

## **APPENDIX C1**

### ***Biological Resources Report and Peer Review***

**Biological Resources Assessment  
Topgolf Burlingame  
City of Burlingame, San Mateo County, California**

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## SECTION 1: INTRODUCTION

At the request of ARCO/Murray National Construction Company, Inc., FirstCarbon Solutions (FCS) conducted a biological resources assessment (BRA) for the roughly 12.7-acre project site located in the City of Burlingame, San Mateo County, California. The project proposes to redevelop the site with a Topgolf recreation facility. The proposed project consists of a 3-story, 84,140-square-foot building with an outdoor patio area, and an approximately 5-acre outdoor driving range. Additionally, the facility would contain up to 120 hitting bays with a maximum capacity of 1,804 occupants.

The survey was performed at the request of ARCO/Murray to meet compliance with Federal, State, and local jurisdictions to determine if development of the property could potentially affect sensitive biological resources located on or adjacent to the property. Additionally, focused surveys for avian species were recorded at five driving ranges and/or golf courses, including the driving range at the proposed site, to assist in the determination of whether the project has the potential for causing injury and mortality of avian species due to collisions between avian species and the protective netting that surrounds golf courses and driving ranges. The data gathered from those surveys was used to further support the findings listed in this document. Further analysis is provided in Section 4.3, Wildlife, of this report and the corresponding datasheets can be found in Appendix A. This report analyzes potential effects on sensitive biological resources and jurisdictional areas associated with the proposed project.

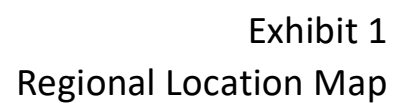
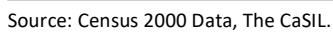
### 1.1 - Project Site Location and History

The proposed project is located at 250 Anza Boulevard and borders the San Francisco Bay, sitting between Millbrae and San Mateo (Exhibit 1). The project site is located in the San Mateo, California United States Geological Survey (USGS) 7.5-Minute Topographical Quadrangle Map. The project site is currently an active driving range, putting green, and associated walkways. There are several small pockets of undeveloped area throughout the site. The project site is bound by a large parking lot, an AstroTurf sports complex, the Double Tree by Hilton Hotel, the San Francisco Bay, and the Bayshore Freeway. Directly off-site is a building that currently houses the main office for the driving range and a small restaurant. Regional access to the site is provided via Interstate 80 (I-80) west. Local access to the site is provided via Airport Boulevard (Exhibit 2).

### 1.2 - Project Description

The proposed project plans to redevelop the site through the construction of a Topgolf recreation facility (Exhibit 3). The facility would contain an outdoor patio area, 5-acre driving range, and up to 120 hitting bays. A small miniature golf area will be contained within the project boundaries as well. Additional parking lot spaces will be constructed.

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Source: ESRI Aerial Imagery.

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## Exhibit 2 Local Vicinity Map Aerial Base

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## SECTION 2: REGULATORY SETTING

### 2.1 - Federal

#### 2.1.1 - Endangered Species Act

The United States Fish and Wildlife Service (USFWS) has jurisdiction over species listed as threatened or endangered under the Federal Endangered Species Act (FESA). Section 9 of FESA protects listed species from “take,” which is broadly defined as actions taken to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” FESA protects threatened and endangered plants and animals and their critical habitat. Candidate species are those proposed for listing; these species are usually treated by resource agencies as if they were actually listed during the environmental review process. Procedures for addressing impacts to federally listed species follow two principal pathways, both of which require consultation with the USFWS, which administers the FESA for all terrestrial species. The first pathway is the Section 10(a) incidental take permit, which applies to situations where a non-federal government entity must resolve potential adverse impacts to species protected under FESA. The second pathway is Section 7 consultation, which applies to projects directly undertaken by a federal agency or private projects requiring a federal permit or approval.

#### 2.1.2 - Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the Fish and Game Code. All raptors and their nests are protected from take or disturbance under the MBTA (16 United States Code [USC] § 703, *et seq.*) and California statute (Fish and Game Code [FGC] § 3503.5). The golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalus*) are also afforded additional protection under the Eagle Protection Act, amended in 1973 (16 USC § 669, *et seq.*) and the Bald and Golden Eagle Protection Act (16 USC § 668–668d).

#### 2.1.3 - Clean Water Act

##### Section 404

The United States Army Corps of Engineers (USACE) administers Section 404 of the federal Clean Water Act (CWA), which regulates the discharge of dredge and fill material into waters of the United States. The USACE has established a series of nationwide permits that authorize certain activities in waters of the United States, if a proposed activity can demonstrate compliance with standard conditions. Normally, the USACE requires an individual permit for an activity that will affect an area equal to or in excess of 0.5 acre of waters of the United States. Projects that result in impacts to less than 0.5 acre can normally be conducted pursuant to one of the nationwide permits, if consistent with the standard permit conditions. The USACE also has discretionary authority to require an Environmental Impact

Statement for projects that result in impacts to an area between 0.1 and 0.5 acre. Use of any nationwide permit is contingent on the activities having no impacts to endangered species.

## Section 401

As stated in Section 401 of the CWA, “any applicant for a federal permit for activities that involve a discharge to waters of the State, shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act.” Therefore, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB).

## 2.2 - State

### 2.2.1 - CEQA Guidelines

The following California Environmental Quality Act (CEQA) Guidelines serve as thresholds of significance for determining the potential impacts to the biological resources identified in this report:

- Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or USFWS.
- Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Has a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites.
- Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflicts with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan.

### 2.2.2 - California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA is similar to FESA but pertains to State-listed endangered and threatened species. CESA requires State agencies to consult with the CDFW when preparing CEQA documents. The purpose is to ensure that the State lead agency actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of habitat essential to the continued existence of those

species, if there are reasonable and prudent alternatives available (FGC § 2080). CESA directs agencies to consult with the CDFW on projects or actions that could affect listed species, directs the CDFW to determine whether jeopardy would occur, and allows the CDFW to identify “reasonable and prudent alternatives” to the project consistent with conserving the species. CESA allows the CDFW to authorize exceptions to the State’s prohibition against take of a listed species if the “take” of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (FGC § 2081).

### 2.2.3 - California Fish and Game Code

Under CESA, the CDFW has the responsibility for maintaining a list of endangered and threatened species (FGC § 2070). Sections 2050 through 2098 of the Fish and Game Code outline the protection provided to California’s rare, endangered, and threatened species. Section 2080 of the Fish and Game Code prohibits the taking of plants and animals listed under the CESA. Section 2081 established an incidental take permit program for State-listed species. The CDFW maintains a list of “candidate species,” which it formally notices as being under review for addition to the list of endangered or threatened species.

In addition, the Native Plant Protection Act of 1977 (NPPA) (FGC § 1900, *et seq.*) prohibits the taking, possessing, or sale within the State of any plants with a State designation of rare, threatened, or endangered (as defined by the CDFW). An exception to this prohibition in the NPPA allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify the CDFW and give the agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed. Fish and Game Code, Section 1913 exempts from “take” prohibition “the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way.” Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the proposed project.

The CDFW also maintains lists of “Species of Special Concern” that serve as species “watch lists.” The CDFW has identified many Species of Special Concern. Species with this status have limited distribution or the extent of their habitats has been reduced substantially, such that their populations may be threatened. Thus, their populations are monitored, and they may receive special attention during environmental review. While they do not have statutory protection, they may be considered rare under CEQA and thereby warrant specific protection measures.

Sensitive species that would qualify for listing but are not currently listed are afforded protection under CEQA. CEQA Guidelines Section 15065 (Mandatory Findings of Significance) requires that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines Section 15380 (Rare or Endangered Species) provides for the assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Unlisted plant species on the California Native Plant Society (CNPS) Lists 1A, 1B, and 2 would typically be considered under CEQA.



Sections 3500 to 5500 of the Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. The CDFW cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock.

Under Section 3503.5 of the Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders of *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. To comply with the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of CESA. "Take" of protected species incidental to otherwise lawful management activities may be authorized under Fish and Game Code Section 206.591. Authorization from the CDFW would be in the form of an Incidental Take Permit.

Section 1602 of the Fish and Game Code requires any entity to notify CDFW before beginning any activity that "may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake" or "deposit debris, waste, or other materials that could pass into any river, stream, or lake." "River, stream, or lake" includes waters that are episodic and perennial; and ephemeral streams, desert washes, and watercourses with a subsurface flow. A Lake or Streambed Alteration Agreement will be required if the CDFW determines that project activities may substantially adversely affect fish or wildlife resources through alterations to a covered body of water.

#### **2.2.4 - California Porter-Cologne Water Quality Control Act**

The RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, within any region that could affect the water of the state" (Water Code § 13260(a)), pursuant to provisions of the Porter-Cologne Water Quality Act. "Waters of the State" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code § 13050(e)).

#### **2.2.5 - California Department of Fish and Wildlife Species of Concern**

In addition to formal listing under FESA and CESA, species receive additional consideration by CDFW and local lead agencies during the CEQA process. Species that may be considered for review are included on a list of "Species of Special Concern," developed by the CDFW. It tracks species in California whose numbers, reproductive success, or habitat may be threatened. In addition to

Species of Special Concern, the CDFW identifies animals that are tracked by the California Natural Diversity Database (CNDDDB), but warrant no federal interest and no legal protection. These species are identified as California Special Animals.

### 2.2.6 - California Native Plant Society

The CNPS maintains a rank of plant species native to California that has low population numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts to populations of CNPS ranked plants receive consideration under CEQA review. The following identifies the definitions of the CNPS ranks:

- **Rank 1A:** Plants presumed Extinct in California
- **Rank 1B:** Plants Rare, Threatened, or Endangered in California and elsewhere
- **Rank 2:** Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere
- **Rank 3:** Plants about which we need more information—A Review List
- **Rank 4:** Plants of limited distribution—A Watch List

All plants appearing on CNPS List 1 or 2 are considered to meet the CEQA Guidelines Section 15380 criteria. While only some of the plants ranked 3 and 4 meet the definitions of threatened or endangered species, the CNPS recommends that all Rank 3 and Rank 4 plants be evaluated for consideration under CEQA.

### 2.2.7 - Habitat Conservation Plan

The project site is not subject to any adopted Habitat Conservation Plan and is therefore subject to regulation by local, State, and Federal laws on a case-by-case basis. As there is no adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan applicable to the project site, no impact would occur in this regard, and as such, no additional requirements of mitigation measures are recommended.

### 2.2.8 - Regional and Local

If deemed applicable, the proposed project will be required to comply with local and regional ordinances and regulations. Specially, the following may apply:

#### **City of Burlingame Municipal Code: (Title 11, Chapter 11.04 Street Trees and 11.06 Urban Reforestation and Tree Protection)**

This chapter lists the protections in place for specific trees and the necessary steps required for tree removal.

- The City requires a permit for removal, pruning, or damage to any street tree or protected tree. Street trees are defined as any woody plant with a single stem and commonly achieving ten feet or more in height. Protected trees are defined as a) any tree with a circumference of 48 inches or more when measured at a height 54 inches above natural grade; b) a tree or

stand of trees so designated by the city council; or c) a stand of trees in which the Parks and Recreation director has determined each tree is dependent on the others for survival.

- Municipal Code 11.06.050 further prohibits the storage of chemicals or other construction materials within the drip line of protected trees.
- The Municipal Code Section 11.06 Urban Reforestation and Tree Protection includes measures and conditions that protect trees that are to remain, and requirements for replacement of trees that are removed.

Tree replacement required under City Municipal Code 11.06.090 includes the following:

- (a)(2) One landscape tree for every two thousand (2,000) square feet of lot coverage for apartment houses or condominiums.
- (b) Permits for removal of protected tree(s) shall include replanting conditions with the following guidelines:
  - (1) Replacement shall be three (3) fifteen (15)-gallon size, one twenty-four (24)-inch box size, or one thirty-six (36)-inch box size landscape tree(s) for each tree removed as determined below.
  - (2) Any tree removed without a valid permit shall be replaced by two (2) 24-inch box size, or two (2) 36-inch box size landscape trees for each tree so removed as determined below.
  - (3) Replacement of a tree be waived by the director if a sufficient number of trees exists on the property to meet all other requirements of the Urban Reforestation and Tree Protection ordinance.
  - (4) Size and number of the replacement tree(s) shall be determined by the director and shall be based on the species, location and value of the tree(s) removed.
  - (5) If replacement trees, as designated in subsection (b)(1) or (2) above, as applicable, cannot be planted on the property, payment of equal value shall be made to the City. Such payments shall be deposited in the tree planting fund to be drawn upon for public tree planting

## City of Burlingame General Plan

### Objectives

- (A): To initiate, develop, and implement programs for the conservation of natural resources giving particular attention to critical resource conditions.
- (B): To prevent or eliminate damage to the environment and stimulate the health and welfare of the citizens of Burlingame.
- (C): To restore, where found to be feasible, natural features of vegetative cover, streams, marsh and bay where areas have been unduly disturbed by man.
- (D): To initiate, develop, and implement programs for the conservation of the built environment.
- (E): To foster public educational programs on local conservation needs.
- (F): To participate in regional conservation programs of direct concern to the City.
- (G): To promote economic growth which is consistent with an improvement in the quality of the environment.

### *Actions*

- (1): The City should act to protect valuable vegetative cover and encourage planting additional vegetation, giving preference to indigenous materials.
- (2): The City should initiate a study by the Planning Commission of the remaining natural areas to determine the effect of development on or near these areas.
- (3): Because projects being developed outside the corporate limits can adversely affect the City environment, Burlingame should monitor all major developments through the EIR process and other procedures.
- (4): The City should protect the creeks flowing through private and public lands by regulation and acquisition of conservation easements where found to be necessary.
- (5): The City should acquire development rights where found to be necessary to protect areas that are of outstanding value in their natural condition.
- (6): To protect existing urban areas and structures from deterioration, Burlingame should ensure that private places are properly maintained.
- (7): In order to develop a stronger conservation awareness in the people of Burlingame, the City should help to develop conservation education programs in the schools and in the community.
- (8): To develop an exchange of information, the City should maintain communication with conservation groups and conservation agencies in areas of direct concern to the City.

### ***San Francisco Bay Conservation and Development Commission***

The San Francisco Bay Conservation and Development Commission (BCDC) is tasked with regulating all development within the San Francisco Bay, the Bay's shoreline band, and the Suisun Marsh. BCDC is guided in its decisions by the McAteer-Petris Act, the San Francisco Bay Plan, and other plans for specific areas around the Bay.

