **Fishes** | | | | |
| *Eucyclogobius newberryi* | tidewater goby | FE/None | Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River | **Not expected to occur.** Aquatic habitat to support this species is absent from the project site. |
| *Lavinia exilicauda harengus* | Pajaro/Salinas hitch | None/SSC | Found in Pajaro and Salinas river systems, both tributary to Monterey Bay. | **Not expected to occur.** Aquatic habitat to support this species is absent from the project site. |
| *Oncorhynchus mykiss irideus* pop. 9 | steelhead - south-central California coast DPS | FT/None | Coastal basins from Redwood Creek south to the Gualala River, inclusive; does not include summer-run steelhead | **Not expected to occur.** Aquatic habitat to support this species is absent from the project site. |

| Row Labels | Common Name | Status (Federal/State) | Habitat | Potential to Occur |
|---|---|---|---|---|
| **Mammals** | | | | |
| *Corynorhinus townsendii* | Townsend's big-eared bat | None/SSC | Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels | **Moderate potential to occur.** Although the project site contains suitable coniferous and deciduous forest habitat, limestone caves, lava tubes, and man-made strcutres are absent from the site for roosting. However, the species may forage on the site from time to time. There are no documented CNDDB occurences of this species within 5 miles of the project site (CDFW 2021). |
| *Eumetopias jubatus* | Steller (=northern) sea-lion | FPD/SSC | Beaches, ledges, and rocky reefs | **Not expected to occur.** Habitat for this species is absent from the project site. |
| *Lasiurus blossevillii* | Western red bat | None/SSC | Roosts primarily in trees, typically adjacent to open fields or streams, which are protected above and open below for foraging; prefers habitat edges and mosaics with trees. Winter range includes western lowlands and coastal regions south of San Francisco Bay. | **High potential to occur.** The numerous trees on the project site are suitable for roosting by this species. |
| *Sorex ornatus salarius* | Monterey shrew | None/SSC | Saltmarsh, riparian, wetlands, uplands of Salinas River Delta | **Not expected to occur.** Saltmarsh and riparian habitat for this species is absent from the project site. This species has been documented in the vicinity of Monterey (CDFW 2021). |
| *Taxidea taxus* | American badger | None/SSC | Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils | **Not expected to occur.** The project site is too densely forested to support this species, and grassland/coastal scrub habitats are absent from the site. This species has been documented in the vicinity of Seaside (CDFW 2021). |

| Row Labels | Common Name | Status (Federal/State) | Habitat | Potential to Occur |
|---|---|---|---|---|
| **Invertebrates** | | | | |
| *Branchinecta lynchi* | vernal pool fairy shrimp | FT/None | Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats | **Not expected to occur.** Vernal pool and ephemeral freshwater habitats to support this species is absent from the project site. |
| *Danaus plexippus* pop. 1 | monarch butterfly | FC/None | Wind-protected tree groves with nectar sources and nearby water sources | **Present.** The project site contains suitable habitat for this species, and the species was observed on site during the October 2021 site visit. Additionally, numerous observations of this species has been made from 1960-2014 (Occ. No. 89) (CDFW 2021). |
| *Euphilotes enoptes smithi* | Smith's blue butterfly | FE/None | Sand dunes, scrub, chaparral, grassland, and their ecotones | **Not expected to occur.** The project site does not contain suitable sand dune, scrub, chaparral, or grassland habitat to support this species. The nearest documented CNDDB occurrence of this species is approximately 4 miles southeast of the project site (CDFW 2021). |

# Methods

## Literature Review

Special-status species potentially present on the project site were identified through a literature search of the following sources: U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) (USFWS 2021), California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2021a), and the California Native Plant Society's Inventory of Rare and Endangered Plants of California (CNPS 2021). Searches of the above-referenced databases were completed for the Monterey and four surrounding U.S. Geological Survey 7.5-minute quadrangles: Seaside, Soberanes Point, Marina, and Mt. Carmel.

For this report, special-status plant and wildlife species are defined as those that are (1) listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act; (2) listed or candidates for listing as threatened or endangered under the California Endangered Species Act; (3) designated as Fully Protected under the California Fish and Game Code; (4) designated as a California Species of Special Concern by CDFW; or (5) assigned a California Rare Plant Rank of 1A, 1B, 2A or 2B by the California Native Plant Society. The California Rare Plant Ranking (CRPR) system includes six rarity and endangerment ranks for categorizing plant species of concern, as follows:

- CRPR 1A – Plants presumed to be extinct in California
- CRPR 1B – Plants that are rare, threatened, or endangered in California and elsewhere
- CRPR 2A – Plants presumed to be extinct in California, but more common elsewhere
- CRPR 2B – Plants that are rare, threatened, or endangered in California, but more common elsewhere
- CRPR 3 – Plants about which more information is needed (a review list)
- CRPR 4 – Plants of limited distribution (a watch list)

Plants with CRPR 1A, 1B, 2A, or 2B may qualify as endangered, rare, or threatened species within the definition of California Environmental Quality Act (CEQA) Guidelines Section 15380. CDFW recommends that potential impacts to CRPR 1 and 2 species be evaluated in CEQA review documents. In general, CRPR 3 and 4 species do not meet the definition of endangered, rare, or threatened pursuant to CEQA Guidelines Section 15380, but these species may be evaluated on a case-by-case basis.

## Field Reconnaissance

Following the literature review, Dudek Urban Forestry Specialist Michele Laskowski and Biologist Emily Scricca determined the potential for special-status species to occur within the project site. Determinations were based on a review of habitat types, soils, and elevation preferences, as well as the known geographic range of each species. For example, if the project site is within the elevation range of a particular plant species, but a specific soil type for that species was not present, the species was determined to have "low potential to occur" on the project site.

Species were considered "not expected to occur" when the project site was clearly outside the known geographic range of the species or when potential habitat was absent from the project site.

Ms. Laskowski performed a tree inventory and special-status plant habitat assessment on the project site on October 5, 2021 from 9 a.m. to 4 p.m. and on October 8, 2021 from 9 a.m. to 4 p.m. Weather during the site visits was overcast with an ambient temperature of approximately 65°F. The survey consisted of walking the entire site on foot and recording field notes on observed vegetation and wildlife species and habitat suitability for special-status plants.

Ms. Scricca performed a biological field reconnaissance of the project site on October 21, 2021, from 10:30 a.m. to 12:30 p.m. Weather during the site visit was partly cloudy, with an ambient temperature of approximately 65°F at the start and 72°F at the completion of the field visit. The site visit included mapping vegetation communities and land cover types present on the project site and assessing habitat for special-status wildlife species. The visit was conducted on foot to ensure visual coverage of the entire project site. Field notes and an aerial photograph (Google Earth Pro 2021) with an overlay of the project boundary were used to map vegetation communities and record any sensitive biological resources while in the field. Representative project site photographs are included in Attachment A.

All plant species were identified to the lowest taxonomic group possible. Nomenclature for plant species follow the Jepson Manual, Vascular Plants of California, Second Edition (Jepson Flora Project 2021).

Wildlife species detected by sight, calls, tracks, scat, or other signs were recorded into a field notebook. The project site was scanned with and without binoculars to aid in the identification of wildlife. Wildlife species not observed but expected to use the project site were identified based on known habitat preferences and regional distribution.

No formal wetland delineation or focused surveys for special-status plant or animal species were conducted. The field visit was sufficient to generally describe aquatic features on the project site that could be subject to regulation by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or CDFW.

# Existing Conditions

## Vegetation Communities and Land Cover Types

The project site is mostly undeveloped parkland except for a community baseball field, restroom facility, and playground at the southern boundary of the site. This area is surrounded by dirt pedestrian trails and scattered picnic tables mixed amongst individual coast live oak (*Quercus agrifolia),* Monterey cypress (*Hesperocyparis macrocarpa*), Monterey pine (*Pinus radiata*), and coast redwood (*Sequoia sempervirens*) trees.

The remainder of the site is dominated by the Monterey cypress – Monterey pine stands (*Hesperocyparis macrocarpa – Pinus radiata* Forest & Woodland Semi-Natural Alliance) (Figure 3, Vegetation Communities and Land Cover Types). This vegetation community is dominated by a Monterey cypress and Monterey pine overstory with a lower canopy dominated by coast live oak. Common understory vegetation includes a shrub layer that is sparse to intermittent and an herbaceous layer that is sparse to grassy. Monterey cypress – Monterey pine stands have been

planted as windbreaks, groves, or individual trees and are naturalized in coastal areas. Because of their artificial origin, they do not contain a global or state rarity ranking.

## Soils and Hydrology

According to the U.S. Department of Agriculture Natural Resources Conservation Service (USDA 2021), three soil types occur within the project site: Baywood sand, 2 to 15 percent slopes; Narlon loamy fine sand, 2 to 9 percent slopes; and Narlon loamy fine sand, 15 to 30 percent slopes (see Figure 4, Soils). The project site mostly consists of the Narlon loamy fine sand complex; the Baywood sand soil type is found along the southwestern boundary of the site, north of the baseball field. The Narlon loamy fine sand complexes are considered to be poorly drained hydric soils with a very high runoff class. Baywood sand in non-hydric, although hydric inclusions may occur. None of the soil types are known to support edaphic special-status plant species (i.e., the soils of the site are neither serpentine nor alkaline).

The project site lies within the Soberanes Creek-Frontal Pacific Ocean Hydrologic Unit (HUC 12 180600060203) (Figure 5, Hydrologic Setting). An unnamed drainage is located approximately 0.25 miles south of the project site, originating from within the Rip Van Winkle Open Space, and ultimately drains into the Pacific Ocean, a traditional navigable water of the United States. According to the U.S. Geological Survey National Hydrography Dataset (USGS 2021), predefined waters of the United States or state are absent from the project site.

## Plant and Wildlife Species Observed

Most vegetation on the project site consists of native or naturalized species; 47 species of plants (28 native [60%] and 19 nonnative [40%] species) were recorded on the site (see Attachment B). The field visit was conducted late in the growing season when many plants are not evident or identifiable. As such, floristic surveys conducted at the appropriate time of the growing season would likely yield a greater number of identifiable species. The understory vegetation observed on the project site included annual grasses such as ripgut brome (*Bromus hordeaceus),* big quakinggrass (*Briza maxima*), wild oats (*Avena barbata/fatua*),perennial rye grass (*Festuca perennis*), mouse barley (*Hordeum murinum)* and others. Perennials, subshrubs and shrubs include blackberry (*Rubus ursinus*), toyon (*Heteromeles arbutifolia*), poison oak (*Toxicodendron diversilobum*), monkey flower (*Diplacus aurantiacus*), western brakenfern (*Pteridium aquilinum*), English ivy (*Hedra helix*), hedgenettle (*Stachys bullata*), broom (*Cytisus scoparius*), vining honeysuckle (*Lonicera hispidula*) and others.