The project proposes minimal construction work within 100 feet of the shoreline for the driveway connection. As a result, the proposed development will be under the jurisdiction of the BCDC and subject to additional permitting requirements. Therefore, it will be necessary to obtain a BCDC permit prior to undertaking work within 100 feet of the shoreline, including filling, dredging, dredged sediment disposal, shoreline development and other work.

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## SECTION 3: METHODS

### 3.1 - Literature Review

The literature review provides a baseline from which to evaluate the biological resources potentially occurring on the project site, as well as the surrounding area.

#### 3.1.1 - Existing Documentation

As part of the literature review, an FCS biologist examined existing environmental documentation for the project site and local vicinity. This documentation included biological studies for the area; literature pertaining to habitat requirements of special-status species potentially occurring in the vicinity of the site; and Federal register listings, protocols, and species data provided by the USFWS and CDFW. These and other documents are listed in the references section of this report.

#### 3.1.2 - Topographic Maps and Aerial Photographs

An FCS biologist reviewed current USGS 7.5-minute topographic quadrangle map(s) and aerial photographs as a preliminary analysis of the existing conditions within the project site and immediate vicinity. Information obtained from the review of the topographic maps included elevation range, general watershed information, and potential drainage feature locations (USGS 1986). Aerial photographs provided a perspective of the most current site conditions relative to on-site and off-site land use, plant community locations, and potential locations of wildlife movement corridors.

#### 3.1.3 - Soil Surveys

The United States Department of Agriculture (USDA) has published soil surveys that describe the soil series (i.e., group of soils with similar profiles) occurring within a particular area (USDA 1980). These profiles include major horizons with similar thickness, arrangement, and other important characteristics. These series are further subdivided into soil mapping units that provide specific information regarding soil characteristics. Many special-status plant species have a limited distribution based exclusively on soil type. Therefore, pertinent USDA soil survey maps were reviewed to determine the existing soil mapping units within the project site and to establish if soil conditions on-site are suitable for any special-status plant species (Soil Survey Staff 2019).

#### 3.1.4 - Special-Status Species Database Search

An FCS biologist compiled a list of threatened, endangered, and otherwise special-status species previously recorded within the general project vicinity. The list was based on a search of the CDFW CNDDDB (CDFW 2019), a special-status species and plant community account database, and the CNPS Electronic Inventory (CNPSEI) of Rare and Endangered Vascular Plants of California database (CNPS 2019) for the San Mateo, California USGS 7.5-minute topographic quadrangle map.

The CNDDB Biogeographic Information and Observation System (BIOS 5; CDFW 2018) database was used to determine the distance between known recorded occurrences of special-status species and the project site.

### 3.1.5 - Jurisdictional Waters and Wetlands

Prior to conducting the reconnaissance-level survey, FCS's biologists reviewed USGS topographic maps and aerial photography to identify any potential natural drainage features and water bodies. In general, all surface drainage features identified as blue-line streams on USGS maps and linear patches of vegetation are expected to exhibit evidence of flows and considered potentially subject to State and Federal regulatory authority as "waters of the United States and/or State." A preliminary assessment was conducted to determine the location of any existing drainages and limits of project-related grading activities, to aid in determining if a formal delineation of waters of the United States or State is necessary.

## 3.2 - Field Survey

FCS Biologist, Joaquin Pacheco, and Ornithologist, Chris Hensley, conducted the reconnaissance-level field survey on February 25, 2019. The object of the survey was not to extensively search for every species occurring within the project site, but to ascertain general site conditions and identify potentially suitable habitat areas for various special-status plant and wildlife species. Special-status or unusual biological resources identified during the literature review were ground-truthed during the reconnaissance-level survey for mapping accuracy. Special attention was paid to sensitive habitats and areas potentially supporting special-status floral and faunal species.

In addition to the field survey, an FCS biologist conducted an avian survey at the site on January 31, 2019. All information collected from this survey, as well as four additional surveys at golf courses and driving ranges with similar environmental conditions, can be found in Appendix A.

### 3.2.1 - Vegetation

Common plant species observed during the reconnaissance-level survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Uncommon and less familiar plants were identified off-site with the use of taxonomical guides, such as Clarke et al. (2007), Hitchcock (1971), McAuley (1996), and Munz (1974). Taxonomic nomenclature used in this study follows Baldwin et al. (2012). Common plant names, when not available from Baldwin et al. (2012), were taken from other regionally specific references. Vegetation types and boundaries were noted on aerial photos and through field observation, and digitized using ESRI ArcGIS software® ArcMap 10.0. By incorporating collected field data and interpreting aerial photography, a map of habitat types, land cover types, and other biological resources within the project site was prepared. Habitat types were based on the classification system from *A Guide to Wildlife Habitats of California* (CDFG 1988). Vegetation community and land cover types used to help classify habitat types are based on Holland (1986) and Oberbauer (1996) and cross-referenced with CDFW's Natural Communities List (2010).

### 3.2.2 - Wildlife

Wildlife species detected during the reconnaissance-level survey by sight, calls, tracks, scat, or other signs were recorded in a field notebook. Notations were made regarding suitable habitat for those special-status species determined to potentially occur within the project site (CDFW 2019).

Appropriate field guides were used to assist with species identification during surveys, such as Peterson (2010), Reid (2006), and Stebbins (2003).

### 3.2.3 - Focused Bird Survey

FCS was contracted to perform four separate avian surveys at golf course driving ranges located in environmental contexts as similar to and as close to the proposed site as possible. The proposed site is uniquely located in that it is approximately 320 feet south of San Francisco Bay and 200 feet north of Sanchez Lagoon. Therefore, finding driving ranges and/or golf courses with the same environmental context where also permission for a biologist to conduct survey efforts on-site could be achieved was challenging. The four locations surveyed are listed in greater detail below, along with an explanation of why each location was selected.

- **Mariners Point Golf and Range, 2401 East 3rd Avenue, Foster City, CA 94404:** This site is located on the edge of San Francisco Bay, within Foster City. Similar to the proposed site, this site is a golf course and range with netting that is located near suitable nesting and foraging habitat for various species of shorebirds. This site was selected because of its similarity to the proposed project's use, as well as its location near habitat for shorebirds. The netting at this site is approximately 110 feet tall. This site was surveyed on January 21, 2019 by Ornithologist Chris Hensley. No collisions of any sort were recorded during this survey.
- **Santa Clara Golf and Tennis Club, 5155 Stars and Stripes Drive, Santa Clara, CA 95054:** This site is located south of the Don Edwards San Francisco Bay National Wildlife Refuge in Santa Clara. This site is a golf course and recreation facility with netting similar to that proposed for the proposed project. It is located largely in an urban environment, near the Levi's Stadium structure. This site was selected because it is located in close proximity to the San Francisco Bay and Don Edwards Wildlife Refuge; as such, avian activity was expected to be high due to these preferable habitats. Additionally, management at this facility were amenable to allowing the biologist to survey on site. This site was surveyed on January 21, 2019 by FCS Biologist Joaquin Pacheco. No collisions of any sort were recorded during this survey.
- **San Bruno Golf Course, 2101 Sneath Lane, San Bruno, CA 94066:** This golf course site is located near the San Bruno Creek and in a heavily wooded forest habitat. This site was selected because it has a similar type of use as that proposed for the project, and because it is located near habitat favorable for birds. This site was surveyed on January 22, 2019 by Ornithologist, Chris Hensley. No collisions of any sort were recorded during this survey.
- **Sunken Gardens Golf Course, 1010 South Wolfe Road, Sunnyvale, CA 94086:** This site is in a largely urban environment and surrounded by residential and commercial housing. This site was selected because of a lack of other viable options. The golf course is located within 4 miles of the San Francisco Bay and shares the same regional location within the San Francisco



## Methods

Bay as the proposed Burlingame location. The netting at this site is approximately 110 feet tall. This site was surveyed on January 22, 2019 by FCS Biologist, Joaquin Pacheco. No collisions of any sort were recorded during this survey.

In addition, the proposed project site, located at 250 Anza Boulevard, Burlingame, CA, was surveyed on February 25, 2019. No collisions of any sort were recorded during this survey.

Each survey consisted of two separate periods of time; the first occurred 30 minutes before sunrise until 3 hours after sunrise, and the second occurred 2 hours before sunset and 30 minutes after sunset. An FCS biologist attempted to collect data from four different locations surrounding the driving range netting.

It is important to note that the surveys were not intended to ascertain accurate population counts but to document any collision between avian species and the erected netting surrounding the driving ranges. During the surveys, bird flight patterns were observed to determine whether birds appeared to be aware of the netting and therefore avoided them during their flights, or were “surprised” by the netting thereby either colliding with or almost colliding with the netting.

It should also be noted that bird flight patterns are influenced by the time of day, time of year, and weather conditions and therefore single day surveys are not fully determinative of the potential, or lack thereof, for bird collisions with netting. Furthermore, surveys documenting a lack of observed collisions on a single day, such as this survey, cannot represent the full realm of potential impacts of collisions that may occur over time. For example, if collisions are infrequent, but have the potential to affect an entire flock of birds (such as shorebirds moving between the Bay and Sanchez Lagoon), such an event would be very difficult to observe and document but could affect large numbers of individuals.

However, the information gathered during the surveys helps inform the conclusions reached in this report regarding the potential for bird injury and mortality due to collisions with the proposed netting.

### 3.2.4 - Wildlife Movement Corridors

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. Urbanization and the resulting fragmentation of open space areas create isolated “islands” of wildlife habitat, forming separated populations. Corridors act as an effective link between populations.

The project site was evaluated for evidence of a wildlife movement corridor during the reconnaissance-level survey. However, the scope of the biological resources study did not include a formal wildlife movement corridor study utilizing track plates, camera stations, scent stations, or snares. Therefore, the focus of this study was to determine if the change of current land use of the project site may have significant impacts on the regional movement of wildlife. These conclusions are made based on the information compiled during the literature review, including aerial photographs, USGS topographic maps and resource maps for the vicinity, the field survey conducted, and professional knowledge of desired topography and resource requirements for wildlife potentially utilizing the project site and vicinity.

## SECTION 4: RESULTS

The reconnaissance-level field survey was conducted by FCS Biologist, Joaquin Pacheco, and Ornithologist, Chris Hensley, on February 25, 2019. Weather conditions during the field survey were cloudy with a starting temperature of 56° degrees Fahrenheit with occasional gusts of wind. The site was in active use by golfers on the driving range and putting green.

### 4.1 - Environmental Setting

The 12.7-acre site is highly disturbed and actively used. The areas of planted vegetation, such as the driving range and putting green, are actively maintained. The site contains impervious surfaces surrounding and within the project site, and built-out coverage structures over the driving range. There is protective netting surrounding the majority of the project site, both around the driving range and the smaller putting green area. There are a large number of planted, ornamental trees, large swaths of blackberry brambles, and a bioretention basin located in the central portion of the putting green. This area of the project site with the bioretention basin is designed to facilitate the collection and rapid infiltration of stormwater runoff through rocks and grates. This area surrounding the bioretention basin, as a result, supports some hydrophytic vegetation, as runoff is concentrated here briefly, but drains rapidly. It was confirmed by golf course personnel that the area has not ponded water in the last few years. As a result, the area surrounding the bioretention feature does not provide wetland or aquatic habitat. Areas of vegetation that are unmaintained are overgrown and display common urban and non-native species.

#### 4.1.1 - Topography

The vast majority of the project site is relatively flat. The site slopes from south to north with approximately 30' of grade change across the existing driving range. Beyond the range/maintenance yards, the sides quickly slope down toward Airport Boulevard and San Francisco Bay to the north, Sanchez Lagoon to the south, and an access road to the west.

#### 4.1.2 - Soils

The project site is in an area that was formally tidal marsh lands and was filled with soil and rubble concrete in the 1920s and 1930s, and was then used as a landfill until 1984.<sup>1</sup>

The USDA Natural Resources Conservation Service indicates that the soils on the site consist of one soil type: Pits and Dumps (Exhibit 4).

- Pits and Dumps soils generally consist of previously excavated gravel and sand soils. It has high permeability and is moderately to well drained.

<sup>1</sup> City of Burlingame. 2012. Burlingame Bayfront Specific Plan. June 18. 2012.

## 4.2 - Vegetation Communities

A search of the USFWS Critical Habitat Portal revealed that the project does not contain identified critical habitat for any federally listed species (USFWS 2019). Also, there is no Critical Habitat designated by the National Marine Fisheries Service (NMFS) present in the project area. Finally, there are no designated refuges within the project boundaries.

### 4.2.1 - Disturbed/Developed

Disturbed land is classified as areas that have been physically disturbed (by previous legal human activity) and are no longer recognizable as a native or naturalized vegetation association, but continues to retain a soil substrate. Typically, vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance, or shows signs of past or present animal usage that removes any capability of providing viable natural habitat for uses other than dispersal. Examples of disturbed land include areas that have been graded, repeatedly cleared for fuel management purposes and/or experienced repeated use that prevents natural revegetation (i.e., dirt parking lots, trails that have been present for several decades), recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old home-sites.

Developed land is classified as areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported and retains no soil substrate. Developed land is characterized by permanent or semi-permanent structures, pavement, or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident because a large amount of debris or other materials have been placed upon it may also be considered urban/developed (e.g., car recycling plant, quarry).

Developed land within the site includes the paved walkways, overhang structures, and associated fencing and buildings.

The vegetation within the portions of the site considered to be developed land includes landscaped grasses, dandelions (*Taraxacum* spp.), white clover (*Trifolium repens*), and English daisies (*Bellis perennis*). Areas that were not actively maintained contained blackberry brambles (*Rubus* spp.), pampas grass (*Cortaderia selloana*), coyote grass (*Baccharis pilularis*), fennel (*Foeniculum vulgare*), cutleaf geranium (*geranium dissectum*) and acacia (*Acacia* spp.). The dense, understory vegetation provided suitable nesting habitat for a variety of songbirds as well as smaller rodents and mammals.

### 4.2.2 - Ruderal Vegetation

This plant community consists predominantly of ruderal and unmaintained or escaped ornamental vegetation. Ruderal species are those species that is first to colonize disturbed lands.

Unmaintained ruderal vegetation can be found on the project site in the area of the proposed driveway/access road depicted as extending south from Airport Boulevard to the southwestern corner of the project site (see Exhibit 5), as well as the area surrounding the aforementioned bioretention basin near the putting green where some hydrophytic vegetation is found. This

hydrophytic vegetation is likely the result of intermittent water concentration near the bioretention basin. However, this area does not support wetland or aquatic habitat. As described above, areas within the project site that were not actively maintained contained blackberry brambles (*Rubus* spp.), pampas grass (*Cortaderia selloana*), coyote grass (*Baccharis pilularis*), fennel (*Foeniculum vulgare*), cutleaf geranium (*Geranium dissectum*) and acacia (*Acacia* spp.).

### 4.3 - Wildlife

The vegetation community and land cover types discussed above provide habitat for numerous local wildlife species. Wildlife activity was low during the field survey and consisted entirely of avian species. Although not observed during the field survey, non-avian species may also be found on the site at times, such as the native raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*); the non-native house mouse (*Mus musculus*), black rat (*Rattus rattus*), and Virginia opossum (*Didelphis virginiana*); and the gopher snake (*Pituophis catenifer*) and western fence lizard (*Sceloporus occidentalis*). These species are common and widespread in the region and are likely to occur on the site.

The following are brief discussions of wildlife species observed within the project site during the field survey, separated into taxonomic groups. Each discussion contains representative examples of a particular taxonomic group either observed on-site or expected to occur.

#### 4.3.1 - Birds

Species observed during the site visit include the American crow (*Corvus brachyrhynchos*), Anna's hummingbird (*Calypte anna*), house sparrow (*Passer domesticus*), black phoebe (*Sayornis nigricans*), and California towhee (*Melospiza crissalis*). Various species of songbirds, such as chickadees and sparrows, were audible during the field survey.

### 4.4 - Focused Bird Surveys

Appendix A includes detailed information regarding the data collected and used for this document from the avian surveys. The following is a summary of that data.

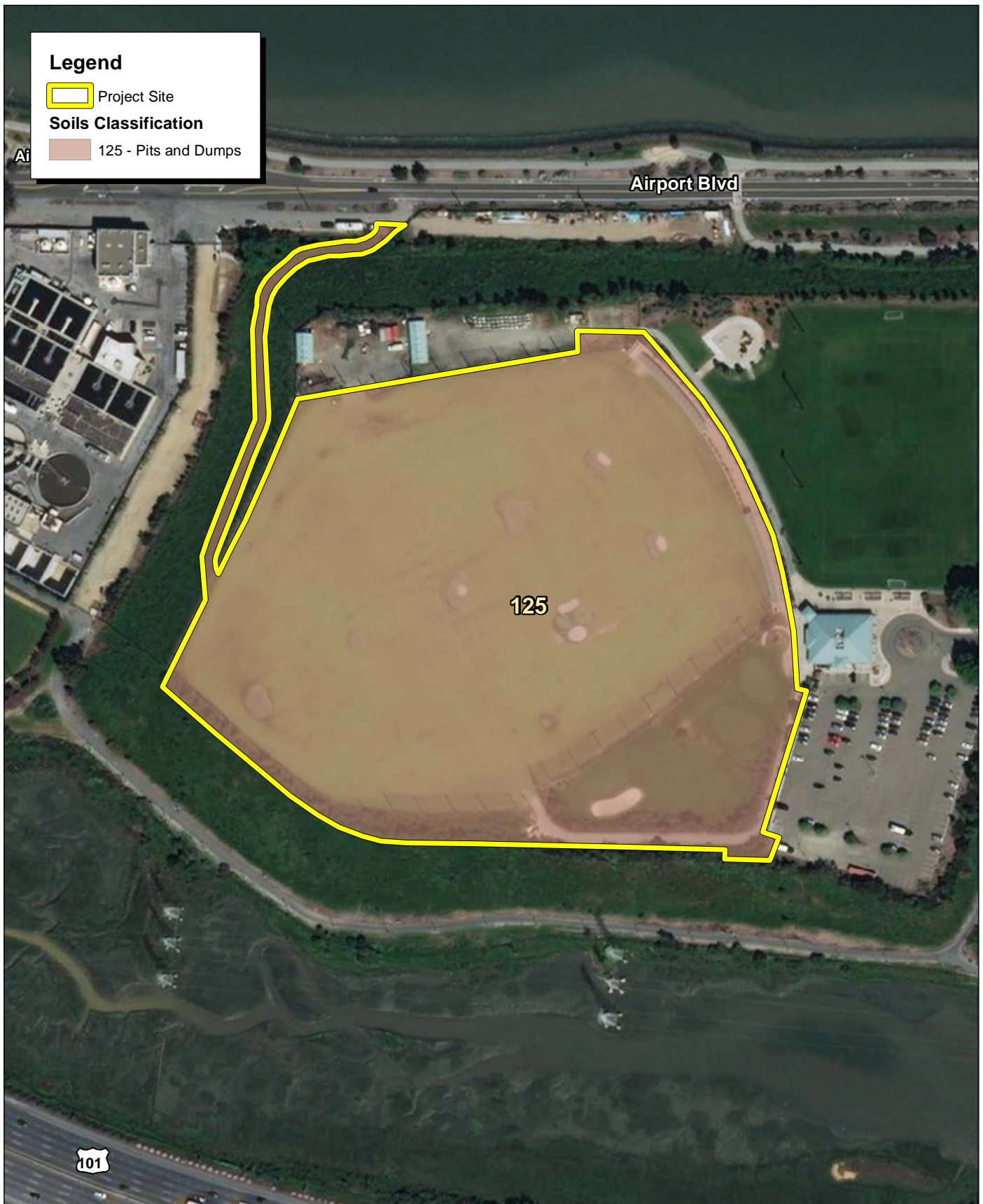
- **Mariners Point Golf and Range:** The dominant species observed were rock pigeon (*Columba livia*), various species of gull (*Larus* spp.), and ruddy duck (*Oxyura jamaicensis*). A total of 45 different species were recorded.
- **Santa Clara Golf and Tennis Club:** The dominant species observed were various species of gull, American crow, and black phoebe. A total of 18 different species were recorded.
- **San Bruno Golf Course:** The dominant species observed were American crow, common raven (*Corvus corax*), and Anna's hummingbird. A total of 17 different species were recorded.
- **Sunken Gardens (Sunnyvale) Golf Course:** The dominant species observed were European starling (*Sturnus vulgaris*), and northern flicker (*Colaptes auratus*). A total of 17 different species were recorded.

- **Proposed Project site:** The dominant species observed were various species of gull, European starling, and black phoebe. A total of 18 different species were recorded.

## 4.5 - Trees

The project site contains a variety of planted ornamental trees within the project boundaries, mainly surrounding the putting green. Additionally, the parking lot has planted ornamental cherry blossom trees (*Prunus serrulata*) throughout. The site contains willow trees (*Salix* spp.) and acacia tree. The majority of the trees present on-site are located surrounding the putting green and adjacent to the pavement walkway along the western boundaries of the project site. An arborist report was completed in August 2018 by Registered Consulting Arborist, David L. Babby, and is included in Appendix D. This report found there to be 88 trees on-site consisting of 11 different species. The main species on-site are red gum (*Eucalyptus camaldulensis*), blackwood acacia (*Acacia melanoxylon*), and Nichol's willowleafed peppermint (*Eucalyptus nicholii*).





Source: ESRI Aerial Imagery. USDA Soils Data, San Mateo East.

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## Exhibit 4 Soils Map

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## Exhibit 5 Biological Resources



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## SECTION 5: SENSITIVE BIOLOGICAL RESOURCES

The following section discusses the existing site conditions and potential for special-status biological resources to occur within the project site.

### 5.1 - Special-Status Plant Communities

Special-status plant communities are considered sensitive biological resources based on Federal, State, or local laws regulating their development, limited distributions, and habitat requirements of special-status plant or wildlife species that occur within them. The high level of disturbance and several developed areas within project boundaries preclude the presence of special-status plant communities. Additionally, the soil community present is dominated by pits and dumps, which is not conducive to the growth rare plant species. There are no special-status plant communities within the project boundaries.

### 5.2 - Special-Status Plant Species

The Special-Status Plant Species Table (Appendix B-1) identifies 24 special-status plant species and CNPS sensitive species that have been recorded to occur within the San Mateo, California topographic quadrangle (USGS 1986), as recorded by the CNDDB and CNPSEI (CDFW 2018; CNPS 2018). The table also includes the species' status, required habitat, and potential to occur within the project site. All special-status plant species have been determined unlikely to occur on-site, primarily based on the absence of suitable habitat, lack of quality soil, and high level of activity and disturbance within project boundaries in addition to the results of the species review and the reconnaissance-level field assessment. All plant species are included in the table, in order to justify their exclusion from further discussion.

### 5.3 - Special-Status Wildlife Species

The Special-Status Wildlife Species Table (Appendix B) identifies 15 Federal and State listed threatened and/or endangered wildlife species, and State Species of Special Concern that have been recorded in the CNDDB (CDFW 2018) as occurring within the San Mateo, California topographic quadrangle (USGS 1986). The table also includes the species' status, required habitat, and potential to occur within the project site. All special-status wildlife species that have been determined unlikely to occur on-site, primarily based on the absence of suitable habitat and no recorded occurrence in the vicinity of the project site, have also been included in the table to justify their exclusion from further discussion. Of the 15 listed species, it is expected that only the Alameda song sparrow (*Melospiza melodia pusillula*) and American peregrine falcon (*Falco peregrinus anatum*) have the potential to occur on-site. Also, and as discussed in Appendix B, habitat for peregrine falcon can be found nearby, but off-site. It is possible that peregrine falcons may nest in old common raven or raptor nests on electrical transmission towers in Sanchez Lagoon (a large stick nest currently occupied by ravens is present on a tower approximately 275 feet south of the site), or possibly on nearby buildings such as the Double Tree Hotel to the east. Although the likelihood of nesting nearby

is low given this species' very low breeding densities around San Francisco Bay, nesting in nearby, off-site nesting is possible.

The San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), burrowing owl (*Athene cunicularia*), western snowy plover (*Charadrius alexandrinus nivosus*), pallid bat (*Antrozous pallidus*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), longfin smelt (*Spirinchus thaleichthys*), and California red-legged frog (*Rana draytonii*) are all unlikely to occur on-site due to lack of suitable habitat as the majority of the site is highly disturbed and developed.

The California black rail (*Laterallus jamaicensis coturniculus*), California Ridgeway's rail (*Rallus obsoletus obsoletus*) and salt-marsh harvest mouse (*Reithrodontomys raviventris*) have a very low potential to occur in the near vicinity of the project site but due to the preferential habitat found off-site, it is unlikely they would enter or reside within project boundaries. The California black rail and the California Ridgeway's rail have a very low likelihood of occurring or breeding in the near vicinity of the project site as well. This is due to salt marsh habitat in Sanchez Lagoon to the south of the project site. However, the vegetation throughout the majority of the marsh is too short in stature and too sparse to support breeding California Ridgeway's rails, and due to the sparse, fragmented nature of dense vegetation, black rails are also not expected to breed in that marsh. Most of the taller vegetation is present as a narrow fringe along the edges of the marsh, which are easily accessible to these rails' mammalian predators (e.g., raccoons, striped skunks, and feral cats [*Felis catus*]), as well as exposure to higher levels of anthropogenic disturbance. Several stands of cordgrass are also present; although California Ridgeway's rails breed in cordgrass in many parts of the Bay area, those cordgrass stands in Sanchez Lagoon are located in particularly low-lying areas that are flooded frequently enough that rails are not expected to use those stands for nesting. It is possible that dispersant California Ridgeway's rails or migrant California black rails may occasionally forage in Sanchez Lagoon, but these species are not expected to nest close enough to the site to be potentially disturbed by project activities, and they would occur in Sanchez Lagoon only as rare dispersants, if at all. Furthermore, the range of the salt marsh harvest mouse does not extend north of the San Mateo Bridge. Thus, the salt marsh harvest mouse is not expected to occur in the marsh habitat to the south of the project site in Sanchez Lagoon.

The preferred habitat of the Alameda song sparrow and American peregrine falcon is further discussed below.

#### Alameda Song Sparrow

- This species is a resident of salt marshes bordering the south arm of San Francisco Bay in the proximity of the project site. It inhabits Salicornia marshes and nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia. The species may occasionally forage in the understory vegetation found on-site around the periphery and may nest in areas near the site but suitable nesting habitat is not present within 100 feet of the areas to be disturbed by project activities. Due to the high level of activity and development within the project boundaries, it has a low potential to occur.

#### American Peregrine Falcon

- This species resides near wetlands, lakes, rivers, or other waters; on cliffs, banks, dunes, mounds; and on human-made structures. Suitable nesting habitat may be found off-site, such as in old common raven or raptor nests on electrical transmission towers in Sanchez Lagoon, or possibly at the nearby Double Tree Hotel. Although the site itself does not contain the typical habitat in which peregrines reside or nest, one individual was observed at the project site during the focused avian surveys. As such, to be conservative, this report assumes that this species has a high potential to occur on the project site.

### 5.4 - Nesting Birds

There are varieties of mature trees, mainly ornamental species, within the project boundaries. However, these trees are not expected to provide suitable nesting habitat for special-status birds or for non-special-status migratory raptors and passerine birds species protected under the MBTA.

It is possible that peregrine falcon, a special-status bird species, could nest close enough to the site such that construction activities could disturb active nests. Potential impacts on nesting peregrine falcons due to construction of the project include the destruction of eggs or occupied nests, mortality of young, and the abandonment of nests with eggs or young birds prior to fledging. If this species' nests were found to be present, impacts to the species would be significant.

No other special-status bird species are anticipated to be impacted due to lack of nesting habitat on or near the project site. Similarly, non-special-status migratory raptors and passerine bird species are not expected to be impacted due to lack of nesting habitat on or near the project site.

Nonetheless, the project would likely be required to conduct pre-construction nesting bird surveys to reduce impacts to nesting birds protected by the MBTA and California Fish and Game Code to a less than significant level.

### 5.5 - Wildlife Movement Corridors

The project site does not contain any creeks, washes, or waterways, which provide significant wildlife movement corridors within the project's greater vicinity. The site also does not contain any vegetation communities expected to convey wildlife movement, as the vegetation within the site is composed of non-native/invasive species, including a golf driving range. Moreover, the site is located within a developed, urban area that does not provide suitable habitat for a wildlife movement corridor.

Additionally, movement across the current site is restricted by the large fences of protective netting surrounding the majority of the site. These barriers, in conjunction with the urban context of the project site and lack of surface waters and vegetative communities on the project site, further impede wildlife and fish species movement across the project site. The proposed project will not drastically change the already impeded movement across the site for aquatic and terrestrial wildlife species.