Wildlife species observed or expected to occur on the project site are those that are adapted to forested parklands, Monterey cypress – Monterey pine stands, and urban landscapes with moderate human activity. Western fence lizard (*Sceloporus occidentalis*) was the only amphibian or reptile species observed during the site visit, although common species such as Sierran tree frog (*Pseudacris sierra*), gopher snake (*Pituophis catenifer*), and western rattlesnake (*Crotalus oreganus*) are also likely to occur. Common bird species observed included black phoebe (*Sayornis nigricans*), red-shouldered hawk (*Buteo lineatus*), Anna's hummingbird (*Calypte anna*), California scrub-jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), dark-eyed junco (*Junco hyemalis*), and California towhee (*Melozone crissalis*). Scat belonging to black-tailed deer (*Odocoileus hemionus*) was observed throughout the project site. A full list of wildlife species observed during the site visit is included in Attachment C.

# Results

## Special-Status Plant and Wildlife Species

### Special-Status Plant Species

Results of the CNDDB, California Native Plant Society, and IPaC database searches revealed 75 special-status plant species as historically or potentially occurring in the site vicinity (Attachment D, Special-Status Plant Species Potential to Occur). Of these, 31 were eliminated from consideration because they were CRPR rankings of 3 and 4. This narrowed the list to include plants that are state and federally listed and/or with a CRPR of 1 or 2.

Each of the remaining 44 species were evaluated based on suitable habitat or edaphic conditions (i.e., alkaline or serpentine soils), or the sites' location outside of their known range and the proximity of known populations to the project areas. The site supports planted Monterey cypress but is outside the range of naturally occurring stands at Cypress Point and Point Lobos State Park near Carmel with a CRPR of 1B.2; therefore, this species is not expected to occur. Two special-status plant species are known to occur on or near the project site: Monterey pine (*Pinus radiata*) and Yadon's rein orchid (*Piperia yadonii*). Four species were determined to have a high potential to occur in the project site. Those include sandmat manzanita (*Arctostaphylos pumila*), San Francisco collinsia (*Collinsia multicolor*), marsh microseris (*Microseris paludosa*), northern curly-leaved monardella (*Monardella sinuata ssp. nigrescens*). The status of these species is briefly discussed below.

Marsh microseris has a CRPR of 1B.2 and is a perennial herb with a high potential to occur on the site. It occurs in closed-cone coniferous forest, cismontane woodland, and coastal scrub habitat. The project site overlaps an area of known occurrence of this species. A historical occurrence comprised of four collections at unspecified locations in "Pacific Grove" from 1906 to 1956 overlaps much of Pacific Grove, including the project site (Occ. No. 3; CDFW 2021a).

Native Monterey cypress has a CRPR of 1B.2 and is limited to two stands at Cypress Point and Point This species occurs on the project site but is naturalized and therefore the on-site trees are not considered special-status plants. The species is widely planted and naturalized elsewhere on the coast and beyond.

Native Monterey pine has a CRPR of 1B.1 and is present on the project site. The trees in this location are within the estimated historic range of this species as mapped by the CNDDB (Occ. No. 4) (CDFW 2021a) and are naturally occurring. The species is widely planted and naturalized elsewhere. Records provided by the City of Pacific Grove indicate that this stand of Monterey pine has been present on the site since the beginning of the 20th Century.

Northern curly-leaved monardella has a CRPR of 1B.2 and is a perennial herb with a high potential to occur on the site. This species occurs in chaparral, lower montane coniferous forest, coastal scrub and coastal dunes. The collection source for the CNDDB occurrence of this species in the area is from 1932 so the location description is based on a best guess (Occ. No. 4) (CDFW 2021a). It is likely to be found on stabilized dunes in the vicinity.

Sandmat manzanita has a CRPR of 1B.2 and is a perennial evergreen shrub with a high potential to occur on the site. This species has three known populations within 0.5 mile of the project site. Within those locations the species has been extensively mapped and a noted increase in population density from 2004 to 2015 (Occ. Nos. 9, 14, and 20) (CDFW 2021a).

San Francisco collinsia has a CRPR or 1B.2 and is an annual herb with a high potential to occur on the site. This species occurs in closed-cone coniferous forest and coastal scrub habitat. A historical occurrence comprised of a 1903 collection at an unspecified location overlaps a 1-mile-radius area centered on Pacific Grove, including the project site (Occ. No. 3; CDFW 2021a). The site provides high-quality habitat for this species.

Yadon's rein orchid is federally endangered with the CRPR or 1B.1. It is a perennial herb that is known to occur in closed cone coniferous forest, coastal bluff scrub and chaparral. It is known to occur on the project site (Occ. No. 4) (CDFW 2021a) and there are multiple occurrences in the vicinity. It has been noted as occurring in the understory of Monterey pine within patchy but dense *Calamagrostis nutkensis* (CDFW 2021a). It was noted that the roadside mowing and vehicles parking along the road are a threat to this species.

Because the site visits were conducted outside of the blooming period for the above-mentioned plant species, most of these species would not have been evident or identifiable during the site visit.

### Special-Status Wildlife Species

Based on the results of the CNDDB and IPaC database searches and field reconnaissance, Dudek identified 33 special-status wildlife species as occurring or potentially occurring in the region of the project site (Attachment E, Special-Status Wildlife Species Potential to Occur). Of these, 28 species were eliminated from consideration due to the absence of suitable habitat and/or the project site's location outside of their known range. The remaining species have some potential to occur within or near the project site and are described in more detail below.

#### *Northern California Legless Lizard*

Northern California legless lizard (*Anniella pulchra*) is a California species of special concern. This species is a fossorial (i.e., burrowing) animal and is found primarily in areas with sandy or loose soils, where they typically are found beneath leaf litter and in the soil (Holland and Goodman 1998; Morey 2000). This species may be found in sparsely vegetated areas in a variety of habitats, including beach dunes; chaparral; California sagebrush scrub; oak woodlands; pine forests; pine–oak woodland; sandy washes; and stream terraces with sycamores, cottonwoods, or oaks (Morey 2000; Stebbins 2003; Holland and Goodman 1998).

This species was documented within sandy soil within the southwest corner of the project site in 2017 (Occ. No. 375) (CDFW 2021a). The project site contains suitable woodland habitat with sandy soils to support this species. This species was not observed in the study area during the site survey; however, there is high potential for it to be present.

#### *White-Tailed Kite*

The white-tailed kite (*Elanus leucurus*) is a California Fully Protected species. It generally occurs in low-elevation grassland, wetland, oak woodland, low shrub, open woodlands, or savannah habitats. This species also uses fencerows, irrigation ditches with residual vegetation, and freeway edges and medians. Nests are constructed in a variety of trees, with coast live oak perhaps the most common, and placed high in the crown on thin branches (Peeters and Peeters 2005).

White-tailed kite has a moderate potential to nest within the project site. The project site contains suitable nest trees (*Quercus* spp., *Pinus* spp., etc.), however foraging habitat is marginal due to the lack of open habitat and

density of trees on the site, and the site is immediately surrounded by residential development. This species was not observed during any of Dudek's site visits and has not been documented in the CNDDB within 5 miles of the project site (CDFW 2021a). However, there are several recent eBird observations of this species within and adjacent to the project site from 2015-2021, including one observation from 2019 within the middle of the project site (eBird 2021).

### *Special-Status Bats*

Townsend's big-eared bat *(Corynorhinus townsendii*) is a California Species of Special Concern that is known to roost in limestone caves and lava tubes, man-made structures, and tunnels. This species inhabits deciduous forests and riparian habitat. The project site does not contain suitable roosting habitat for this species due to the lack of man-made structures and caves onsite, however, there is moderate potential for this species to occasionally forage on site and roost within the structures adjacent to the project site. Because the project site is surrounded by urban development and subject to frequent human disturbance, Townsend's big-eared bat is unlikely to occur in large numbers, if present.

The numerous trees on the site provide suitable roosting habitat for special-status (e.g., western red bat) and common foliage-roosting bat species. Additionally, many of the trees on site contain hollowed out cavities in which common bat species may roost.

Signs of roosting bat occupancy (i.e., guano or staining) were not observed within the project site during the field visit.

### *Special-Status Butterflies*

The monarch butterfly (*Danaus plexippus pop. 1*) is a candidate species for listing under the federal Endangered Species Act. This species is known to inhabit wind-protected tree groves with nectar sources and nearby water sources.

The project site contains suitable habitat for this species, and there are numerous documented occurrences of this species within the site from 1960-2014 (Occ. No. 89) (CDFW 2021a). Additionally, this species was observed within the project site during the October site visits.

This project site is within the historic overwintering range for this species. There is a growing body of research that examines the characteristics that create suitable overwintering habitat for this species. Loss of overwintering habitat is one among several identified stressors that may be driving the monarch population decline. The Xerces Society recognizes the Pacific Grove Sanctuary, approximately 900 feet northwest of the site, among the top ten highest priority overwintering sites remaining in California (Xerces 2020).

## Nesting and Migratory Birds

In California, all native active bird nests (with eggs or young) are protected by provisions in the federal Migratory Bird Treaty Act of 1918 and Sections 3503 and 3503.5 of the California Fish and Game Code. The trees and shrubs within and adjacent to the project site provide suitable nesting habitat for several native local and migratory bird species.

## Potentially Jurisdictional Aquatic Resources

The project site does not support any aquatic resource features that may be regulated by the USACE under Section 404 of the Clean Water Act, San Francisco Bay RWQCB under Section 401 of the Clean Water Act or California Porter-Cologne Act (Porter-Cologne), and/or CDFW under Section 1602 of the California Fish and Game Code.

## Sensitive Natural Communities

Sensitive natural communities are vegetation communities that are of limited distribution statewide or within a county or region. A list of sensitive natural communities in California is maintained by CDFW (2021b) based on rarity of and threats to these communities in California. Impacts on high-quality occurrences of sensitive natural communities are typically considered significant under the California Environmental Quality Act (CEQA).

The project site consists of one vegetation community, Monterey cypress – Monterey pine stands, which is not listed as a sensitive vegetation community under the California Natural Community List (CDFW 2021b).

## Protected Trees

Chapter 12.20.020 of the City of Pacific Grove's municipal code describes five categories of protected trees;

(1) Native Trees. All Gowen cypress, regardless of size; all Coast live oak, Monterey cypress, Shore pine, Torrey pine, and Monterey pine six inches or greater in trunk diameter, measured at 54 inches above native grade.

(2) All Other Private Trees. In addition to subsection (a)(1) of this section, all other Trees on private property, regardless of species, 12 inches or greater in trunk diameter, measured at 54 inches above native grade.

(3) Monarch Butterfly Habitat Trees. All Trees in or within 100 yards of designated Monarch sanctuaries. For the purposes of this title, the following sites are designated as Monarch sanctuaries, serving as official Pacific Grove Monarch butterfly over-wintering sites:

  (A) Monarch Grove Sanctuary. That portion of land bordered on the east and west by Ridge Road and Grove Acre Avenue, respectively, on the south by Short Street, and on the north by the northerly boundary of assessor's parcel numbers 006-361-30-031, -032, -033, and -034, extended from Grove Acre easterly to Ridge Road.

  (B) Washington Park Site. That portion of land bordered on the east and west by Alder Street and Melrose Avenue, respectively, on the north by Pine Avenue, and on the south by the imaginary extension of Junipero Avenue westerly from Alder to Melrose.

(4) Public Trees. All Trees on Public Property six inches or greater in trunk diameter, measured at 54 inches above native grade, and all Street Trees, regardless of size.

(5) Designated Trees. All Trees that are otherwise Protected and will be impacted as a result of Development, both proposed for Pruning or Removal and where the Development will impact the Critical Root Zone of the Tree that requires protection during construction, and all Trees otherwise identified- during Development or otherwise- for special protection by the property owner. Trees that are proposed to be Removed as part of a Development project shall be processed as part of the community.

Based on the forest inventory conducted by Dudek foresters, about two-thirds of the trees present within the project site would qualify as a protected tree by being a native tree (category 1), a public tree (category 2) or a Monarch Butterfly Habitat Tree (category 3) and being over 6 inches in diameter.

# Summary of Site Constraints and Recommendations

The implementation of the proposed project could potentially be constrained by the following biological resources present or potentially present within or immediately adjacent to the project site.

## Special-Status Plants

As described above, two special-status plants are known to occur within the project site (Monterey pine, and Yadon's rein orchid). Additionally, four special-status plants have a high potential to occur in within the project site (sandmat manzanita, San Francisco collinsia, marsh microseris, and northern curly-leaved monardella). Vegetation removal activities associated with project implementation could directly impact these species, if present. To protect special-status plant species, Dudek recommends that a qualified botanist conduct appropriately timed special-status plant surveys prior to vegetation removal activities at the appropriate period when these species are evident and identifiable. If any special-status plants are identified, they should be flagged with high-visibility flagging and completely avoided. If avoidance is not feasible, a species-specific mitigation plan should be prepared that describes the measures to be implemented to reduce and mitigate unavoidable impacts to special-status plants.

## Special-Status Wildlife

Four special-status wildlife species—Northern California legless lizard, white-tailed kite, Townsend's big-eared bat, and monarch butterfly—have potential to occur on or in the vicinity of the project site.

**Northern California legless lizard.** As previously described, the project site provides suitable habitat for Northern California legless lizard, and this species has historically been documented within the project site. Proposed vegetation removal activities could disturb habitat for this species, and potentially impact individual Northern California legless lizards. To prevent impacts to Northern California legless lizards, Dudek recommends that a qualified biologist conduct a pre-activity survey for this species no more than 7 days prior to the start of project activities. The survey shall consist of gently raking any loose soil, sand, or leaf litter with a wooden rake until all Northern California legless lizards are found. Any Northern California legless lizards found within the project site shall be relocated to similar habitat outside of the area of impact.

**White-Tailed Kite and Other Nesting and Migratory Birds.** As previously described, the project site provides suitable nesting habitat for white-tailed kite and other native bird species. If project activities occur during the nesting season (typically defined by CDFW as February 15 to September 1), direct impacts to white-tailed kite and nesting and migratory birds could occur through destruction of active nests. Additionally, prolonged loud vegetation removal noise and increases in human activity could disturb nesting birds, resulting in nest abandonment or failure. To protect white-tailed kite and nesting and migratory birds, Dudek recommends that a pre-activity nesting bird survey be conducted by a qualified biologist within 10 days prior to vegetation removal or ground-disturbance activities to determine if any native birds are nesting on or near the site (including a 250-foot buffer for white-tailed kite and other raptors). If any active nests are observed during surveys, a suitable avoidance buffer will be determined by

the qualified biologist based on species, location, and planned project activity. These nests would be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist.

**Townsend's Big-eared Bat and Other Roosting Bats.** As previously described, the project site provides suitable foraging habitat for Townsend's big-eared bat, and suitable roosting habitat for foliage-roosting, and cavity-roosting bat species. If project activities require the removal of trees during peak activity timeframes when young or overwintering bats may be present (generally March through April and August through October), such activities could directly impact active bat roosts. To avoid impacts to active bat roosts, Dudek recommends that tree removals occur outside peak activity timeframes to the extent practicable. Additionally, it is recommended that daily restrictions on the timing of any work activities should be limited to daylight hours to reduce disturbance to roosting (and foraging) bat species.

Finally, Dudek recommends that a biologist with demonstrated experience conducting bat habitat assessments and roost surveys conduct a focused survey of subject trees within 30 days of the commencement of vegetation management activities. The survey should include a determination on whether active bat roosts are present on or within 50 feet of the project site. If Townsend's big-eared bat is detected to be roosting within the project site, CDFW should be contacted for additional instruction. If a non-breeding and non-wintering common bat colony is found, the individuals shall be evicted under the direction of a qualified biologist to ensure their protection and avoid unnecessary harm. If a maternity colony or overwintering colony is found within the project site, then the qualified biologist shall establish a suitable work-free buffer around the location. The buffer shall remain in place until the qualified biologist determines that the nursery is no longer active.

**Monarch Butterfly.** As previously described, Monarch butterfly has been documented within the project site, and the species may use the project site for overwintering, nectar foraging and possible larval rearing should host plants occur within the site. Because the Monarch butterfly is a candidate species for listing under the federal Endangered Species Act (ESA), it does not currently receive any legal protection under Section 9 of the ESA but any direct impacts to individuals or their host plants would be considered significant under CEQA. However, the City would be required to adhere to the management restrictions for tree removal inside of and within 100 yards of a Monarch Sanctuary. This would include limiting removals to the prescriptions in the approved Monarch Habitat Management plan and prohibiting the removal or pruning of trees during the months of October through April. Therefore, direct impacts to any Monarch butterflies potentially overwintering on the site are not expected.

## Protected Trees

Approximately two-thirds of the trees on the site meet the criteria for protection under Chapter 12.20 of the City's municipal code. The City would not be required to obtain a permit to remove trees within the park as part of City approved Forest Management Plan. However, the City would be required to adhere to the management restrictions for tree removal inside of and within 100 yards of a Monarch Sanctuary. This would include limiting removals to the prescriptions in the approved Monarch Habitat Management plan and prohibiting the removal or pruning of trees during the months of October through April. Tree pruning on protected trees is permitted provided no more than 25% of the live crown is removed during any treatment.

All tree pruning and removal work would be required to take place outside of the nested periods of listed threatened, endangered, or special status species as specified by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

Please contact me if you have any questions regarding the content of this report.

Sincerely,

Emily Scricca
Biologist

*Att.:* *Figures 1-5*
*Attachment A, Representative Photographs of the Project Site*
*Attachment B, Plant Species Compendium*
*Attachment C, Wildlife Species Compendium*
*Attachment D, Special-Status Plant Species Potential to Occur*
*Attachment E, Special-Status Wildlife Species Potential to Occur*

*cc:* *Matt Ricketts, Dudek*
*Jeremy Cawn, Dudek*

# References Cited

CDFW (California Department of Fish and Wildlife). 2021a. California Natural Diversity Database. CDFW, Biogeographic Data Branch. Accessed October 2021. https://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp.

CDFW. 2021b. California Natural Community List. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline

CNPS (California Native Plant Society, Rare Plant Program). 2021. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Accessed October 2021. http://www.rareplants.cnps.org.

eBird. 2021. *eBird: An online database of bird distribution and abundance* [web application]. Ithaca, New York: Cornell Lab of Ornithology. Accessed October 2021. http://www.ebird.org.

Google Earth Pro (7.3.3.7699 [64-bit]). 2021. 36° 62' 05.64"N, 121° 92' 84.63"W. Borders and labels; places layers. Google, LLC. May 5, 2018. Accessed October 2021. http://www.google.com/earth/index.html.

Holland, D.C., and R.H. Goodman Jr. 1998. *A Guide to the Amphibians and Reptiles of MCB Camp Pendleton, San Diego County, California*. Prepared for AC/S Environmental Security, Resource Management Division, MCB Camp Pendleton. Contract M00681-94-C-0039. Fallbrook, California: Camp Pendleton Amphibian and Reptile Survey. November 6, 1998.

Jepson Flora Project. 2021. *Jepson eFlora*. Berkeley, California: University of California. Accessed October 2021. https://ucjeps.berkeley.edu/eflora/.

Morey, S. 2000. "California Legless Lizard, *Anniella pulchra*." In *Life History Accounts and Range Maps—California Wildlife Habitat Relationships System*, edited by R. Duke. California Department of Fish and Game, California Interagency Wildlife Task Group. Updated September 2000. http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx.

Peeters, H., and P. Peeters. 2005. Raptors of California. Berkeley, CA: University of California Press.

Stebbins, R.C. 2003. *A Field Guide to Western Reptiles and Amphibians*. 3rd ed. Peterson Field Guide. New York, New York: Houghton Mifflin Company.

USDA (U.S. Department of Agriculture). 2021. Web Soil Survey. USDA, Natural Resources Conservation Service, Soil Survey Staff. http://websoilsurvey.nrcs.usda.gov/.

USFWS. 2021. IPaC (Information for Planning and Consultation) Search. Accessed October 2021. http://www.fws.gov/data.

USGS (U.S. Geological Survey). 2021. National Hydrography Dataset: GIS Online viewer. Accessed October 2021. http://nhd.usgs.gov/.