With regard to avian movement in the vicinity of the project site, it should be noted that the proposed facility and associated netting will occupy largely the same area currently occupied by the existing facility and netting. Avian species traveling through the area have adapted to the conditions on-site since the construction of the existing driving range. However, the netting proposed for the project will be taller than the existing netting. Because avian species in the vicinity of the project have adapted to the existing netting by moving over and around it, it is anticipated that they will adapt to the taller nets as proposed for the project as well. Similarly, although the building will be larger than the existing building, birds are anticipated to avoid the proposed building just as they have avoided the existing building.

Given the site already presents barriers to wildlife movement corridors, the project will not interfere substantially with the movement of native resident or migratory fish or wildlife species, including birds, or impede the use of wildlife nursery sites compared to existing conditions. Thus, a more detailed analysis of the potential for the project to have a significant impact due to interfering with the movement of resident or migratory birds is not warranted. That said, because birds are likely to move over and around the project site between San Francisco Bay and Sanchez Lagoon, particularly during the spring and fall migration periods, a discussion of the project's potential to result in impacts from building collisions or netting collisions is provided below for informational purposes.

## 5.6 - Trees

As previously mentioned, the project site contains various species of mature, ornamental trees, and several native species of trees. The City of Burlingame offers protection to tree(s) with the following:

- a) Any tree with a circumference of 48 inches or more when measured at a height 54 inches above natural grade.
- b) A tree or stand of trees so designated by the City Council.
- c) A stand of trees in which the Parks and Recreation Director has determined each tree is dependent on the others for survival.

## 5.7 - Jurisdictional Waters and Wetlands

An assessment of potentially jurisdictional features was conducted as part of the literature review and reconnaissance-level survey for the project site. There were several areas that appeared to be man-made water features that were limited in size and focused around the putting green area. No standing water was recorded but the presence of blackberry brambles and willows indicated the possible presence of wetland area. Upon further investigation, this area was determined to not be jurisdictional due to the lack of wetland criteria for determination of jurisdictional wetlands. No further studies are required.

## 5.8 - Habitat Conservation Plan

The project site does not fall within the coverage area of a habitat conservation plan or natural community conservation plan. Therefore, there would be no construction impact related to consistency with a conservation plan and these issues are not addressed in the impact analysis and recommendations section of this document.

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## SECTION 6: IMPACT ANALYSIS AND RECOMMENDATIONS

The following discussion addresses potential impacts to special-status biological resources resulting from the proposed project and recommends mitigation measures, where appropriate, to minimize those impacts to a level of “less than significant” under CEQA.

### 6.1 - Special-Status Wildlife Species

The two protected species that have a potential to occur within the project boundaries are the Alameda song sparrow (low potential) and American peregrine falcon (high potential). Of these, only the peregrine falcon may nest close enough to the site (i.e., within 300 feet) such that construction may result in disturbance of active nests due to noise and operation of construction equipment, which could result in the abandonment of eggs or young. This potential is very low due to the low density of nesting peregrine falcons in the Bay area. However, there is some potential for this species to use an old raven nest on electrical towers in Sanchez Lagoon, within 300 feet of the project site. Therefore, there is some potential for nesting peregrine falcons to be disturbed by construction activity to the point of nest abandonment. Given the scarcity of this species as a breeder in the region, the loss of an active nest would represent a significant impact. As such, preconstruction surveys will be required to ensure the absence of American peregrine falcon to determine the necessary mitigation measures. These measures can be completed through the Preconstruction Surveys for the possible presence of nesting birds and birds protected under MBTA. See discussion in Section 6.2, below.

Alameda song sparrows are not expected to nest close enough to the project site (within 100 feet) such that construction activities would result in physical disturbance or indirect disturbance of active nests to the point that eggs or young would be lost or abandoned due to construction or operation of the project. Alameda song sparrows may occasionally occur on the project site as dispersants or foragers; however, adult birds are not expected to be killed or injured as a result of project construction activities, as they could easily fly from the work site prior to such effects occurring. Nonetheless, the preconstruction surveys will also be required to ensure the absence of nesting birds and birds protected under MBTA.

### 6.2 - Nesting Birds

As noted above, trees within the project site are not expected to provide suitable nesting habitat for special-status birds or for non-special-status migratory raptors and passerine birds species protected under the MBTA. Due to the absence of sensitive habitats, the project site supports only regionally common, urban-adapted breeding birds and supports only a very small proportion of these species’ regional populations. In addition, many birds are expected to continue to nest and forage on the project site after project construction is completed. These birds are habituated to disturbance related to the existing golf course, and the project incorporates trees, shrubs, and forbs into the landscape design, which will provide some food and structural resources for the common, urban-adapted birds of the area, as well as for migrants that may use the area during spring and fall



migration. Therefore, project impacts on non-special-status nesting and foraging birds that use the site are anticipated to be less than significant.

However, nests of all native bird species are protected from direct take by Federal and State statutes. Additionally, and as previously described, peregrine falcons could nest close enough to the site such that construction activities could disturb active nests. Impacts to these birds may be considered significant under CEQA. As such, implementation of the following mitigation measure as it relates to nesting birds would reduce impacts to a “less than significant” level. The following mitigation measures are recommended to comply with the MBTA and California Fish and Game Code:

The following measures shall be implemented for construction work during the nesting season (February 1 through August 31):

- If construction or tree removal is proposed during the nesting season for migratory birds (typically February 1 through August 31), a qualified biologist shall conduct pre-construction surveys for American peregrine falcon and other nesting birds within the construction area, including a 300-foot survey buffer for raptors such as the American peregrine falcon and a 100-foot buffer for non-raptors. The survey will be conducted no more than three (3) days prior to the start of ground disturbing activities in the construction area.
- If an active nest is located during pre-construction surveys, construction activities shall be restricted as necessary to avoid disturbance of the nest until it is abandoned or a qualified biologist deems disturbance potential to be minimal. Restrictions may include establishment of exclusion zones (no ingress of personnel or equipment) around an active nest (typically 300-foot buffer for raptors and 100-foot for non-raptors) or alteration of the construction schedule.
- A qualified biologist shall delineate the buffer using nest buffer signs, Environmentally Sensitive Area (ESA) fencing, pin flags, and/or flagging tape. The buffer zone shall be maintained around the active nest site(s) until the young have fledged and are foraging independently.

### 6.3 - Wildlife Movement Corridor

As discussed above, given the site already presents barriers to wildlife movement corridors and wildlife has adapted to these barriers, including the existing structure and netting, the project is not anticipated to interfere substantially with the movement of native resident or migratory fish or wildlife species, including birds, or impede the use of wildlife nursery sites compared to existing conditions. The following information is nonetheless included to provide additional detail regarding the potential (or lack thereof) for bird collisions with the proposed building and the potential for bird collisions with the proposed netting.

### 6.3.1 - Impacts from Building Collisions

Clear or reflective glass creates an illusion of clear airspace that birds do not see as a barrier, resulting in birds colliding with the glass. Birds also collide with glass because they see reflections of the landscape (e.g., clouds, sky, vegetation, or the ground) or they see through the glass to perceived habitat (including potted plants or vegetation inside buildings).

The majority of bird collisions with glass in buildings occur within the “Bird Collision Zone”—i.e., within the first 60 feet above the ground—since this is where birds spend most of their time foraging, defending territory, nesting, and roosting (City of San Francisco 2011).

In an effort to reduce bird collisions with building glass, the USFWS’s Division of Migratory Bird Management has compiled a list of best practices and best available technologies to avoid and minimize bird/glass collisions (USFWS 2016). These include integrating glass and window design options to create a visual signal or cue to help birds detect and avoid glass. Specifically, they encourage the use of opaque, etched, or patterned glass that meets the suggested pattern dimensions, or has a Materials Threat Score of less than 30 (see LEED Pilot Credit 55: Bird Collision Deterrence; U.S. Green Building Council 2011). In addition, they suggest avoiding the over-use of glass by keeping the percentage of total glass below American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standard of 40 percent of surface area (ANSI/ASHRAE/IES Standard 90.1 2013). They also encourage building design measures such as the use of architectural features to reduce the amount, reflectivity, and transparency of glass. Another strategy is moving plants away from clear glass windows so that they cannot be seen from the outside.

The project avoids the over-use of glass by keeping the percentage of total glass below 40 percent of surface area: the north-facing and west-facing, side facades do not include any glazing and the south-facing, main façade includes less than 15 percent glazing. In addition, the project will not use reflective glass but rather will include patterned glass to help birds detect and avoid the windows. In addition, the project includes multiple mullions (i.e., vertical and horizontal bars) on all windows that break up the transparent or reflective areas of the glass. Finally, no landscaping is proposed inside windows, and the landscaping provided outside the building on the site is interspersed to provide only limited foraging opportunities for birds. As a result, the project will have a less than significant impact from bird collisions with the building.

### 6.3.2 - Impacts from Netting Collisions

There is little scientific literature regarding the potential for bird collisions with netting at driving ranges. As a result, FCS conducted bird surveys to understand bird movements near netting such as that proposed. Based upon these surveys, it appears that birds become familiar with the netting and fly around it, even at 190 feet height (the proposed height). It is possible, however, that some birds may still collide with the netting. Of those, not all will be injured or killed. Moreover, those birds that may be injured or killed would not all be special-status species or non-special-status migratory raptors and passerine bird species protected under the MBTA.

There is no well-established CEQA threshold for determining the potential impact of bird collisions as a result of netting interactions. For purposes of this analysis, the threshold of significance used was that the project would result in a significant impact if it would result in injury or mortality of the following due to a collision with the netting:

- One individual of a State or federally listed species
- More than one individual/three months of the white-tailed kite [*Elanus leucurus*] (a California fully-protected species);
- More than one individual/2 months of a California species of special concern; or
- More than five individuals/month of any native bird species (given the potential for impacts to large numbers of species)

Because of the unique location of this facility, combined with the lack of data, it is difficult to determine the number of bird collisions that may occur with the project netting, the type of birds, etc. That said, Topgolf will be implementing a monitoring and adaptive management program at this facility. Through this program, Topgolf will study the bird movements around the site to determine if certain thresholds regarding the number of bird injuries and mortalities, and types of species involved, are reached. If the thresholds are reached, Topgolf will implement remedial measures to ensure that the injuries/mortalities are addressed. These remedial measures may include installation of net marking devices, such as FireFlys or BirdMark BM-AG, that would be placed along all sections of the netting perimeter rope and rib lines to form vertical rows of flight diverters in the center of each area of netting between support poles. The maximum distance between such marking devices, and/or between such marking devices and support poles, would be 15 feet.

In lieu of installing net marking devices during initial project construction, Topgolf may implement the below Monitoring Plan and Adaptive Management/Remedial Measures. The results of the Monitoring Plan will determine the extent to which Adaptive Management/Remedial Measures, including, but not limited to, the net marking devices discussed above, would be required. The Monitoring Plan and Adaptive Management/Remedial Measures will ensure that the number of collisions, if they occur, are sufficiently low to avoid a significant impact. As a result, the project will have a less than significant impact from bird collisions with the netting. The monitoring and adaptive management program for the proposed project is described in detail, below.

### **Monitoring and Adaptive Management/Remedial Measures**

#### **1. Personnel and Schedule:**

- a. Bird-netting collision surveys shall be performed seven (7) days/week for two (2) years by Topgolf facility personnel who have received training in such monitoring by a qualified biologist (or Topgolf may have a biologist conduct such surveys, if desired).
- b. Bird-netting interaction monitoring shall be performed for two (2) consecutive days, twice/month in April, September, and either December or January (i.e., during spring and fall migration and winter), for a total of 12 survey days/year, for two (2) years. This monitoring will be performed by a qualified biologist hired by Topgolf.
- c. The two-year survey period shall begin once all netting has been installed.

2. *Personnel Qualifications, Training, and Materials:*

Topgolf facility personnel that are selected as monitors for bird-netting collision surveys shall receive the training described under “Education” below. At a minimum, these facility personnel shall have an adequate understanding of bird/carcass detection and good observation skills. Monitors without previous experience conducting carcass surveys shall receive the following training from a qualified individual:

- How to search for dead birds along the edges of the facility.
- Provided with example pictures of bird carcasses on the ground and on various types of ground cover.
- How to record data on data sheets in the field.
- How to organize and secure data sheets so that the data collected are not lost.
- Procedures to follow if a dead or injured bird is detected during surveys (e.g., contacting an authorized biologist or bird rehabilitation organization, as described below).

Each monitor shall be provided with the following equipment to help with data collection: flashlight, camera, and data sheet. In addition, a ruler, gloves, small and large zip lock bags, and field guides to bird identification shall be kept on the site for use by an authorized biologist or bird rehabilitation organization, in the event a dead or injured bird is detected (see below).

3. *Education:*

A qualified biologist shall develop a brief training curriculum for Topgolf on-site facilities personnel and other pertinent personnel on how to conduct daily perimeter surveys, the protocols for collecting data, and procedures to follow if a dead or injured bird is detected during surveys (e.g., contacting an authorized biologist or bird rehabilitation organization).

4. *Bird-Netting Collision Survey Procedures:*

- a. The monitor shall divide the survey area into sectors to identify the location of specimens (described below) and a map of the survey area; sectors shall be created prior to the initiation of surveys.
- b. The survey shall begin within 2 hours of sunrise (and preferably earlier, to minimize the potential for dead or injured birds to be removed by predators or scavengers). The monitor shall first scan the interior of the site, using binoculars (and a spotting scope if necessary), for any conspicuous birds that are injured, dead, or trapped within the facility’s netting. This scan can occur from one of the facility’s golf-driving bays.
- c. The monitor shall then walk around the outside of the facility’s netting perimeter, looking for dead or injured birds (including “feather spots” where dead or injured birds may have been predated or scavenged) both inside the facility (i.e., looking through the netting) and within a 20-foot wide strip on the outside of the netting. The monitor may need to walk a zigzag route to adequately cover the 20-foot wide strip. If, during the study, the monitors notice dead or injured birds that are more than 20 feet from the edge of the netting, and it appears that the injury/fatality resulted from collision with the netting, the width of this exterior survey area shall be increased accordingly, the specific extent based on the determination of the qualified biologist, for all future surveys.