WRCC (Western Regional Climate Center). 2021. Monterey, California (045795). Monthly Climate Summary. Accessed October 2021. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5795

Xerces Society. 2020. State of the Monarch Butterfly Overwintering Sites in California. Report to the U.S. Fish and Wildlife Service. Accessed Online 12-20-21 at: https://xerces.org/sites/default/files/2018-05/16 015_01_XercesSoc_State-of-Monarch-Overwintering-Sites-in-California_web.pdf

# Appendix C
Site Photos

**Photo Number 1.** Plot 1 looking north

**Photo Number 2.** Plot 2 looking east

**Photo Number 3.** Plot 3 looking south

**Photo Number 4.** Plot 4 looking west

**Photo Number 5.** Plot 6 looking north

**Photo Number 6.** Plot 8 looking south

**Photo Number 7.** Plot 11 looking west

**Photo Number 8.** Plot 14 looking north

# Appendix D

Forest Inventory Data Forms

| Forest Inventory Data, Zone 2, Plots: 2, 4, 14, 12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | Basal Area |
| 1 | Monterey Pine | 19 | 50 | Poor | Pitch Tubes, Cankers, Frass | Y | Y | 1.96894815 |
| 2 | Coast Live Oak | 10 | 25 | Fair | | N | N | 0.545415 |
| 3 | Coast Redwood | 21 | 30 | Good | 3 stems: 6,6,9 | N | N | 2.40528015 |
| 4 | Coast Live Oak | 10 | 20 | Fair | | N | N | 0.545415 |
| 5 | Monterey Pine | 7 | 25 | Good | Pitch Tubes, Cankers | Y | Y | 0.26725335 |
| 6 | Monterey Pine | 9 | 25 | Good | | N | N | 0.44178615 |
| 7 | Monterey Pine | 6 | 30 | Good | | N | N | 0.1963494 |
| 8 | Coast Live Oak | 9 | 15 | Fair | | N | N | 0.44178615 |
| 9 | Coast Live Oak | 6 | 25 | Good | | N | N | 0.1963494 |
| 10 | Coast Live Oak | 4 | 20 | Fair | | N | N | 0.0872664 |
| 11 | Coast Live Oak | 7 | 15 | Fair | | N | N | 0.26725335 |
| 12 | Coast Live Oak | 4 | 15 | Fair | | N | N | 0.0872664 |
| 13 | Coast Live Oak | 7 | 15 | Fair | | N | N | 0.26725335 |
| 14 | Monterey Pine | 20 | 35 | Dead | | N | N | 2.18166 |
| 15 | Monterey Pine | 22 | 25 | Dead | | N | N | 2.6398086 |
| 16 | Monterey Pine | 4 | 15 | Good | | N | N | 0.0872664 |
| 17 | Monterey Pine | 16 | 45 | Good | Old Pitch tubes, branch tip dieback | Y | N | 1.3962624 |
| 18 | Monterey Pine | 6 | 30 | Good | Branch tip dieback | N | N | 0.1963494 |
| 19 | Monterey Pine | 5 | 25 | Fair | Dead top, branch tip dieback | N | N | 0.13635375 |
| 20 | Monterey Pine | 5 | 10 | Dead | | N | N | 0.13635375 |
| 21 | Monterey Pine | 19 | 50 | Fair | Branch tip dieback | N | N | 1.96894815 |
| 22 | Monterey Pine | 33 | 75 | Fair | | N | N | 5.93956935 |
| 23 | Coast Live Oak | 4 | 10 | Fair | | N | N | 0.0872664 |
| 24 | Monterey Pine | 12 | 40 | Good | | N | N | 0.7853976 |
| 25 | Monterey Pine | 7 | 35 | Fair | Pitch Tubes, Branch Tip Dieback | Y | N | 0.26725335 |
| 26 | Monterey Pine | 7 | 25 | Good | | N | N | 0.26725335 |
| 27 | Monterey Pine | 12 | 30 | Fair | | N | N | 0.7853976 |
| 28 | Monterey Pine | 25 | 75 | Poor | Mistletoe, 50% dieback, Pitch tubes | Y | N | 3.40884375 |
| 29 | Monterey Pine | 25 | 75 | Fair | Frass, Beetle exit holes, Branch tip dieback | Y | N | 3.40884375 |
| 30 | Monterey Pine | 10 | 40 | Good | | N | N | 0.545415 |
| 31 | Monterey Pine | 17 | 55 | Fair | Branch Tip Dieback | N | N | 1.57624935 |
| 32 | Golden Wattle (Acacia) | 6 | 10 | Good | | N | N | 0.1963494 |
| 33 | Monterey Pine | 23 | 55 | Poor | Heavy Pitch Streamers on trunk | N | Y | 2.88524535 |
| 34 | Coast Live Oak | 43 | 20 | Good | 5 Stems:6,12,9,8,8 | N | N | 10.08472335 |
| 35 | Monterey Pine | 19 | 55 | Fair | | N | N | 1.96894815 |
| 36 | Monterey Pine | 20 | 45 | Fair | | N | N | 2.18166 |
| 37 | Coast Live Oak | 5 | 10 | Good | | N | N | 0.13635375 |
| 38 | Monterey Pine | 18 | 50 | Fair | Branch dieback | N | N | 1.7671446 |
| 39 | Coast Live Oak | 12 | 20 | Good | | N | N | 0.7853976 |
| 40 | Monterey Pine | 27 | 70 | Good | Branch tip dieback | N | N | 3.97607535 |

| Forest Inventory Data, Zone 2, Plots: 2, 4, 14, 12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | Basal Area |
| 41 | Toyon | 9 | 20 | Good | | N | N | 0.44178615 |
| 42 | Toyon | 18 | 25 | Good | 3 Stems: 7,6,5 | N | N | 1.7671446 |
| 43 | Coast Live Oak | 6 | 20 | Fair | | N | N | 0.1963494 |
| 44 | Coast Live Oak | 6 | 15 | Dead | | N | N | 0.1963494 |
| 45 | Coast Live Oak | 7 | 15 | Poor | Hypoxolon conk, Trunk decay | N | N | 0.26725335 |
| 46 | Coast Live Oak | 5 | 15 | Good | | N | N | 0.13635375 |
| 47 | Coast Live Oak | 7 | 15 | Fair | | N | N | 0.26725335 |
| 48 | Coast Live Oak | 12 | 25 | Fair | Internal decay, Branch decay, bark staining | N | N | 0.7853976 |
| 49 | Coast Live Oak | 10 | 20 | Good | | N | N | 0.545415 |
| 50 | Coast Live Oak | 7 | 20 | Fair | | N | N | 0.26725335 |
| 51 | Coast Live Oak | 13 | 30 | Good | | N | N | 0.92175135 |
| 52 | Coast Live Oak | 11 | 30 | Good | | N | N | 0.65995215 |
| 53 | Coast Live Oak | 8 | 30 | Fair | | N | N | 0.3490656 |
| 54 | Coast Live Oak | 12 | 35 | Fair | Dieback in the crown, sparse crown | N | N | 0.7853976 |
| 55 | Coast Live Oak | 15 | 35 | Fair | Sparse crown | N | N | 1.22718375 |
| 56 | Coast Live Oak | 10 | 10 | Poor | Broken top | N | N | 0.545415 |
| 57 | Coast Live Oak | 8 | 10 | Poor | Broken top | N | N | 0.3490656 |
| 58 | Coast Live Oak | 8 | 15 | Poor | Broken top | N | N | 0.3490656 |
| 59 | Toyon | 23 | 35 | Good | 5 Stems:6,4,5,4,4 | N | N | 2.88524535 |
| 60 | Coast Live Oak | 10 | 35 | Fair | poor vigor | N | N | 0.545415 |
| 61 | Coast Live Oak | 14 | 35 | Fair | poor vigor | N | N | 1.0690134 |
| 62 | Coast Live Oak | 4 | 10 | Good | | N | N | 0.0872664 |
| 63 | Coast Live Oak | 6 | 15 | Fair | | N | N | 0.1963494 |
| 64 | Monterey Pine | 13 | 45 | Poor | Mistletoe, small crown, high crown | N | N | 0.92175135 |
| 65 | Monterey Pine | 17 | 55 | Poor | Pitch tubes, mistletoe | Y | N | 1.57624935 |
| 66 | Monterey Pine | 22 | 55 | Dead | | N | N | 2.6398086 |
| 67 | Monterey Pine | 22 | 55 | Fair | | N | N | 2.6398086 |
| 68 | Coast Live Oak | 7 | 15 | Good | | N | N | 0.26725335 |
| 69 | Monterey Pine | 6 | 40 | Fair | Pitch tubes, branch dieback, damage on lower trunk | Y | N | 0.1963494 |
| 70 | Monterey Pine | 25 | 80 | Good | | N | N | 3.40884375 |
| 71 | Coast Live Oak | 7 | 10 | Fair | | N | N | 0.26725335 |
| 72 | Coast Live Oak | 6 | 10 | Fair | | N | N | 0.1963494 |
| 73 | Monterey Pine | 27 | 75 | Fair | Conks, Pitch tube, internal decay | Y | N | 3.97607535 |
| 74 | Monterey Pine | 19 | 50 | Good | | N | N | 1.96894815 |
| 75 | Coast Live Oak | 7 | 25 | Fair | | N | N | 0.26725335 |
| 76 | Coast Live Oak | 8 | 10 | Poor | Dead top | N | N | 0.3490656 |
| 77 | Coast Live Oak | 8 | 25 | Fair | | N | N | 0.3490656 |
| 78 | Coast Live Oak | 4 | 10 | Good | | N | N | 0.0872664 |
| 79 | Coast Live Oak | 6 | 10 | Good | | N | N | 0.1963494 |
| 80 | Coast Live Oak | 12 | 45 | Poor | Branch tip dieback, dead top | N | N | 0.7853976 |