- d. All whole birds and feather spots shall be considered injuries or fatalities. Feather spots consist of groups of feathers composed of at least two or more primary flight feathers, five or more tail feathers, or 10 or more feathers of any type concentrated together in an area one (1) square meter or smaller; feathers with significant skin or flesh, or any bone attached shall be considered fatalities.
- e. The monitor shall divide the survey area into sectors to identify the location of the specimen, which will assist with identifying any collision “hotspots” as discussed below. A map of the survey area and sectors shall be created prior to the initiation of surveys. The locations of any dead or injured birds shall be marked on the map during each survey.
- f. If a dead or injured bird is located and the monitor is not a biologist with permits to handle dead or injured birds, the monitor shall contact a qualified biologist such as the San Francisco Bay Bird Observatory, Santa Clara Valley Audubon Society, or Point Blue Conservation Science (“authorized biologist”). The authorized biologist shall follow collection protocols outlined in the permits to handle dead or injured birds. The authorized biologist shall identify the bird to species and, if possible and if relevant for the issue of determining whether the bird is of a special-status taxon, to subspecies. The authorized biologist shall photograph the head, body profile, and feet of the bird, as well as any other features useful in determining the cause of injury or death. If the bird is dead, then using gloves, the authorized biologist shall place specimens in sealable plastic bags; write the date of collection, species involved, and time of day in permanent marker on the outside of the bag; and store all specimens in a freezer.
- g. A spreadsheet for data collection shall be created with the following columns – Date, Time, Monitor, Location, # of Dead Birds, # of Injured Birds, and Disposition of Bird.
- h. The survey area outside the netting shall be mowed to local industry standards so that vegetation remains short enough to allow dead or injured birds to be readily found by monitors. If vegetation cannot be cut short enough, carcass detection trials shall be conducted to estimate the proportion of carcasses present that are actually detected (vs. overlooked) by monitors. If detection trials are needed, the trials would be conducted four times/year, and overseen by a qualified biologist. The qualified biologist would place at least five carcasses of non-protected species (e.g., nonnative birds such as rock pigeons [*Columba livia*], house sparrows [*Passer domesticus*], or European starlings [*Sturnus vulgaris*]) in randomly selected locations (though at least two such locations would be within vegetation in the exterior survey area). The personnel conducting the regular monitoring surveys (i.e., which may be Topgolf staff or a qualified biologist hired by Topgolf) cannot know any details regarding the detection trial, such as when the trial is being conducted, how many specimens are used in the trial, or where those specimens are located; the monitors would only be told at the beginning of the study that a detection trial may be conducted, and that if such a trial is conducted, the birds used in the detection trial would be marked with an inconspicuous marker (e.g., a small piece of clear tape on a leg) so that the monitors would know to report and collect those individuals as “trial carcasses”, but without collecting detailed data or including them in the survey results.

5. *Procedures if Injured Bird is Observed:*

- a. If an injured bird is found, the monitor or facility personnel shall contact the local Animal Control and the Wildlife Center of Silicon Valley (408-929-9453) or other organization qualified to handle injured birds ("bird rehabilitation organization") and follow any instructions given.
- b. For a bird that is easily accessible, the monitor or facility personnel shall use gloves and a towel or cloth to collect the bird, place the injured bird into a carrier or box with cloth at the bottom and slats for air circulation, cover the box or carrier with a towel, and keep it in a cool dry area until a bird rehabilitation organization provides instructions or picks up the injured bird.
- c. If a bird is stuck high in the net, facility personnel shall work with crane operators to access the area of the net where the bird is trapped, then work with the bird rehabilitation organization to remove the injured animal and give it to the bird rehabilitation organization for examination and rehabilitation, as needed.
- d. If a bird is trapped within the interior of the facility, facility personnel shall stop play, contact a bird rehabilitation organization, and follow provided instructions. Based on the determination of a qualified biologist, if appropriate, a long-handled net may be used by trained staff to attempt to capture the trapped bird.

6. *Bird-Netting Interaction Monitoring:*

During the period identified above for bird-netting interaction monitoring, one or more qualified biologists shall monitor how birds interact with the netting. Using binoculars and spotting scopes, and scanning from one of the facility's upper bays or other suitable vantage points, the qualified biologist(s) shall: (1) observe birds flying in the vicinity of the site to determine whether their behavior (such as flight path) is affected by the netting; (2) determine whether flight paths over and around netting are modified well in advance (indicating that birds see the netting far ahead) or suddenly (indicating that birds see the netting only at close range); (3) look for birds that run into the netting; (4) determine whether birds within the facility have difficulty escaping; and (5) otherwise record any information that can inform impact assessment or mitigation strategies for the Topgolf Alviso facility or similar projects. All relevant information shall be recorded in writing or electronically.

7. *Reporting:*

A report on the results of monitoring shall be prepared by Topgolf every three (3) months and provided to a qualified biologist for review. The report shall include information on monitoring (e.g., who conducted the surveys, dates, and maps); a summary of detections of trapped, injured, or dead birds; and an estimate of the number of injuries/fatalities during that period. If detection trials are needed due to vegetation height, the estimated number of injuries/fatalities shall be adjusted based on the proportion of detection trial carcasses that were detected by monitors. The quarterly report shall also include summaries of observations during bird-netting interaction monitoring. Once the qualified biologist confirms the findings in the report, the biologist shall submit the report to the Supervising Environmental Planner in the City of Burlingame Department of Planning, Building and Code Enforcement for review and inclusion in the records.

### Adaptive Management/Remedial Measures

8. If one individual of a state or federally listed species is injured or killed as a result of netting interactions, Topgolf shall hire a qualified biologist to begin the process of identifying and implementing remedial measures to reduce collisions.

Otherwise, upon receipt of the monitoring report every three (3) months, the qualified biologist hired by Topgolf shall review the bird-netting collision data to determine whether injuries or fatalities indicate that remedial measures are necessary to reduce collisions.

Examples of metrics that would necessitate remedial measures include injury or fatality of:

- More than one individual per every 3 months of the white-tailed kite [*Elanus leucurus*] (a California fully protected species);
- More than one individual per every 2 months of a California species of special concern; or
- More than five individuals/per month of any native bird species.

Remedial measures may include, but are not limited to, installing deterrence devices to make the netting more conspicuous to birds or deter birds from flying in that area. If Topgolf proposes an alternative deterrence device, Topgolf will hire a qualified biologist to prepare a report documenting why the alternative deterrence device is equivalently effective. The report shall be submitted to the Supervising Environmental Planner in the City of Burlingame Department of Planning, Building and Code Enforcement for review and approval.

The locations of the deterrence devices may be informed by review of monitoring data to determine whether any collision “hotspots” (i.e., where collisions seem to be occurring more frequently) are present. For example, if the majority of injuries/fatalities are concentrated in a few areas, then only those hotspots would need to be treated with deterrence devices. The extent of installation, and the type of deterrence devices would be determined by the qualified biologist, with approval by the City, based on a review of the monitoring data.

If the remedial measures involve spacing of deterrence devices at a density less than 15 feet, the two-year monitoring period shall restart for each treated hotspot area. Monitoring for each treated hotspot area(s) shall be completed when two (2) years of monitoring have indicated that collisions are below the metrics defined above, or the netting is entirely treated with net marking devices along all sections of the netting perimeter rope and rib lines at a distance of be 15 feet, as described above, or using alternative deterrence devices as recommended by the qualified biologist and approved by the City.

## 6.4 - Trees

Per the City of Burlingame Municipal Code, 10 of the trees on-site are offered protection from removal. The exact location and species of each tree is included in the previously mentioned arborist report (Appendix D). To ensure no adverse impacts to protected trees occur before, during, or following project construction, it is recommended the applicant follow the tree preservation guidelines set forth in the arborist report. These include:

- A Tree Protection Zone (TPZ) is necessary to restrict or confine the following activities to help achieve a reasonable assurance of a tree’s vigor, longevity and anchoring capacity: trenching,

soil scraping, compaction, mass and finish-grading, overexcavation, subexcavation, tilling, ripping, swales, bioswales, storm drains, dissipaters, equipment cleaning, removal of underground utilities and vaults, altering existing water/drainage flows, stockpiling and dumping of materials, and equipment and vehicle operation. For this project, an ideal TPZ should have a linear distance from a trunk of 10 times its diameter (e.g. an 18-inch diameter tree would have a setback of 15 feet in all directions); for multi-trunk measurements, use the combined diameter. In the event an impact encroaches slightly within a setback, it can be reviewed on a case-by-case basis by the project arborist to determine whether measures can sufficiently mitigate the impacts to less-than-significant levels.

- All site-related plans should contain notes referencing this report for tree protection measures.
- Abandon all existing, unused lines or pipes within a TPZ, and any above-ground section should be cut off at existing soil grade (rather than being dug up and causing subsequent root damage); this provision should be specified on the demolition plan.
- Design and route future utilities, irrigation, storm drains, dissipaters, bioswales (or other bioretention device/structure) and swales beyond TPZs. Dictated by the proximity to tree trunks, an alternative installation method may be warranted, such as hand-digging, a pneumatic air device (such as an Air-Spade®), or directional boring.
- For directional-boring, the ground above any tunnel must remain undisturbed, and access pits and any infrastructure (e.g. splice boxes, meters and vaults) established beyond TPZs.
- Where within 10 feet from TPZ, confine grading (cut and fill), overexcavation, subexcavation, trenching, compaction, and other ground disturbance to within 12 to 24 feet from any foundation, footing, curb, gutter, pavement, driveway or retaining wall.
- Any retaining wall constructed beneath a canopy for the purposes of retaining fill away from a TPZ should be, preferably, established on top of existing soil grade with no footing (e.g. drystack), or alternatively, using a pier and above-grade beam foundation, where the piers are minimized in diameter, spaced as far apart as possible, and the beams or spans between the piers established on top or above existing soil grade (i.e. a no-dig design except vertically for the piers). The ground beneath the beams or wall must not be compacted or dug.
- Structures should consider avoiding the need to remove large limbs (e.g. >3-inches in diameter) or sections of canopies contributing to a tree's overall form, including for erecting construction scaffolding or the need for manlifts.
- The permanent and temporary drainage design, including downspouts, should not require water being discharged towards an oak's trunk.
- The future staging area and route(s) of access should be routed beyond canopies and unpaved areas of TPZs.
- Avoid specifying the use of herbicides use within a TPZ; where used on-site, they should be labeled for safe use near trees. Also avoid prescribing liming within 50 feet of a tree.



- Erosion control should consider that any straw wattle or fiber rolls require no more than a 2-inch deep, vertical soil cut for their embedment, and are established as close to canopy edges as possible (and not against a tree trunk).
- The landscape design should conform to the following additional recommendations:
  - Large growing trees, such as those that can exceed the height of retained trees, should be installed beyond TPZs, and be at least 10 to 15 feet from a future foundation, wall and hardscape.
  - Plant material installed within an oak's TPZ must be drought-tolerant, limited in amount, and planted at least 3 feet from its trunk. Plant material installed beneath canopies of other trees should be at least 24 to 36 inches from their trunks.
  - Irrigation and lighting features (e.g. main line, lateral lines, valve boxes, wiring and controllers) should be established so that no trenching occurs within a TPZ.
  - In the event this is not feasible, they may require being installed in a radial direction to a tree's trunk, and terminate a specific distance from a trunk (versus crossing past it).
- Ground cover beneath canopies should be comprised of a 3-inch layer of coarse wood chips or other high-quality mulch (gorilla hair, rock, stone, gravel, black plastic or other synthetic ground cover should be avoided). Mulch should be kept off the trees' trunks.
- New fence posts (posts) should be placed at least 5 feet from a tree's trunk (depends on trunk size and growth pattern); the post layout should be guided by where large roots are likely located, which can be predetermined using a bully probe (or similar), and collaborating with the project arborist.
- Tilling, ripping and compaction within TPZs should be avoided.
- Bender board or other edging material proposed beneath the canopies should be established on top of existing soil grade (such as by using vertical stakes).

#### **Before Demolition, Grading and Construction**

- Any necessary pruning should only be performed in accordance with the most recent ANSI A300 standards, and by a California licensed and bonded tree-service contractor (D-49) which has an ISA certified arborist in a supervisory role, and carries General Liability and Worker's Compensation insurance.
- Clear soil and rock to expose any buried root collars of retained trees. This work must be manually and carefully performed to avoid damaging the trunk and roots during the process, and preferably by a tree-service company using an Air-Spade® to avoid unnecessary root and/or trunk damage.
- Where feasible, manually spread a 4- to 5-inch layer of coarse wood chips, 0.25 to 0.75-inch in size, over exposed ground beneath canopies; the type and source of these wood chips should be from a professional and licensed tree service, and absent of Sudden Oak Death infection (or the possibility thereof). The chips should not be piled against the trunks, and any existing leaf litter should remain in place and the chips spread on top.

- Where within a TPZ, the removal of plant material and groundcover must be manually performed versus using heavy equipment operating and traveling on unpaved ground. Additionally, the removal of stumps shall only be performed using a stump grinder (versus excavating into the ground and inadvertently damaging roots).
- Begin applying supplemental irrigation during the dry months of the year (e.g. May thru October), at a rate of approximately 10 gallons per inch of trunk diameter every two to three weeks via flooding the inside of a 12-inch tall berm established around the canopy perimeters (or as close to the perimeters as possible). Alternatives include using soaker hoses or through deep-root injection. Note, ultimately, the methodology, amount and frequency of irrigation can be best outlined closer to construction commencing, and any applicable dewatering may require a more intensive supplemental watering program than otherwise needed.
- Install tree protection fencing prior to demolition or other site work for the purpose of restricting access into unpaved sections of ground within a TPZ. Fencing does not need to enclose any pavement remaining within a TPZ (in effect, the pavement allows access within a TPZ, while serving as a superior root zone buffer). Fencing should consist of 5- to 6-foot tall chain link mounted on 2-inch diameter steel posts, which are driven into the ground for vertical alignment. Fencing shall remain in place throughout site development, and will need to be installed, as needed, in various phases (e.g. demolition is Phase 1, grading and construction Phase 2). Also, note that removing hardscape within a TPZ may trigger fencing being modified to capture the newly exposed area.

#### **During Demolition, Grading and Construction**

- Take great care during demolition of existing pavement and other features to avoid damaging a tree's trunk, crown and roots within a TPZ.
- Great care must also be taken by equipment operators to position their equipment to avoid trunks and branches, including the scorching of foliage. Any tree damage or injury should be reported to the project arborist for review of treatment.
- Removing existing hardscape (including curbs and gutters) within a TPZ should be carefully performed to avoid excavating roots and soil during the process, and removal of base material shall be performed under direction of the project arborist (and where necessary, shall remain in place and utilized as future base course).
- Avoid using the trees' trunks as winch supports for moving or lifting heavy loads.
- Any authorized access, digging or trenching within designated-fenced areas shall be foot-traffic only and manually performed without using heavy equipment or tractors.
- Avoid damaging or cutting roots with diameters  $\geq 2$  inches without prior assessment by the project arborist. Should roots of this size become encountered, within one hour of exposure, either bury them with soil or wrap in moistened burlap, to remain continually moist until ultimately covered by soil. If approved for cutting, cleanly severe at 90 degrees to the angle of root growth against the cut line (using loppers or a sharp hand saw), and then immediately after, bury the cut end with soil or cover with a plastic sandwich bag (and secured using a

rubber band, and removed just before backfilling). Roots encountered with diameters less than 2 inches and require removal can be cleanly severed, using a new handsaw or loppers, at 90 degrees to the direction of root growth.

- Spoils created during digging shall not be piled or spread on unpaved ground within a TPZ. If essential, spoils can be temporarily piled on plywood or a tarp.
- New irrigation and lighting features (e.g. main line, laterals, valve boxes, wiring and controllers) should be established so that no trenching occurs within a TPZ. In the event this is not feasible, the trenches may require being installed in a radial direction to a tree's trunk, and terminate a specific distance from a trunk (versus crossing past it). The use of a pneumatic air device (such as an Air-Spade®) may be needed to avoid root damage. Additionally, any Netafim tubing used should be placed on grade, and header lines installed as mentioned above. All routes within and near a TPZ shall be reviewed with the project arborist several weeks or months prior to installation.
- Digging holes for any new fence within a TPZ shall be manually performed, and in the event a root of  $\geq 2$  inches in diameter is encountered during the process, the hole should be shifted over by 12 inches and the process repeated.
- Dust accumulating on trunks and canopies during dry weather periods should be periodically washed away (e.g. every three to four months).
- Avoid disposing harmful products (such as cement, paint, chemicals, oil and gasoline) beneath canopies or anywhere on site that allows drainage within or near TPZs. Herbicides should not be used with a TPZ; where used on site, they should be labeled for safe use near trees.
- Fertilization may benefit a tree's health, vigor and appearance. If applied, however, soil samples should first be obtained to identify the pH levels and nutrient levels so a proper fertilization program can be established. I further recommend any fertilization is performed under the direction and supervision of a certified arborist, and in accordance with the most recent ANSI A300 standards.

## SECTION 7: CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological resources assessment, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: September 13, 2019 Signed: \_\_\_\_\_



Brian Mayerle, Senior Biologist  
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Walnut Creek, CA 94597

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## Appendix A: Datasheets



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**Location: Mariner's Golf Course**  
**Date of Survey: January 21, 2019**  
**Surveyor: Chris Hensley**

Morning

Time	Speices	Count
650	American Robin	2
	Song Sparrow	3
	Eared Grebe	1
	Bufflehead	4
	Gull Spp	25
	Yellow-rumped Warbler	1
	Unidentified Teal	4
	Western Sandpiper	4
	Surf Scoter	3
	House Sparrow	2
	Black Pheobe	2
	Anna's Hummingbird	1
	Western Grebe	1
	American Goldfinch	1
	Canada Goose	4
	Brown Pelican	1
	Green-winged Teal	2
	Double-crested Cormorant	2
	Marsh Wren	2
	Rock Pigeon	28
750	Rock Pigeon	30
	Willet	5
	American Robin	1
	Anna's Hummingbird	1
	Song Sparrow	2
	American Wigeon	5
	Greater Scaup	11
	Marsh Wren	2
	UNID	1
	American Crow	2
	Surf Scoter	2
	Bufflehead	6
	Western Grebe	4
	Yellow-rumped Warbler	1
	European Starling	2
	Eared Grebe	1
	Black Pheobe	2
	Rock Pigeon	1
	House Finch	3
	UNID	2
900	Sharp-shinned Hawk	1
	Red-Tailed Hawk	2
	Gull Spp	75
	Mourning Dove	1
	Savannah Sparrow	3
	Song Sparrow	8
	Golden-crowned Sparrow	3
	Anna's Hummingbird	2
	Yellow-rumped Warbler	2
	Ring-billed Gull	2
	Black Pheobe	1
	Western Bluebird	2
	Rock Pigeon	4

Evening

Time	Speices	Count
1521	Black Pheobe	2
	Bufflehead	9
	Yellow-rumped Warbler	1
	Mallard	2
	Rock Pigeon	2
	Bushtit	4
	Greater Scaup	2
	Forster's Tern	2
	Great Egret	1
	Western Grebe	1
	Surf Scoter	4
	American Wigeon	2
	Ring-billed Gull	5
	Spotted Sandpiper	1
	Snowy Egret	2
1621	Long-billed Curlew	1
	Anna's Hummingbird	1
	Ring-billed Gull	30
	Herring Gull	20
	Great Egret	11
	Snowy Egret	1
	Rock Pigeon	1
	American Crow	1
	Ruddy duck	25
	Forster's Tern	1
	Greater Scaup	2
	UNID	1
	Red-Tailed Hawk	1
	Yellow-rumped Warbler	1
	White-crowned Sparrow	1
1659	European Starling	1
	Black Pheobe	1
	Savannah Sparrow	4
	Song Sparrow	1
	White-crowned Sparrow	4
	Golden-crowned Sparrow	3
	European Starling	2
	Anna's Hummingbird	1
	Black Pheobe	1
	UNID	1
	Ruby-crowned Kinglet	1

**Location: San Bruno Golf Course**

**Date of Survey: January 22, 2019**

**Surveyor: Chris Hensley**

Morning

<b>Time</b>	<b>Speices</b>	<b>Count</b>
650	American Crow	75
	Mourning Dove	1
	White-Crowned Sparrow	1
	Dark-eyed Junco	6
	Common Raven	7
	Wrentit	2
750	Anna's Hummingbird	3
	Ruby-crowned Kinglet	2
	UNID	1
	European Starling	1
	American Robin	3
	Red-tailed Hawk	2
	Western Scrub Jay	3
900	American Goldfinsh	1
	Stellar Jay	1

Evening

<b>Time</b>	<b>Speices</b>	<b>Count</b>
1522	Anna's Hummingbird	11
	UNID	1
	Red-tailed Hawk	1
1621	Ruby-crowned Kinglet	1
	Western Scrub Jay	1
	American Robin	2
1659	Yellow-rumped Warbler	1
	American Crow	30

**Location: Santa Clara Golf Course**

**Date of Survey: January 21, 2019**

**Surveyor: Joaquin Pacheco**

**Morning**

<b>Time</b>	<b>Speices</b>	<b>Count</b>
641	Black Phoebe	2
	yellow-rumped warbler	3
	Seagull Spp	90
	American Crow	5
	Chickadee Spp	3
	Song Sparrow	4
756	Black Phoebe	2
	Seagull Spp	15
	House Finch	3
	Yellow-Breasted Chat	1
	Mallard	5
	American Crow	4
	Dark-Eyed Junco	1
	Anna's Hummingbird	1
	Wrentit	1
	Canada Goose	4
911	Anna's Hummingbird	1
	House Finch	3
	Red-tailed Hawk	1
	American Crow	1
	Seagull Spp	2
	Black Phoebe	3
	Turkey Vulture	2

**Evening**

<b>Time</b>	<b>Speices</b>	<b>Count</b>
1511	Black Phoebe	3
	Mallard	2
	Seagull Spp	45
	Say's Phoebe	1
	Canada Goose	5
	Anna's Hummingbird	1
1601	Anna's Hummingbird	1
	Seagull Spp	15
	Turkey Vulture	1
	Black Phoebe	1
	Western Bluebird	4
	Western Scrub Jay	2
17:15	Seagull Spp	15
	yellow-rumped warbler	3
	Black Phoebe	4
	House Finch	2
	Red-tailed Hawk	1

**Location: Sunken Gardens Golf Course**

**Date of Survey: January 22, 2019**

**Surveyor: Joaquin Pacheco**

**Morning**

<b>Time</b>	<b>Speices</b>	<b>Count</b>
638	Song Sparrow	7
	House Finch	1
	American Crow	10
	Western Bluebird	3
	Canada Geese	2
	Black Pheobe	1
	Northern Flicker	12
	Common Raven	3
	Yellow-rumped Warbler	3
	Brewer's Blackbird	1
738	Chestnut-backed chickadee	4
	Allens Hummingbird	2
	Yellow-rumped Warbler	2
	Dark-eyed Junco	4
	Northern Harrier	2
	European Starling	15
	American Crow	5
847	Dark-eyed Junco	5
	Canada Geese	8
	Seagull Spp	3
	European Starling	10
	American Crow	3

**Evening**

<b>Time</b>	<b>Speices</b>	<b>Count</b>
1515	Common Raven	2
	American Crow	5
	Black Pheobe	1
1614	American Crow	5
	European Starling	12
	Northern Harrier	1
	Western Bluebird	1
	Black Pheobe	1
	Northern Flicker	1
1715	Anna's Hummingbird	1
	American Crow	5
	European Starling	10

**Location: Proposed Project Site, 250 Anza Boulevard, Burlingame, CA**

**Date of Survey: February 25, 2019**

**Surveyors: Joaquin Pacheco and Chris Hensley**

**Morning**

<b>Time</b>	<b>Speices</b>	<b>Count</b>
645	White-crowned Sparrow	6
	Seagull Spp	10
	Black Pheobe	10
	American Crow	1
	Cormorant Spp	3
715	Yellow-rumped Warbler	2
	Song Sparrow	5
	Cormorant Spp	1
	American Crow	2
	Rock Pigeon	3
	Anna's Hummingbird	1
	Seagull Spp	10
815	Seagull Spp	25
	California Towhee	2
	American Crow	2
	Black Pheobe	1
	Canada Goose	4
	House Finch	1
	Western Bluebird	2
	Peregrine Falcon	1

**Evening**

<b>Time</b>	<b>Speices</b>	<b>Count</b>
1530	Turkey Vulture	3
	Peregrine Falcon	1
	Brewer's Blackbird	1
1630	Seagull Spp	15
	American Crow	5
	Song Sparrow	3
1700	Black Pheobe	2
	Cormorant Spp	4
	European Starling	10
	Western Bluebird	2

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## Appendix B: Sensitive Species Tables



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## **B.1 - Special-Status Plant Species Table**

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**Table 1: Special-status Plant Species Potentially Occurring within the Project**

Scientific Name Common Name	Status			Habitat Description <sup>4</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>	CNPS <sup>3</sup>			
arcuate bush-mallow <i>Malacothamnus arcuatus</i>	—	—	1B.2	Chaparral, cismontane woodland. Gravelly alluvium. 1–735 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral habitat on site.	No
bent-flowered fiddleneck <i>Amsinckia lunaris</i>	—	—	1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. 3–795 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of cismontane woodland onsite.	No
chaparral ragwort <i>Senecio aphanactis</i>	—	—	2B.2	Dicot annual herb found in chaparral, cismontane woodland, and coastal scrub habitat. Prefers drying alkaline flats. Bloom period: January-April. 15-800m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral and woodland habitat onsite.	No
Choris' popcornflower <i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	—	—	1B.2	Chaparral, coastal scrub, coastal prairie. Mesic sites. 5–705 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral habitat on site.	No
coastal marsh milk-vetch <i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	—	—	1B.2	Coastal dunes, marshes and swamps, coastal scrub. Mesic sites in dunes or along streams or coastal salt marshes. 0–155 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal dunes and marshes onsite.	No
Crystal Springs fountain thistle <i>Cirsium fontinale</i> var. <i>fontinale</i>	FE	SE	1B.2	Valley and foothill grassland, chaparral, cismontane woodland, meadows and seeps. Serpentine seeps and grassland. 45–185 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of valley and foothill grassland onsite.	No
Crystal Springs lessingia <i>Lessingia arachnoidea</i>	—	—	1B.2	Coastal sage scrub, valley and foothill grassland, cismontane woodland. Grassy slopes on serpentine; sometimes on roadsides. 90–200 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal sage scrub onsite.	No

**Table 1 (cont.): Special-status Plant Species Potentially Occurring within the Project**

Scientific Name Common Name	Status			Habitat Description <sup>4</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>	CNPS <sup>3</sup>			
fragrant fritillary <i>Fritillaria liliacea</i>	—	—	1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay, in grassland. 3–385 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal scrub onsite.	No
Franciscan onion <i>Allium peninsulare</i> var. <i>franciscanum</i>	—	—	1B.2	Cismontane woodland, valley and foothill grassland. Clay soils; often on serpentine; sometimes on volcanics. Dry hillsides. 5–320 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of cismontane woodland onsite.	No
Hillsborough chocolate lily <i>Fritillaria biflora</i> var. <i>ineziana</i>	—	—	1B.1	Cismontane woodland, valley and foothill grassland. Probably only on serpentine; most recent site is in serpentine grassland. 90–160 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of cismontane woodland onsite.	No
Marin western flax <i>Hesperolinon congestum</i>	FT	ST	1B.1	Chaparral, valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral. 60–400 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral onsite.	No
Point Reyes salty bird's-beak <i>Chloropyron maritimum</i> ssp. <i>palustre</i>	—	—	1B.2	Coastal salt marsh. Usually in coastal salt marsh with <i>Salicornia</i> , <i>Distichlis</i> , <i>Jaumea</i> , <i>Spartina</i> , etc. 0–115 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal salt march onsite.	No
saline clover <i>Trifolium hydrophilum</i>	—	—	1B.2	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools. 1–335 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of marshes and swamps.	No

**Table 1 (cont.): Special-status Plant Species Potentially Occurring within the Project**

Scientific Name Common Name	Status			Habitat Description <sup>4</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>	CNPS <sup>3</sup>			
San Francisco collinsia <i>Collinsia multicolor</i>	—	—	1B.2	Closed-cone coniferous forest, coastal scrub. On decomposed shale (mudstone) mixed with humus; sometimes on serpentine. 10–275 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of closed-cone coniferous forest.	No
San Francisco owl's-clover <i>Triphysaria floribunda</i>	—	—	1B.2	Coastal prairie, coastal scrub, valley and foothill grassland. On serpentine and non-serpentine substrate (such as at Pt. Reyes). 1–150 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal prairie coastal scrub.	No
San Mateo thorn-mint <i>Acanthomintha duttonii</i>	FE	SE	1B.1	Chaparral, valley and foothill grassland. Uncommon serpentinite vertisol clays; in relatively open areas. 50–185 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral onsite.	No
San Mateo woolly sunflower <i>Eriophyllum latilobum</i>	FE	SE	1B.1	Cismontane woodland, coastal scrub, lower montane coniferous forest. Often on roadcuts; found on and off of serpentine. 30–610 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of cismontane woodland onsite.	No
short-leaved evax <i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	—	—	1B.2	Coastal bluff scrub, coastal dunes, coastal prairie. Sandy bluffs and flats. 0–640 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal bluff scrub	No
western leatherwood <i>Dirca occidentalis</i>	—	—	1B.2	Broadleafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 20–640 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of upland forest habitat onsite.	No