| Forest Inventory Data, Zone 2, Plots: 2, 4, 14, 12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | Basal Area |
| 81 | Monterey Pine | 5 | 10 | Good | | N | N | 0.13635375 |
| 82 | Coast Live Oak | 11 | 30 | Good | | N | N | 0.65995215 |
| 83 | Monterey Pine | 14 | 50 | Fair | Pitch tubes, damage to trunk | Y | N | 1.0690134 |
| 84 | Coast Live Oak | 9 | 25 | Good | | N | N | 0.44178615 |
| 85 | Coast Live Oak | 5 | 15 | Good | | N | N | 0.13635375 |
| 86 | Coast Live Oak | 13 | 35 | Good | | N | N | 0.92175135 |
| 87 | Coast Live Oak | 12 | 30 | Good | | N | N | 0.7853976 |
| 88 | Monterey Pine | 21 | 60 | Fair | Pitch tubes | Y | N | 2.40528015 |
| 89 | Coast Live Oak | 10 | 20 | Fair | | N | N | 0.545415 |
| 90 | Coast Live Oak | 10 | 20 | Fair | | N | N | 0.545415 |
| 91 | Coast Live Oak | 14 | 25 | Fair | Sapsucker/woodpecker damage | N | N | 1.0690134 |
| 92 | Coast Live Oak | 6 | 20 | Poor | | N | N | 0.1963494 |
| 93 | Coast Live Oak | 18 | 35 | Good | | N | N | 1.7671446 |
| 94 | Coast Live Oak | 14 | 35 | Good | | N | N | 1.0690134 |
| 95 | Coast Live Oak | 5 | 15 | Fair | | N | N | 0.13635375 |
| 96 | Coast Live Oak | 24 | 35 | Fair | 2 Stems: 9, 15 | N | N | 3.1415904 |
| 97 | Coast Live Oak | 12 | 30 | Good | | N | N | 0.7853976 |
| 98 | Monterey Pine | 15 | 60 | Fair | Canopy raised, small crown | N | N | 1.22718375 |
| 99 | Monterey Pine | 14 | 40 | Dead | | N | N | 1.0690134 |
| 100 | Coast Live Oak | 4 | 10 | Good | | N | N | 0.0872664 |
| 101 | Coast Live Oak | 5 | 15 | Good | | N | N | 0.13635375 |
| 102 | Coast Live Oak | 3 | 5 | Good | | N | N | 0.04908735 |
| 103 | Coast Live Oak | 11 | 40 | Poor | | N | N | 0.65995215 |
| 104 | Monterey Pine | 26 | 60 | Good | 2 Stems: 8,18 | N | N | 3.6870054 |
| 105 | Monterey Pine | 18 | 60 | Fair | Branch tip dieback | N | N | 1.7671446 |
| 106 | Monterey Pine | 8 | 20 | Fair | | N | N | 0.3490656 |
| 107 | Coast Live Oak | 17 | 25 | Good | 2 Stems: 8,9 | N | N | 1.57624935 |
| 108 | Coast Live Oak | 5 | 10 | Good | | N | N | 0.13635375 |
| 109 | Monterey Pine | 15 | 50 | Poor | Thin crown | N | N | 1.22718375 |
| *Count All* | *109* | *Average Height All* | *31* | — | *QMD All* | *14.2* | — | — |
| *Count Pine* | *43* | *Average Height Pine* | *45* | — | *QMD Pine* | *17.5* | — | — |
| *Count Oak* | *61* | *Average Height Oak* | *21* | — | *QMD Oak* | *11.1* | — | — |
| *Count Other* | *5* | *Average Height Other* | *17.2* | — | *QMD Other* | *16.8* | — | — |
| *TPA* | *109* | — | — | — | — | — | — | — |
| **Total BA** | **120.2312826** | **71.6457144** | **40.88976** | **7.695806** | **—** | **—** | **—** | **—** |
| *Avg BA* | *1.10303929* | *1.666179405* | *0.670324* | *1.539161* | — | — | — | — |

| Forest Inventory Data, Zone 2, Plots: 2, 4, 14, 12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | Basal Area |
| Tree Diameter Distribution (by diameter inches) | | | | | | | | |
| | 3 to 8 | 9 to 14 | 15 to 20 | 21 to 26 | 27 to 32 | >32 | | |
| All | 43 | 31 | 17 | 12 | 2 | 2 | | |
| Pine | 11 | 7 | 13 | 9 | 2 | 1 | | |
| Oak | 32 | 23 | 3 | 1 | 0 | 1 | | |
| Other | 0 | 1 | 1 | 2 | 0 | 0 | | |

| Forest Inventory, Data Zone 3, Plots: 11, 13, 15, 16 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter at Standard Height (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | BA |
| 1 | Monterey Pine | 15 | 75 | Good | | N | N | 1.23 |
| 2 | Monterey Pine | 23 | 85 | Fair | Branch tip dieback, mistletoe | N | N | 2.89 |
| 3 | Monterey Pine | 23 | 100 | Poor | Sparse crown, Branch tip dieback | N | N | 2.89 |
| 4 | Coast Live Oak | 12 | 25 | Good | | N | N | 0.79 |
| 5 | Coast Live Oak | 8 | 20 | Fair | | N | N | 0.35 |
| 6 | Coast Live Oak | 11 | 15 | Fair | Trunk decay | N | N | 0.66 |
| 7 | Monterey Pine | 24 | 100 | Fair | Damage on trunk, Pitch tubes | Y | N | 3.14 |
| 8 | Monterey Pine | 21 | 85 | Fair | Mistletoe | N | N | 2.41 |
| 9 | Monterey Pine | 17 | 85 | Good | Dieback in upper half of the crown | N | N | 1.58 |
| 10 | Coast Live Oak | 5 | 15 | Good | | N | N | 0.14 |
| 11 | Coast Live Oak | 8 | 20 | Good | | N | N | 0.35 |
| 12 | Coast Live Oak | 7 | 15 | Fair | Internal decay | N | N | 0.27 |
| 13 | Monterey Pine | 24 | 75 | Fair | Mistletoe, pitch tubes, branch tip dieback | Y | N | 3.14 |
| 14 | Coast Live Oak | 10 | 15 | Fair | 2 Stems:5,5 | N | N | 0.55 |
| 15 | Coast Live Oak | 28 | 40 | Good | 3 Stems: 10,10,8 | N | N | 4.28 |
| 16 | Coast Live Oak | 4 | 15 | Good | | N | N | 0.09 |
| 17 | Coast Live Oak | 8 | 15 | Poor | Damage to tree top | N | N | 0.35 |
| 18 | Coast Live Oak | 19 | 25 | Fair | 3 Stems: 4,7,8 | N | N | 1.97 |
| 19 | Monterey Pine | 8 | 60 | Poor | Small live crown | N | N | 0.35 |
| 20 | Coast Live Oak | 12 | 20 | Fair | 2 Stems: 7,5, Decay in Branches | N | N | 0.79 |
| 21 | Coast Live Oak | 16 | 35 | Good | 2 Stems: 7,9 | N | N | 1.4 |
| 22 | Coast Live Oak | 10 | 40 | Fair | Internal decay | N | N | 0.55 |
| 23 | Coast Live Oak | 7 | 30 | Good | | N | N | 0.27 |
| 24 | Coast Live Oak | 10 | 15 | Good | | N | N | 0.55 |
| 25 | Monterey Pine | 33 | 70 | Dead | | N | N | 5.94 |
| 26 | Monterey Pine | 14 | 45 | Poor | Sparse crown, Branch tip dieback | N | N | 1.07 |
| 27 | Monterey Pine | 18 | 60 | Fair | Dieback | N | N | 1.77 |

| Forest Inventory, Data Zone 3, Plots: 11, 13, 15, 16 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter at Standard Height (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | BA |
| 28 | Monterey Pine | 17 | 65 | Dead | | N | N | 1.58 |
| 29 | Monterey Pine | 7 | 35 | Fair | Pitch tubes | Y | N | 0.27 |
| 30 | Monterey Pine | 8 | 30 | Good | | N | N | 0.35 |
| 31 | Monterey Pine | 6 | 30 | Good | | N | N | 0.2 |
| 32 | Monterey Pine | 11 | 45 | Dead | | N | N | 0.66 |
| 33 | Coast Live Oak | 14 | 30 | Good | 2 Stems: 11, 3 | N | N | 1.07 |
| 34 | Coast Live Oak | 6 | 15 | Poor | Fungal conks | N | N | 0.2 |
| 35 | Coast Live Oak | 5 | 20 | Good | | N | N | 0.14 |
| 36 | Coast Live Oak | 10 | 20 | Good | | N | N | 0.55 |
| 37 | Coast Live Oak | 7 | 20 | Fair | | N | N | 0.27 |
| 38 | Coast Live Oak | 3 | 10 | Good | | N | N | 0.05 |
| 39 | Coast Live Oak | 8 | 10 | Fair | Decay in branches | N | N | 0.35 |
| 40 | Coast Live Oak | 12 | 20 | Fair | 2 Stems: 6,6, decay in trunk | N | N | 0.79 |
| 41 | Coast Live Oak | 10 | 15 | Fair | | N | N | 0.55 |
| 42 | Monterey Pine | 14 | 55 | Good | Pitch tubes | Y | N | 1.07 |
| 43 | Coast Live Oak | 21 | 20 | Fair | 4 stems: 9,5,4,3 | N | N | 2.41 |
| 44 | Monterey Pine | 8 | 45 | Good | | N | N | 0.35 |
| 45 | Coast Live Oak | 4 | 15 | Poor | | N | N | 0.09 |
| 46 | Monterey Pine | 12 | 35 | Poor | Branch dieback | N | N | 0.79 |
| 47 | Coast Live Oak | 7 | 15 | Fair | | N | N | 0.27 |
| 48 | Monterey Pine | 23 | 85 | Good | Mistletoe | N | N | 2.89 |
| 49 | Monterey Pine | 23 | 85 | Fair | Mistletoe | N | N | 2.89 |
| 50 | Monterey Pine | 29 | 90 | Good | Mistletoe | N | N | 4.59 |
| 51 | Monterey Pine | 21 | 70 | Fair | Mistletoe | N | N | 2.41 |
| 52 | Monterey Pine | 28 | 85 | Fair | Mistletoe | N | N | 4.28 |
| 53 | Coast Live Oak | 18 | 30 | Good | 2 Stems: 9,9 | N | N | 1.77 |
| 54 | Coast Live Oak | 6 | 20 | Fair | | N | N | 0.2 |
| 55 | Monterey Pine | 13 | 55 | Poor | Mistletoe, branch tip dieback, small crown | N | N | 0.92 |
| 56 | Coast Live Oak | 19 | 30 | Fair | 2 stems: 11,8 | N | N | 1.97 |
| 57 | Coast Live Oak | 13 | 20 | Fair | Damage to trunk | N | N | 0.92 |
| 58 | Coast Live Oak | 14 | 15 | Fair | 2 stems: 7,7 | N | N | 1.07 |
| 59 | Coast Live Oak | 14 | 15 | Good | 2 stems: 7,7 | N | N | 1.07 |
| 60 | Monterey Pine | 14 | 40 | Dead | | N | N | 1.07 |
| 61 | Monterey Pine | 9 | 45 | Dead | | N | N | 0.44 |
| 62 | Monterey Pine | 22 | 90 | Good | Mistletoe | N | N | 2.64 |
| 63 | Monterey Pine | 16 | 35 | Poor | Broken top, Mistletoe | N | N | 1.4 |
| 64 | Coast Live Oak | 5 | 15 | Good | | N | N | 0.14 |
| 65 | Coast Live Oak | 5 | 20 | Good | | N | N | 0.14 |
| 66 | Coast Live Oak | 19 | 35 | Good | 2 stems: 11, 8 | N | N | 1.97 |
| 67 | Coast Live Oak | 18 | 20 | Fair | 2 Stems: 9,9, Broken top | N | N | 1.77 |