**Table 1 (cont.): Special-status Plant Species Potentially Occurring within the Project**

Scientific Name Common Name	Status			Habitat Description <sup>4</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>	CNPS <sup>3</sup>			
white-rayed pentachaeta <i>Pentachaeta bellidiflora</i>	FE	SE	1B.1	Valley and foothill grassland, cismontane woodland. Open dry rocky slopes and grassy areas, often on soils derived from serpentine bedrock. 35–610 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of valley and foothill grassland onsite.	No
woodland woollythreads <i>Monolopia gracilens</i>	—	—	1B.2	Chaparral, valley and foothill grassland, cismontane woodland, broadleaved upland forest, North Coast coniferous forest. Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns, but may have only weak affinity to serpentine. 120–975 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral habitat onsite.	No
Presidio manzanita <i>Arctostaphylos montana</i> <i>ssp. ravenii</i>	FE	SE	1B.1	Chaparral, coastal prairie, coastal scrub. Open, rocky serpentine slopes. 20–215 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of chaparral habitat onsite.	No
San Francisco lessingia <i>Lessingia germanorum</i>	FE	SE	1B.1	Coastal scrub. On remnant dunes. Open sandy soils relatively free of competing plants. 3–155 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal scrub onsite.	No
Hickman's cinquefoil <i>Potentilla hickmanii</i>	FE	SE	1B.1	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps, marshes and swamps. Freshwater marshes, seeps, and small streams in open or forested areas along the coast. 5–125 m.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Lack of coastal bluff scrub onsite.	No

**Table 1 (cont.): Special-status Plant Species Potentially Occurring within the Project**

Scientific Name Common Name	Status			Habitat Description <sup>4</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>	CNPS <sup>3</sup>			
Code Designations						
<sup>1</sup> Federal Status: 2018 USFWS Listing					<sup>2</sup> State Status: 2018 CDFW Listing	
ESU	=	Evolutionary Significant Unit is a distinctive population.			SE	= Listed as endangered under the CESA.
FE	=	Listed as endangered under the FESA.			ST	= Listed as threatened under the CESA.
FT	=	Listed as threatened under the FESA.			SSC	= Species of Special Concern as identified by the CDFW.
FC	=	Candidate for listing (threatened or endangered) under FESA.			FP	= Listed as fully protected under FGC.
FD	=	Delisted in accordance with the FESA.			CFG	= FGC =protected by FGC 3503.5
FPD	=	Federally Proposed to be Delisted.			CR	= Rare in California.
MBTA	=	protected by the Migratory Bird Treaty Act			—	= Not state listed
—	=	Not federally listed				
<sup>3</sup> California Native Plant Society List of sensitive species that have been recorded to occur within the San Mateo, California topographic quadrangle (USGS 1986)						
<sup>4</sup> Habitat description: Habitat description adapted from CNDDB (CDFW 2019).						



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## **B.2 - Special-Status Wildlife Species Table**

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**Table 2: Special-status Wildlife Species Potentially Occurring within the Project**

Scientific Name Common Name	Status		Habitat Description <sup>3</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>			
Reptiles					
San Francisco gartersnake <i>Thamnophis sirtalis tetrataenia</i>	FE	SE	Vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence	No
western pond turtle <i>Emys marmorata</i>	—	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. No water on site.	No
Birds					
Alameda song sparrow <i>Melospiza melodia pusillula</i>	—	SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.	<b>Low potential to occur onsite:</b> this species is not likely to nest in the vegetation onsite as it breeds in marsh habitats, which are not present on site. Suitable nesting habitat for the species is not present on the project site. The species may nest in marsh habitat within Sanchez Lagoon to the south and may occur as an occasional forager in denser vegetation around the periphery of the project site, and there is some potential that it may nest in herbaceous vegetation a short distance up the slope between the project site and Sanchez Lagoon. However, it is not expected to nest close enough to the site (e.g., within 100 feet of impact areas) to be disturbed by project activities.	Yes

**Table 2 (cont.): Special-status Wildlife Species Potentially Occurring within the Project**

Scientific Name Common Name	Status		Habitat Description <sup>3</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>			
American peregrine falcon <i>Falco peregrinus anatum</i>	FPD	FP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	<b>High potential to occur onsite:</b> this species was observed during the site visit. The project area contains suitable foraging habitat and suitable nesting can be found offsite. It is possible that peregrine falcons may nest in old common raven ( <i>Corvus corax</i> ) or raptor nests on electrical transmission towers in Sanchez Lagoon (a large stick nest currently occupied by ravens is present on a tower approximately 275 feet south of the site), or possibly on nearby buildings such as the Double Tree hotel to the east. Although the likelihood of nesting nearby is low given this species' very low breeding densities around San Francisco Bay, nesting in nearby, offsite areas is possible.	Yes
burrowing owl <i>Athene cunicularia</i>	—	SSC	Found in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. A subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence.	No
California black rail <i>Laterallus jamaicensis coturniculus</i>	MBTA	ST FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	<b>Unlikely to Occur:</b> Preferential habitat is found offsite in the form of marshes but lack of suitable habitat and extremely high level of disturbance at site preclude presence on site, and occurrence of species in the vicinity of the project site is very low. While salt marsh habitat is present in Sanchez Lagoon to the south of the project site, it is sparse and fragmented in nature and too short and sparse for breeding.	No

**Table 2 (cont.): Special-status Wildlife Species Potentially Occurring within the Project**

Scientific Name Common Name	Status		Habitat Description <sup>3</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>			
California Ridgway's rail <i>Rallus obsoletus obsoletus</i>	FE	SE	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. The potential for the occurrence of these species in the vicinity of the project site is very low, and while the species is expected to breed close to the site because salt marsh habitat is present in Sanchez Lagoon to the south of the project site. However, the vegetation throughout the majority of the marsh is too short in stature and too sparse to support breeding Ridgway's rails.	No
western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT	SSC	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence.	No
<b>Mammals</b>					
pallid bat <i>Antrozous pallidus</i>	—	SSC	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Species is very sensitive to disturbance of roosting sites.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence.	No
salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE	SE	Only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat, but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence. Species is unlikely to occur in vicinity of project site as within the San Francisco Peninsula, the range of the salt marsh harvest mouse does not extend north of the San Mateo Bridge. Thus, the salt marsh harvest mouse is not expected to occur in the marsh habitat to the south of the project site in Sanchez Lagoon.	No

**Table 2 (cont.): Special-status Wildlife Species Potentially Occurring within the Project**

Scientific Name Common Name	Status		Habitat Description <sup>3</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>			
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	—	SSC	Forest habitats of moderate canopy & moderate to dense understory. May prefer chaparral & redwood habitats. Constructs nests of shredded grass, leaves & other material. May be limited by availability of nest-building materials.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence.	No
<b>Fish</b>					
longfin smelt <i>Spirinchus thaleichthys</i>	FC	ST SSC	Longfin smelt spend their adult life in bays, estuaries, and nearshore coastal areas, and migrate into freshwater rivers to spawn. Spawning occurs primarily from January through March, after which most adults die.	<b>Unlikely to Occur:</b> no suitable habitat is present within the Project. Lack of rivers or streams on site.	No
<b>Insects</b>					
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT	—	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. <i>Plantago erecta</i> is the primary host plant; <i>Orthocarpus densiflorus</i> & <i>O. purpurascens</i> are the secondary host plants.	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence.	No
Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	FE	—	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Larval foodplant thought to be <i>Viola adunca</i> .	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence.	No
<b>Amphibians</b>					
California red-legged frog <i>Rana draytonii</i>	—	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development	<b>Unlikely to Occur:</b> Lack of suitable habitat and extremely high level of disturbance at site preclude presence.	No

**Table 2 (cont.): Special-status Wildlife Species Potentially Occurring within the Project**

Scientific Name Common Name	Status		Habitat Description <sup>3</sup>	Potential to Occur and Rationale	Included in Impact Analysis
	USFWS <sup>1</sup>	CDFW <sup>2</sup>			
Code Designations					
<sup>1</sup> Federal Status: 2018 USFWS Listing			<sup>2</sup> State Status: 2018 CDFW Listing		
ESU	=	Evolutionary Significant Unit is a distinctive population.	SE	=	Listed as endangered under the CESA.
FE	=	Listed as endangered under the FESA.	ST	=	Listed as threatened under the CESA.
FT	=	Listed as threatened under the FESA.	SSC	=	Species of Special Concern as identified by the CDFW.
FC	=	Candidate for listing (threatened or endangered) under FESA.	FP	=	Listed as fully protected under FGC.
FD	=	Delisted in accordance with the FESA.	CFG	=	FGC =protected by FGC 3503.5
FPD	=	Federally Proposed to be Delisted.	CR	=	Rare in California.
MBTA	=	protected by the Migratory Bird Treaty Act	—	=	Not state listed
—	=	Not federally listed			
3 Habitat description: Habitat description adapted from CNDDB (CDFW 2019).					



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## Appendix C: CNDDB and CNPS Inventory Results

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# Selected Elements by Common Name

## California Department of Fish and Wildlife

### California Natural Diversity Database



Query Criteria: Quad<span style='color:Red'> IS </span>(San Mateo (3712253))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b>Alameda song sparrow</b> <i>Melospiza melodia pusillula</i>	ABPBXA301S	None	None	G5T2?	S2S3	SSC
<b>American peregrine falcon</b> <i>Falco peregrinus anatum</i>	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
<b>arcuate bush-mallow</b> <i>Malacothamnus arcuatus</i>	PDMAL0Q0E0	None	None	G2Q	S2	1B.2
<b>Bay checkerspot butterfly</b> <i>Euphydryas editha bayensis</i>	IILEPK4055	Threatened	None	G5T1	S1	
<b>bent-flowered fiddleneck</b> <i>Amsinckia lunaris</i>	PDBOR01070	None	None	G3	S3	1B.2
<b>burrowing owl</b> <i>Athene cunicularia</i>	ABNSB10010	None	None	G4	S3	SSC
<b>California black rail</b> <i>Laterallus jamaicensis coturniculus</i>	ABNME03041	None	Threatened	G3G4T1	S1	FP
<b>California red-legged frog</b> <i>Rana draytonii</i>	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<b>California Ridgway's rail</b> <i>Rallus obsoletus obsoletus</i>	ABNME05011	Endangered	Endangered	G5T1	S1	FP
<b>chaparral ragwort</b> <i>Senecio aphanactis</i>	PDAST8H060	None	None	G3	S2	2B.2
<b>Choris' popcornflower</b> <i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	PDBOR0V061	None	None	G3T1Q	S1	1B.2
<b>coastal marsh milk-vetch</b> <i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	PDFAB0F7B2	None	None	G2T2	S2	1B.2
<b>Crystal Springs fountain thistle</b> <i>Cirsium fontinale</i> var. <i>fontinale</i>	PDAST2E161	Endangered	Endangered	G2T1	S1	1B.1
<b>Crystal Springs lessingia</b> <i>Lessingia arachnoidea</i>	PDAST5S0C0	None	None	G2	S2	1B.2
<b>double-crested cormorant</b> <i>Phalacrocorax auritus</i>	ABNFD01020	None	None	G5	S4	WL
<b>Edgewood blind harvestman</b> <i>Calicina minor</i>	ILARA13020	None	None	G1	S1	
<b>fragrant fritillary</b> <i>Fritillaria liliacea</i>	PMLIL0V0C0	None	None	G2	S2	1B.2
<b>Franciscan onion</b> <i>Allium peninsulare</i> var. <i>franciscanum</i>	PMLIL021R1	None	None	G5T2	S2	1B.2
<b>Hillsborough chocolate lily</b> <i>Fritillaria biflora</i> var. <i>ineziana</i>	PMLIL0V031	None	None	G3G4T1	S1	1B.1
<b>hoary bat</b> <i>Lasiurus cinereus</i>	AMACC05030	None	None	G5	S4	



Selected Elements by Common Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b>longfin smelt</b> <i>Spirinchus thaleichthys</i>	AFCHB03010	Candidate	Threatened	G5	S1	SSC
<b>Marin western flax</b> <i>Hesperolinon congestum</i>	PDLIN01060	Threatened	Threatened	G1	S1	1B.1
<b>Myrtle's silverspot butterfly</b> <i>Speyeria zerene myrtleae</i>	IILEPJ608C	Endangered	None	G5T1	S1	
<b>Northern Coastal Salt Marsh</b> <i>Northern Coastal Salt Marsh</i>	CTT52110CA	None	None	G3	S3.2	
<b>obscure bumble bee</b> <i>Bombus caliginosus</i>	IIHYM24380	None	None	G4?	S1S2	
<b>pallid bat</b> <i>Antrozous pallidus</i>	AMACC10010	None	None	G5	S3	SSC
<b>Point Reyes salty bird's-beak</b> <i>Chloropyron maritimum ssp. palustre</i>	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
<b>Ricksecker's water scavenger beetle</b> <i>Hydrochara rickseckeri</i>	IICOL5V010	None	None	G2?	S2?	
<b>saline clover</b> <i>Trifolium hydrophilum</i>	PDFAB400R5	None	None	G2	S2	1B.2
<b>salt-marsh harvest mouse</b> <i>Reithrodontomys raviventris</i>	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
<b>San Francisco collinsia</b> <i>Collinsia multicolor</i>	PDSCR0H0B0	None	None	G2	S2	1B.2
<b>San Francisco dusky-footed woodrat</b> <i>Neotoma fuscipes annectens</i>	AMAFF08082	None	None	G5T2T3	S2S3	SSC
<b>San Francisco forktail damselfly</b> <i>Ischnura gemina</i>	IIDOD72010	None	None	G2	S2	
<b>San Francisco gartersnake</b> <i>Thamnophis sirtalis tetrataenia</i>	ARADB3613B	Endangered	Endangered	G5T2Q	S2	FP
<b>San Francisco owl's-clover</b> <i>Triphysaria floribunda</i>	PDSCR2T010	None	None	G2?	S2?	1B.2
<b>San Mateo thorn-mint</b> <i>Acanthomintha duttonii</i>	PDLAM01040	Endangered	Endangered	G1	S1	1B.1
<b>San Mateo woolly sunflower</b> <i>Eriophyllum latilobum</i>	PDAST3N060	Endangered	Endangered	G1	S1	1B.1
<b>Santa Cruz kangaroo rat</b> <i>Dipodomys venustus venustus</i>	AMAFD03042	None	None	G4T1	S1	
<b>Serpentine Bunchgrass</b> <i>Serpentine Bunchgrass</i>	CTT42130CA	None	None	G2	S2.2	
<b>short-leaved evax</b> <i>Hesperievax sparsiflora var. brevifolia</i>	PDASTE5011	None	None	G4T3	S2	1B.2
<b>western bumble bee</b> <i>Bombus occidentalis</i>	IIHYM24250	None	None	G2G3	S1	