| Forest Inventory, Data Zone 3, Plots: 11, 13, 15, 16 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter at Standard Height (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | BA |
| 68 | Monterey Pine | 25 | 70 | Dead | | N | N | 3.41 |
| 69 | Monterey Pine | 11 | 35 | Poor | Branch tip dieback | N | N | 0.66 |
| 70 | Coast Live Oak | 10 | 20 | Good | | N | N | 0.55 |
| 71 | Coast Live Oak | 11 | 20 | Good | | N | N | 0.66 |
| 72 | Monterey Pine | 15 | 55 | Good | Old Pitch Tubes | Y | N | 1.23 |
| 73 | Coast Live Oak | 13 | 35 | Fair | Decay in Trunk | N | N | 0.92 |
| 74 | Monterey Pine | 16 | 70 | Good | Pitch tubes, Branch tip dieback, pitch streamers on trunk | Y | Y | 1.4 |
| 75 | Monterey Pine | 9 | 45 | Good | Branch tip dieback | N | N | 0.44 |
| 76 | Coast Live Oak | 15 | 15 | Good | 2 Stems: 9,6 | N | N | 1.23 |
| 77 | Monterey Pine | 14 | 65 | Poor | Small crown, Dead top | N | N | 1.07 |
| 78 | Coast Live Oak | 23 | 25 | Good | 2 Stems:14, 9 | N | N | 2.89 |
| 79 | Monterey Pine | 12 | 45 | Fair | Small crown, branch dieback | N | N | 0.79 |
| 80 | Monterey Pine | 32 | 70 | Poor | dead top | N | N | 5.59 |
| 81 | Monterey Pine | 6 | 20 | Fair | Branch tip dieback | N | N | 0.2 |
| 82 | Monterey Pine | 6 | 35 | Fair | | N | N | 0.2 |
| 83 | Monterey Pine | 11 | 50 | Good | | N | N | 0.66 |
| 84 | Monterey Pine | 18 | 65 | Poor | Dead top, small crown, branch dieback | N | N | 1.77 |
| 85 | Monterey Pine | 6 | 20 | Good | | N | N | 0.2 |
| 86 | Monterey Pine | 9 | 30 | Fair | Trunk Damage | N | N | 0.44 |
| 87 | Monterey Pine | 13 | 35 | Fair | Damage to trunk and crown | N | N | 0.92 |
| 88 | Coast Live Oak | 14 | 20 | Good | 2 stems: 8,6 | N | N | 1.07 |
| 89 | Coast Live Oak | 5 | 20 | Fair | | N | N | 0.14 |
| 90 | Coast Live Oak | 8 | 20 | Good | 2 Stems:5,3 | N | N | 0.35 |
| 91 | Coast Live Oak | 5 | 20 | Fair | | N | N | 0.14 |
| 92 | Monterey Pine | 14 | 45 | Good | | N | N | 1.07 |
| 93 | Coast Live Oak | 11 | 30 | Good | Damage to crown | N | N | 0.66 |
| 94 | Coast Live Oak | 10 | 35 | Good | | N | N | 0.55 |
| 95 | Coast Live Oak | 7 | 15 | Fair | Damage to trunk | N | N | 0.27 |
| 96 | Coast Live Oak | 7 | 20 | Fair | | N | N | 0.27 |
| 97 | Coast Live Oak | 6 | 20 | Fair | Damage to crown | N | N | 0.2 |
| 98 | Monterey Pine | 24 | 65 | Dead | | N | N | 3.14 |
| 99 | Coast Live Oak | 11 | 35 | Good | | N | N | 0.66 |
| 100 | Coast Live Oak | 11 | 35 | Good | Damage to crown | N | N | 0.66 |
| 101 | Monterey Pine | 22 | 70 | Good | | N | N | 2.64 |
| 102 | Coast Live Oak | 8 | 15 | Fair | Damage to crown, Decay in branches | N | N | 0.35 |
| 103 | Coast Live Oak | 18 | 35 | Good | 2 Stems: 6,12 | N | N | 1.77 |
| 104 | Monterey Pine | 27 | 75 | Fair | Dieback, overmature tree | N | N | 3.98 |
| 105 | Coast Live Oak | 11 | 35 | Fair | Thin crown | N | N | 0.66 |
| 106 | Coast Live Oak | 5 | 20 | Fair | Decay in trunk | N | N | 0.14 |

| Forest Inventory, Data Zone 3, Plots: 11, 13, 15, 16 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Tree #** | **Species** | **Diameter at Standard Height (inches)** | **Height (inches)** | **Condition** | **Notes** | **Evidence of Beetle Infestation? Y/N** | **Evidence of Pitch Canker Infection? Y/N** | **BA** |
| 107 | Coast Live Oak | 15 | 20 | Good | 2 stems:9,6 | N | N | 1.23 |
| 108 | Coast Live Oak | 7 | 15 | Good | | N | N | 0.27 |
| 109 | Coast Live Oak | 9 | 20 | Good | | N | N | 0.44 |
| 110 | Coast Live Oak | 16 | 20 | Good | 2 Stems:10,6 | N | N | 1.4 |
| 111 | Coast Live Oak | 12 | 35 | Good | | N | N | 0.79 |
| 112 | Coast Live Oak | 9 | 30 | Good | | N | N | 0.44 |
| 113 | Monterey Pine | 16 | 60 | Fair | Pitch streamers on trunk, Pitch tubes, cankers | Y | Y | 1.4 |
| 114 | Coast Live Oak | 6 | 20 | Fair | | N | N | 0.2 |
| 115 | Coast Live Oak | 4 | 10 | Fair | | N | N | 0.09 |
| 116 | Coast Live Oak | 8 | 25 | Good | | N | N | 0.35 |
| 117 | Coast Live Oak | 8 | 25 | Good | | N | N | 0.35 |
| 118 | Coast Live Oak | 8 | 25 | Fair | | N | N | 0.35 |
| 119 | Coast Live Oak | 7 | 15 | Fair | Decay in trunk | N | N | 0.27 |
| 120 | Coast Live Oak | 3 | 10 | Fair | | N | N | 0.05 |
| 121 | Monterey Pine | 8 | 50 | Fair | Broken top | N | N | 0.35 |
| 122 | Coast Live Oak | 9 | 10 | Good | Branch decay, bent over top-previously hit by larger tree | N | N | 0.44 |
| 123 | Coast Live Oak | 5 | 15 | Good | | N | N | 0.14 |
| *Count All* | *123* | *Average Height All* | *37* | | *QMD All* | *14.4* | | |
| *Count Pine* | *50* | *Average Height Pine* | *59* | | *QMD Pine* | *17.8* | | |
| *Count Oak* | *73* | *Average Height Oak* | *22* | | *QMD Oak* | *11.4* | | |
| *Count Other* | *0* | *Average Height Other* | *0* | | *QMD Other* | *0.0* | | |
| *TPA* | *123* | | | | | | | |
| **Total BA** | **138.5736** | **86.6719** | **51.90169** | | | | | |
| *Avg BA* | *1.126615* | *1.733438* | *0.710982* | | | | | |
| **Tree Diameter Distribution (by diameter inches)** | | | | | | | | |
| | 3 to 8 | 9 to 14 | 15 to 20 | 21 to 26 | 27 to 32 | >32 | | |
| All | 43 | 41 | 19 | 14 | 5 | 1 | | |
| Pine | 9 | 15 | 9 | 12 | 4 | 1 | | |
| Oak | 34 | 26 | 10 | 2 | 1 | 0 | | |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | | |

| Forest Inventory Data Zone 4, Plots: 1, 3, 6, 7, 8, 9 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter at Standard Height (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | Basal Area |
| 1 | Coast Live Oak | 9 | 20 | Fair | Broken Top | N | N | 0.44179 |
| 2 | Coast Live Oak | 8 | 20 | Poor | 2 Stems: 8,5, branch tip dieback | N | N | 0.34907 |
| 3 | Monterey Pine | 20 | 60 | Good | | N | N | 2.18166 |
| 4 | Coast Live Oak | 5 | 15 | Fair | | N | N | 0.13635 |
| 5 | Coast Live Oak | 5 | 15 | Fair | | N | N | 0.13635 |
| 6 | Coast Live Oak | 4 | 15 | Poor | | N | N | 0.08727 |
| 7 | Coast Live Oak | 4 | 10 | Poor | | N | N | 0.08727 |
| 8 | Coast Live Oak | 7 | 35 | Fair | | N | N | 0.26725 |
| 9 | Coast Live Oak | 8 | 20 | Good | 2 stems:5, 3 | N | N | 0.34907 |
| 10 | Coast Live Oak | 21 | 35 | Good | 2 stems: 12, 9 | N | N | 2.40528 |
| 11 | Coast Live Oak | 15 | 35 | Good | | N | N | 1.22718 |
| 12 | Coast Live Oak | 8 | 15 | Poor | Hypoxylon canker | N | N | 0.34907 |
| 13 | Coast Live Oak | 12 | 30 | Fair | | N | N | 0.78540 |
| 14 | Coast Live Oak | 7 | 15 | Fair | Decay in trunk | N | N | 0.26725 |
| 15 | Coast Live Oak | 7 | 20 | Fair | Damage to trunk with sprout growth | N | N | 0.26725 |
| 16 | Coast Live Oak | 22 | 30 | Fair | 2 stems: 13, 9, dieback | N | N | 2.63981 |
| 17 | Coast Live Oak | 22 | 30 | Fair | 2 stems,: 13,9 | N | N | 2.63981 |
| 18 | Coast Live Oak | 8 | 30 | Fair | | N | N | 0.34907 |
| 19 | Monterey Pine | 16 | 20 | Dead | | N | N | 1.39626 |
| 20 | Monterey Pine | 8 | 35 | Poor | Dead top | N | N | 0.34907 |
| 21 | Monterey Pine | 21 | 85 | Poor | Broken top with regrowth, pitch streamers on trunk | N | Y | 2.40528 |
| 22 | Coast Live Oak | 6 | 15 | Poor | | N | N | 0.19635 |
| 23 | Coast Live Oak | 4 | 10 | Poor | | N | N | 0.08727 |
| 24 | Coast Live Oak | 16 | 25 | Fair | Decay in crown | N | N | 1.39626 |
| 25 | Coast Live Oak | 9 | 30 | Poor | Dieback in crown | N | N | 0.44179 |
| 26 | Monterey Pine | 30 | 35 | Dead | | N | N | 4.90874 |
| 27 | Coast Live Oak | 11 | 30 | Good | | N | N | 0.65995 |
| 28 | Coast Live Oak | 8 | 25 | Fair | | N | N | 0.34907 |
| 29 | Coast Live Oak | 9 | 30 | Fair | | N | N | 0.44179 |
| 30 | Monterey Pine | 34 | 130 | Good | | N | N | 6.30500 |
| 31 | Monterey Pine | 18 | 60 | Good | Old Pitch tubes | Y | N | 1.76714 |
| 32 | Monterey Pine | 17 | 60 | Dead | | N | N | 1.57625 |
| 33 | Coast Live Oak | 4 | 10 | Fair | | N | N | 0.08727 |
| 34 | Coast Live Oak | 7 | 15 | Poor | | N | N | 0.26725 |
| 35 | Coast Live Oak | 6 | 10 | Good | | N | N | 0.19635 |
| 36 | Coast Live Oak | 6 | 25 | Fair | | N | N | 0.19635 |
| 37 | Coast Live Oak | 9 | 30 | Poor | Trunk damage | N | N | 0.44179 |
| 38 | Coast Live Oak | 7 | 30 | Fair | Dieback in crown | N | N | 0.26725 |
| 39 | Coast Live Oak | 7 | 30 | Fair | | N | N | 0.26725 |
| 40 | Coast Live Oak | 6 | 30 | Poor | | N | N | 0.19635 |

| Forest Inventory Data Zone 4, Plots: 1, 3, 6, 7, 8, 9 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter at Standard Height (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | Basal Area |
| 41 | Coast Live Oak | 7 | 30 | Fair | | N | N | 0.26725 |
| 42 | Coast Live Oak | 4 | 15 | Poor | | N | N | 0.08727 |
| 43 | Coast Live Oak | 7 | 30 | Fair | Dieback in crown | N | N | 0.26725 |
| 44 | Coast Live Oak | 6 | 25 | Poor | Dieback in crown | N | N | 0.19635 |
| 45 | Coast Live Oak | 13 | 40 | Good | | N | N | 0.92175 |
| 46 | Coast Live Oak | 22 | 30 | Fair | 2 Stem:10, 12, previously uprooted and fell over-has compensated & is stable | N | N | 2.63981 |
| 47 | Coast Live Oak | 9 | 30 | Fair | | N | N | 0.44179 |
| 48 | Coast Live Oak | 13 | 30 | Good | | N | N | 0.92175 |
| 49 | Coast Live Oak | 7 | 25 | Fair | Trunk Decay, Branch Decay | N | N | 0.26725 |
| 50 | Coast Live Oak | 12 | 35 | Fair | | N | N | 0.78540 |
| 51 | Coast Live Oak | 14 | 35 | Fair | Branch Decay | N | N | 1.06901 |
| 52 | Coast Live Oak | 8 | 30 | Good | | N | N | 0.34907 |
| 53 | Coast Live Oak | 9 | 30 | Fair | Trunk Decay, Branch Decay | N | N | 0.44179 |
| 54 | Monterey Pine | 14 | 40 | Dead | | N | N | 1.06901 |
| 55 | Monterey Pine | 39 | 80 | Fair | Thin Crown, Branch tip dieback | N | N | 8.29576 |
| 56 | Monterey Pine | 26 | 70 | Fair | Dead top, Dieback in crown, unbalanced crown | N | N | 3.68701 |
| 57 | Monterey Pine | 14 | 55 | Poor | Significant Dieback | N | N | 1.06901 |
| 58 | Coast Live Oak | 15 | 35 | Fair | | N | N | 1.22718 |
| 59 | Coast Live Oak | 13 | 35 | Good | | N | N | 0.92175 |
| 60 | Monterey Pine | 30 | 80 | Fair | Branch tip Dieback | N | N | 4.90874 |
| 61 | Coast Live Oak | 9 | 30 | Fair | | N | N | 0.44179 |
| 62 | Coast Live Oak | 6 | 15 | Fair | 2 Stem: 3,3 | N | N | 0.19635 |
| 63 | Coast Live Oak | 14 | 35 | Good | Decay in Trunk | N | N | 1.06901 |
| 64 | Coast Live Oak | 5 | 15 | Poor | | N | N | 0.13635 |
| 65 | Coast Live Oak | 9 | 20 | Fair | Damage on trunk, decay in trunk, broken top | N | N | 0.44179 |
| 66 | Coast Live Oak | 18 | 35 | Fair | 2 Stems: 10, 8 | N | N | 1.76714 |
| 67 | Coast Live Oak | 8 | 30 | Fair | | N | N | 0.34907 |
| 68 | Coast Live Oak | 5 | 15 | Fair | | N | N | 0.13635 |
| 69 | Coast Live Oak | 14 | 35 | Fair | | N | N | 1.06901 |
| 70 | Coast Live Oak | 12 | 20 | Fair | 2 stems: 6,6 | N | N | 0.78540 |
| 71 | Coast Live Oak | 8 | 25 | Fair | | N | N | 0.34907 |
| 72 | Coast Live Oak | 9 | 35 | Fair | Decay in Trunk | N | N | 0.44179 |
| 73 | Coast Live Oak | 7 | 30 | Fair | | N | N | 0.26725 |
| 74 | Coast Live Oak | 5 | 10 | Fair | Dead top | N | N | 0.13635 |
| 75 | Coast Live Oak | 14 | 30 | Fair | Conks, decay in branches | N | N | 1.06901 |
| 76 | Monterey Pine | 23 | 60 | Poor | ! Increased Risk of falling on to trail | N | N | 2.88525 |
| 77 | Coast Live Oak | 4 | 10 | Poor | Significant Decay | N | N | 0.08727 |
| 78 | Coast Live Oak | 12 | 30 | Good | | N | N | 0.78540 |
| 79 | Coast Live Oak | 20 | 30 | Fair | 2 Stems: 7,13, Branch Decay | N | N | 2.18166 |

| Forest Inventory Data Zone 4, Plots: 1, 3, 6, 7, 8, 9 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter at Standard Height (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | Basal Area |
| 80 | Coast Live Oak | 4 | 15 | Fair | | N | N | 0.08727 |
| 81 | Coast Live Oak | 13 | 35 | Good | | N | N | 0.92175 |
| 82 | Coast Live Oak | 25 | 30 | Fair | 3 Stems: 10,8,7 | N | N | 3.40884 |
| 83 | Coast Live Oak | 14 | 30 | Fair | 2 Stems: 8,6, Thin Crown | N | N | 1.06901 |
| 84 | Coast Live Oak | 14 | 30 | Fair | 2 Stems: 9,5, Dieback in the crown, Large Dead Branches | N | N | 1.06901 |
| 85 | Coast Live Oak | 13 | 30 | Fair | 2 Stems: 6,7, dieback in the crown, thin crown | N | N | 0.92175 |
| 86 | Coast Live Oak | 5 | 20 | Poor | | N | N | 0.13635 |
| 87 | Coast Live Oak | 10 | 30 | Fair | | N | N | 0.54542 |
| 88 | Coast Live Oak | 14 | 35 | Good | | N | N | 1.06901 |
| 89 | Coast Live Oak | 13 | 35 | Fair | | N | N | 0.92175 |
| 90 | Coast Live Oak | 10 | 30 | Fair | | N | N | 0.54542 |
| 91 | Coast Live Oak | 6 | 15 | Poor | Decay in Trunk | N | N | 0.19635 |
| 92 | Coast Live Oak | 17 | 35 | Fair | 2 Stems: 12,5, Thin crown, decay in branches | N | N | 1.57625 |
| 93 | Coast Live Oak | 8 | 20 | Good | | N | N | 0.34907 |
| 94 | Coast Live Oak | 18 | 20 | Good | Decay in Branches | N | N | 1.76714 |
| 95 | Coast Live Oak | 14 | 25 | Fair | Decay in Branches, Dieback in Crowns | N | N | 1.06901 |
| 96 | Coast Live Oak | 9 | 20 | Fair | Large Cavity on Trunk, Decay in Trunk | N | N | 0.44179 |
| 97 | Coast Live Oak | 11 | 25 | Good | | N | N | 0.65995 |
| 98 | Coast Live Oak | 11 | 20 | Fair | | N | N | 0.65995 |
| 99 | Coast Live Oak | 9 | 20 | Fair | | N | N | 0.44179 |
| 100 | Coast Live Oak | 23 | 30 | Fair | 2 Stems: 11,12 | N | N | 2.88525 |
| 101 | Coast Live Oak | 13 | 30 | Good | | N | N | 0.92175 |
| 102 | Coast Live Oak | 13 | 25 | Fair | Large Cavity on Trunk, Decay in Trunk | N | N | 0.92175 |
| 103 | Coast Live Oak | 6 | 15 | Dead | Decay in Trunk, Dead Top | N | N | 0.19635 |
| 104 | Coast Live Oak | 5 | 10 | Poor | Large Cavity on Trunk, Decay in Trunk | N | N | 0.13635 |
| 105 | Coast Live Oak | 12 | 30 | Fair | Thin Crown | N | N | 0.78540 |
| 106 | Coast Live Oak | 11 | 30 | Poor | Thin Crown, Woodpecker activity | N | N | 0.65995 |
| 107 | Coast Live Oak | 14 | 30 | Poor | | N | N | 1.06901 |
| 108 | Coast Live Oak | 14 | 35 | Good | Decay in trunk | N | N | 1.06901 |
| 109 | Coast Live Oak | 10 | 30 | Poor | | N | N | 0.54542 |
| 110 | Monterey Pine | 26 | 50 | Good | | N | N | 3.68701 |
| 111 | Coast Live Oak | 34 | 35 | Good | 2 Stems: 17, 17 | N | N | 6.30500 |
| 112 | Coast Live Oak | 13 | 15 | Poor | Decay in Trunk and Branches | N | N | 0.92175 |
| 113 | Coast Live Oak | 11 | 20 | Fair | | N | N | 0.65995 |
| 114 | Coast Live Oak | 9 | 20 | Fair | Thin crown | N | N | 0.44179 |
| 115 | Coast Live Oak | 13 | 15 | Poor | 2 stems: 9,4, Decay in trunk | N | N | 0.92175 |
| 116 | Monterey Pine | 3 | 15 | Good | | N | N | 0.04909 |
| 117 | Monterey Pine | 4 | 15 | Good | canker on trunk with pitch streamers | N | Y | 0.08727 |
| 118 | Coast Live Oak | 10 | 30 | Poor | Decay in trunk. Dieback in crown | N | N | 0.54542 |
| 119 | Coast Live Oak | 6 | 15 | Dead | | N | N | 0.19635 |

| Forest Inventory Data Zone 4, Plots: 1, 3, 6, 7, 8, 9 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tree # | Species | Diameter at Standard Height (inches) | Height (inches) | Condition | Notes | Evidence of Beetle Infestation? Y/N | Evidence of Pitch Canker Infection? Y/N | Basal Area |
| 120 | Monterey Pine | 7 | 30 | Good | | N | N | 0.26725 |
| 121 | Monterey Pine | 8 | 30 | Good | Large canker on trunk, pitch tubes | Y | Y | 0.34907 |
| 122 | Monterey Pine | 8 | 30 | Good | | N | N | 0.34907 |
| 123 | Monterey Pine | 8 | 30 | Good | | N | N | 0.34907 |
| 124 | Coast Live Oak | 29 | 30 | Fair | 2 Stems: 14,15, Decay in trunk and branches | N | N | 4.58694 |
| 125 | Coast Live Oak | 9 | 15 | Poor | Broken top | N | N | 0.44179 |
| 126 | Coast Live Oak | 23 | 30 | Fair | 2 stems: 13, 10, Decay in trunk | N | N | 2.88525 |
| 127 | Coast Live Oak | 8 | 20 | Poor | | N | N | 0.34907 |
| 128 | Coast Live Oak | 12 | 20 | Fair | Decay in trunk | N | N | 0.78540 |
| 129 | Coast Live Oak | 12 | 25 | Fair | 2 stems: 4,8 | N | N | 0.78540 |
| 130 | Coast Live Oak | 16 | 35 | Fair | Thin crown | N | N | 1.39626 |
| 131 | Coast Live Oak | 15 | 35 | Poor | Dead top | N | N | 1.22718 |
| 132 | Coast Live Oak | 7 | 20 | Poor | broken top, decay in branches | N | N | 0.26725 |
| 133 | Coast Live Oak | 14 | 35 | Fair | Thin crown, poor vigor | N | N | 1.06901 |
| 134 | Coast Live Oak | 14 | 35 | Fair | Decay in branches | N | N | 1.06901 |
| 135 | Coast Live Oak | 12 | 30 | Poor | Thin crown | N | N | 0.78540 |
| 136 | Coast Live Oak | 16 | 35 | Fair | Decay in branches | N | N | 1.39626 |
| 137 | Coast Live Oak | 13 | 35 | Fair | | N | N | 0.92175 |
| 138 | Coast Live Oak | 10 | 20 | Poor | Decay in branches | N | N | 0.54542 |
| 139 | Coast Live Oak | 13 | 20 | Fair | Decay in trunk, Broken top | N | N | 0.92175 |
| 140 | Monterey Pine | 18 | 35 | Fair | | N | N | 1.76714 |
| 141 | Coast Live Oak | 12 | 30 | Fair | Thin crown | N | N | 0.78540 |
| 142 | Coast Live Oak | 5 | 10 | Poor | | N | N | 0.13635 |
| 143 | Coast Live Oak | 9 | 30 | Fair | | N | N | 0.44179 |
| 144 | Coast Live Oak | 38 | 40 | Good | 2 Stems: 16, 22 | N | N | 7.87579 |
| 145 | Coast Live Oak | 24 | 25 | Poor | 2 Stems: 12,12, Thin crown, Decay in branches | N | N | 3.14159 |
| 146 | Monterey Pine | 21 | 60 | Good | | N | N | 2.40528 |
| 147 | Monterey Pine | 16 | 60 | Poor | Significant dieback | N | N | 1.39626 |
| 148 | Monterey Pine | 28 | 70 | Good | | N | N | 4.27605 |
| 149 | Coast Live Oak | 10 | 25 | Fair | | N | N | 0.54542 |
| 150 | Coast Live Oak | 6 | 20 | Poor | | N | N | 0.19635 |
| 151 | Monterey Pine | 28 | 20 | Dead | | N | N | 4.27605 |
| 152 | Coast Live Oak | 15 | 30 | Fair | | N | N | 1.22718 |
| 153 | Monterey Pine | 22 | 70 | Fair | Thin crown, branch tip dieback | N | N | 2.63981 |
| 154 | Coast Live Oak | 6 | 15 | Fair | | N | N | 0.19635 |
| 155 | Monterey Pine | 30 | 95 | Fair | Heavy mistletoe infestation, small crown, branch tip dieback, damage on trunk | N | N | 4.90874 |
| 156 | Monterey Pine | 31 | 65 | Dead | | N | N | 5.24144 |
| 157 | Coast Live Oak | 13 | 15 | Good | 2 Stems: 6,7 | N | N | 0.92175 |
| 158 | Monterey Pine | 28 | 40 | Fair | Broken branches, mistletoe, branch tip dieback | N | N | 4.27605 |

| Forest Inventory Data Zone 4, Plots: 1, 3, 6, 7, 8, 9 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Tree #** | **Species** | **Diameter at Standard Height (inches)** | **Height (inches)** | **Condition** | **Notes** | **Evidence of Beetle Infestation? Y/N** | **Evidence of Pitch Canker Infection? Y/N** | **Basal Area** |
| 159 | Coast Live Oak | 10 | 20 | Poor | Conks, dead top | N | N | 0.54542 |
| 160 | Monterey Pine | 24 | 55 | Poor | Thin crown, branch tip dieback, mistletoe | N | N | 3.14159 |
| 161 | Coast Live Oak | 13 | 35 | Fair | Decay in trunk | N | N | 0.92175 |
| 162 | Coast Live Oak | 18 | 35 | Good | | N | N | 1.76714 |
| 163 | Coast Live Oak | 17 | 35 | Good | | N | N | 1.57625 |
| 164 | Coast Live Oak | 8 | 20 | Fair | Decay in trunk | N | N | 0.34907 |
| 165 | Coast Live Oak | 4 | 10 | Poor | Significant dieback, decay in trunk, conks | N | N | 0.08727 |
| 166 | Coast Live Oak | 8 | 20 | Fair | Damage to crown, broken branches | N | N | 0.34907 |
| 167 | Coast Live Oak | 12 | 25 | Fair | | N | N | 0.78540 |
| 168 | Monterey Pine | 18 | 70 | Dead | | N | N | 1.76714 |
| 169 | Coast Live Oak | 7 | 10 | Poor | 2 Stems: 5, 2 | N | N | 0.26725 |
| 170 | Coast Live Oak | 17 | 25 | Good | Decay in trunk | N | N | 1.57625 |
| 171 | Monterey Pine | 29 | 40 | Dead | | N | N | 4.58694 |
| 172 | Monterey Pine | 24 | 55 | Dead | | N | N | 3.14159 |
| 173 | Monterey Pine | 30 | 75 | Fair | Mistletoe, branch dieback, thin crown | N | N | 4.90874 |
| 174 | Coast Live Oak | 11 | 25 | Fair | | N | N | 0.65995 |
| 175 | Coast Live Oak | 9 | 20 | Fair | | N | N | 0.44179 |
| 176 | Coast Live Oak | 14 | 30 | Poor | Thin crown, Branch tip dieback | N | N | 1.06901 |
| 177 | Monterey Pine | 14 | 50 | Good | | N | N | 1.06901 |
| 178 | Monterey Pine | 4 | 20 | Fair | Mistletoe | N | N | 0.08727 |
| 179 | Monterey Pine | 7 | 35 | Fair | Mistletoe | N | N | 0.26725 |
| 180 | Coast Live Oak | 15 | 25 | Good | 2 stems: 7, 8 | N | N | 1.22718 |
| 181 | Coast Live Oak | 19 | 30 | Fair | | N | N | 1.96895 |
| 182 | Monterey Pine | 33 | 80 | Good | Old pitch tubes | Y | N | 5.93957 |
| *Count All* | *182* | *Average Height All* | *31* | | *QMD All* | *15.2* | | |
| *Count Pine* | *39* | *Average Height Pine* | *53* | | *QMD Pine* | *22.1* | | |
| *Count Oak* | *143* | *Average Height Oak* | *25* | | *QMD Oak* | *12.7* | | |
| *Count Other* | *0* | *Average Height Other* | *0* | | *QMD Other* | *0.0* | | |
| *TPA* | *120* | | | | | | | |
| **Total BA** | **230.3615** | **104.0379** | **126.3236** | | | | | |
| *Avg BA* | *1.265722* | *2.667639* | *0.883382* | | | | | |

| Tree Diameter Distribution (by diameter inches) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 3 to 8 | 9 to 14 | 15 to 20 | 21 to 26 | 27 to 32 | >32 | | |
| All | 60 | 68 | 23 | 16 | 10 | 5 | | |
| Pine | 9 | 3 | 7 | 8 | 9 | 3 | | |
| Oak | 51 | 65 | 16 | 8 | 1 | 2 | | |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | | |

# Appendix E
Local Tree Nurseries

| Local Tree Nuseries | |
|---|---|
| **Griggs Nursery**<br>831.626.0680 | 9220 Carmel Valley Rd. Carmel, CA 93923<br>info@griggsnursery.com |
| **Drought Resistant Nursery**<br>831.375.2120 | 850 Park Ave, Monterey, CA 93 |
| **Blue Moon Native Garden**<br>831.659.1990 | Carmel Valley, CA<br>info@bluemoonnative.com |
| **Rana Creek Wholesale Nursery**<br>831.659.2830 | 7480 Williams Ranch Rd, Carmel, CA 93923<br>www.ranacreeknursery.com |

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