Selected Elements by Common Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b>western leatherwood</b> <i>Dirca occidentalis</i>	PDTHY03010	None	None	G2	S2	1B.2
<b>western pond turtle</b> <i>Emys marmorata</i>	ARAAD02030	None	None	G3G4	S3	SSC
<b>western snowy plover</b> <i>Charadrius alexandrinus nivosus</i>	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
<b>white-rayed pentachaeta</b> <i>Pentachaeta bellidiflora</i>	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
<b>woodland woollythreads</b> <i>Monolopia gracilens</i>	PDAST6G010	None	None	G3	S3	1B.2

Record Count: 46



## Plant List

### Inventory of Rare and Endangered Plants

8 matches found. *Click on scientific name for details*

#### Search Criteria

California Rare Plant Rank is one of [1B, 2B], FESA is one of [Endangered, Threatened], CESA is one of [Endangered, Threatened, Rare], Found in Quads 3712264, 3712263, 3712262, 3712254, 3712253, 3712252, 3712244 3712243 and 3712242;

[Modify Search Criteria](#) [Export to Excel](#) [Modify Columns](#) [Modify Sort](#) [Display Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
<a href="#">Acanthomintha duttonii</a>	San Mateo thorn-mint	Lamiaceae	annual herb	Apr-Jun	1B.1	S1	G1
<a href="#">Arctostaphylos montana ssp. ravenii</a>	Presidio manzanita	Ericaceae	perennial evergreen shrub	Feb-Mar	1B.1	S1	G3T1
<a href="#">Cirsium fontinale var. fontinale</a>	Crystal Springs fountain thistle	Asteraceae	perennial herb	(Apr)May-Oct	1B.1	S1	G2T1
<a href="#">Eriophyllum latilobum</a>	San Mateo woolly sunflower	Asteraceae	perennial herb	May-Jun	1B.1	S1	G1
<a href="#">Hesperolinon congestum</a>	Marin western flax	Linaceae	annual herb	Apr-Jul	1B.1	S1	G1
<a href="#">Lessingia germanorum</a>	San Francisco lessingia	Asteraceae	annual herb	(Jun)Jul-Nov	1B.1	S1	G1
<a href="#">Pentachaeta bellidiflora</a>	white-rayed pentachaeta	Asteraceae	annual herb	Mar-May	1B.1	S1	G1
<a href="#">Potentilla hickmanii</a>	Hickman's cinquefoil	Rosaceae	perennial herb	Apr-Aug	1B.1	S1	G1

#### Suggested Citation

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#### Questions and Comments

[rareplants@cnps.org](mailto:rareplants@cnps.org)

## Appendix D: Arborist Report



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**ARBOR RESOURCES**

professional consulting arborists and tree care

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# **TREE SURVEY REPORT**

## **TOPGOLF BURLINGAME**

**250 ANZA BOULEVARD  
BURLINGAME, CALIFORNIA**

### **Prepared for:**

ARCO MURRAY | DESIGN BUILD  
308 W. Erie Street Suite 400  
Chicago, IL 60654

### **Prepared by:**

David L. Babby  
*Registered Consulting Arborist® #399*  
*Board-Certified Master Arborist® #WE-4001B*

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August 17, 2018

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## EXHIBITS

<b><u>EXHIBIT</u></b>	<b><u>TITLE</u></b>
A	TREE INVENTORY TABLE (12 sheets)
B	AERIAL MAP (1 sheet)
C	PHOTOGRAPHS (9 sheets)

## 1.0 INTRODUCTION

ARCO MURRAY | DESIGN BUILD has retained me to prepare this *Tree Survey Report* in connection with redeveloping the existing golf range course at 250 Anza Boulevard, Burlingame, into a Topgolf facility. Specific tasks assigned to execute are as follows:

- Visit the site, performed on 6/19/18, 7/9/18 and 8/13/18, to identify 88 trees within the limit of work area.
- Determine each tree's trunk diameter at 54 inches above grade, rounded to the nearest inch. Trees with more than one diameter listed are formed by multiple trunks or leaders at 54 inches high.
- Identify which are defined by Burlingame City Code as protected trees.<sup>1</sup>
- Ascertain each tree's health and structural integrity, and assign an overall condition rating (e.g. good, fair, poor or dead).
- Determine each tree's suitability for preservation (e.g. high, moderate or low).
- Document pertinent and observed health, structural and adjacent hardscape issues.
- Obtain photographs; see Exhibit C.
- Assign numbers to the trees, and show each individual or group location on the aerial map in Exhibit B (copy of the *Existing Conditions Plan*, Sheet C1.0, dated 7/31/18).
- Nail round metal tags with corresponding engraved numbers onto the trees' trunks and/or limbs (the one exception is #81 due to being inaccessible).
- Provide general design guidelines and protection measures to help avoid or mitigate impacts to retained trees.
- Prepare a written report that presents the aforementioned information, and submit via email as a PDF document.

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<sup>1</sup> Section 11.06.020(f)(1) of the Burlingame City Code defines a protected tree, as it relates to this site, as any species which has a trunk diameter  $\geq 15.28$  inches measured 54 inches above natural grade.

## 2.0 TREE COUNT AND COMPOSITION

Eighty-eight (88) trees of 11 various species were inventoried for this report. They are sequentially numbered 1 thru 88, and the table below identifies their names, assigned numbers, counts and overall percentages.

NAME	TREE NUMBER(S)	COUNT	% OF TOTAL
Arroyo willow	50, 51, 62	3	3%
Blackwood acacia	41-43, 45, 52, 53, 56-61, 63-66, 74	17	19%
Brazilian pepper tree	70, 71, 78-83	8	9%
Brisbane box	67-69, 73	4	5%
Coast live oak	72, 77	2	2%
Fremont cottonwood	84-88	5	6%
Lemon-scented gum	75, 76	2	2%
Nichol's willowleafed peppermint	26, 27, 32-38	9	10%
Purple hopbush	54, 55	2	2%
Red gum	1-25, 28-31, 39, 40	31	35%
Spider gum	44, 46-49	5	6%
<b>Total</b>		<b>88</b>	<b>100%</b>

Specific information regarding each tree is presented within the table in **Exhibit A**. The trees' numbers and approximate locations can be viewed on the aerial map in **Exhibit B**, and photographs are presented in **Exhibit C**.

As illustrated in the table, the project area is populated predominantly by eucalyptus trees, accounting for the following five specific species (a combined 53%): lemon-scented gum, Nichol's willowleafed peppermint, red gum (the most encountered), and spider gum. Blackwood acacia trees were the second most encountered species (at 19%).

Ten (10) of the following trees are defined by City Code as protected: #1, 22, 27, 29, 35, 37, 42, 49, 50 and 52. Of these, all are either eucalyptus or blackwood acacia formed by multiple trunks, the exception being for eucalyptus #35 and 37; #35 has a single trunk diameter of 16 inches (and is dead), and #37 has a single trunk diameter of 20 inches.

The trees' general locations can be described as follows:

- #1 thru 24 align the south side of the golf range.
- #25 thru 39 align the south side of the pathway (between the fencing and path).
- #40 is immediately east of the fenced area (parking lot side of fencing).
- #41 is within the putting area.
- #42-51 and 58-66 align the north side of the pathway, along the south and east sides of the putting area.
- #52, 56 and 57 are along the east side of the path adjacent to the parking lot, between the chain link fence and path.
- #53 and 54 are immediately adjacent at the north corner of the putting area.
- #55 is at the northwest side of the shed used for private golf lessons.
- #67 thru 88 align the south side of the drive aisle and parking lot for the dog park adjoining Airport Boulevard; #66-73 and 77-88 are within the fenced area.

As represented on Exhibit B, locations, individual or group, of the following 31 trees were added by me and are only roughly approximate (and should not be construed as being surveyed points): #40, 41 and 60-88.

### 3.0 SUITABILITY FOR TREE PRESERVATION

Each tree has been assigned either a “high,” “moderate” or “low” suitability for preservation rating as a means to cumulatively measure its existing health (e.g. live crown ratio, vigor, shoot growth, foliage density and color, etc.); structural integrity (e.g. limb and trunk strength, taper, defects, root crown, etc.); anticipated life span; remaining life expectancy; prognosis; location; size; particular species; tolerance to construction impacts; growing space; and safety to property and persons within striking distance. Descriptions of these ratings are presented below; the high category is comprised of 1 tree (or 1%), the moderate category 32 (or 36%), and the low category 55 (or 63%).

**High:** Applies to #77.

This oak appears relatively healthy and structurally stable; has no apparent, significant health issues or structural defects; presents a high potential for contributing long-term to the site; and seemingly requires only periodic or regular care and monitoring to maintain its longevity and structural integrity.

**Moderate:** Applies to 3, 5, 9, 12, 13, 16, 17, 20, 21, 25, 31, 37-39, 42, 55, 59, 67-73, 78-80, 82, 84 and 86-88.

These trees contribute to the site, but at levels less than those assigned a high suitability; might have health and/or structural issues which may or may not be reasonably addressed and properly mitigated; and frequent care is typically required for their remaining lifespan.

**Low:** Applies to #1, 2, 4, 6-8, 10, 11, 14, 15, 18 19, 22-24, 26-30, 32-36, 40, 41, 43-54, 56-58, 60-66, 74-76, 81, 83 and 85.

These trees have significant health and/or structural issues expected to worsen regardless of tree care measures employed (i.e. beyond likely recovery). As a general guideline, these trees are not suitable for incorporating into the future landscape, and any which are retained require highly frequent monitoring and care throughout their remaining lifespans to minimize risk to any persons or property within striking distance (current and/or future). Note that #10, 34, 35 and 81 are dead; #74 has partially uprooted; and #75 has an unstable rootball.

## **4.0 TREE PROTECTION MEASURES**

Recommendations presented within this section serve as measures to help mitigate or avoid impacts to trees being retained, and should be carefully followed throughout the entire demolition and construction process. They are subject to change upon reviewing future project plans, and I (hereinafter, "project arborist") should be consulted in the event any cannot be feasibly implemented.

### **4.1 Design Guidelines**

1. A Tree Protection Zone (TPZ) is necessary to restrict or confine the following activities to help achieve a reasonable assurance of a tree's vigor, longevity and anchoring capacity: trenching, soil scraping, compaction, mass and finish-grading, overexcavation, subexcavation, tilling, ripping, swales, bioswales, storm drains, dissipaters, equipment cleaning, removal of underground utilities and vaults, altering existing water/drainage flows, stockpiling and dumping of materials, and equipment and vehicle operation. For this project, an ideal TPZ should have a linear distance from a trunk of 10 times its diameter (e.g. an 18-inch diameter tree would have a setback of 15 feet in all directions); for multi-trunk measurements, use the combined diameter. In the event an impact encroaches slightly within a setback, it can be reviewed on a case-by-case basis by the project arborist to determine whether measures can sufficiently mitigate the impacts to less-than-significant levels.
2. All site-related plans should contain notes referencing this report for tree protection measures.
3. Abandon all existing, unused lines or pipes within a TPZ, and any above-ground section should be cut off at existing soil grade (rather than being dug up and causing subsequent root damage); this provision should be specified on the demolition plan.
4. Design and route future utilities, irrigation, storm drains, dissipaters, bioswales (or other bioretention device/structure) and swales beyond TPZs. Dictated by the proximity to tree trunks, an alternative installation method may be warranted, such as hand-digging, a pneumatic air device (such as an Air-Spade®), or directional boring.



For directional-boring, the ground above any tunnel must remain undisturbed, and access pits and any infrastructure (e.g. splice boxes, meters and vaults) established beyond TPZs.

5. Where within 10 feet from TPZ, confine grading (cut and fill), overexcavation, subexcavation, trenching, compaction, and other ground disturbance to within 12 to 24 from any foundation, footing, curb, gutter, pavement, driveway or retaining wall.
6. Any retaining wall constructed beneath a canopy for the purposes of retaining fill away from a TPZ should be, preferably, established on top of existing soil grade with no footing (e.g. drystack), or alternatively, using a pier and above-grade beam foundation, where the piers are minimized in diameter, spaced as far apart as possible, and the beams or spans between the piers established on top or above existing soil grade (i.e. a no-dig design except vertically for the piers). The ground beneath the beams or wall must not be compacted or dug.
7. Structures should consider avoiding the need to remove large limbs (e.g. >3" in diameter) or sections of canopies contributing to a tree's overall form, including for erecting construction scaffolding or the need for manlifts.
8. The permanent and temporary drainage design, including downspouts, should not require water being discharged towards an oak's trunk.
9. The future staging area and route(s) of access should be routed beyond canopies and unpaved areas of TPZs.
10. Avoid specifying the use of herbicides use within a TPZ; where used on site, they should be labeled for safe use near trees. Also avoid prescribing liming within 50 feet of a tree.
11. Erosion control should consider that any straw wattle or fiber rolls require no more than a 2-inch deep, vertical soil cut for their embedment, and are established as close to canopy edges as possible (and not against a tree trunk).

12. The landscape design should conform to the following additional recommendations:
  - a. Large growing trees, such as those that can exceed the height of retained trees, should be installed beyond TPZs, and be at least 10 to 15 feet from a future foundation, wall and hardscape.
  - b. Plant material installed within an oak's TPZ must be drought-tolerant, limited in amount, and planted at least 3 feet from its trunk. Plant material installed beneath canopies of other trees should be at least 24 to 36 inches from their trunks.
  - c. Irrigation and lighting features (e.g. main line, lateral lines, valve boxes, wiring and controllers) should be established so that no trenching occurs within a TPZ. In the event this is not feasible, they may require being installed in a radial direction to a tree's trunk, and terminate a specific distance from a trunk (versus crossing past it).
  - d. Ground cover beneath canopies should be comprised of a 3-inch layer of coarse wood chips or other high-quality mulch (gorilla hair, rock, stone, gravel, black plastic or other synthetic ground cover should be avoided). Mulch should kept off the trees' trunks.
  - e. New fence posts (posts) should be placed at least 5 feet from a tree's trunk (depends on trunk size and growth pattern); the post layout should be guided by where large roots are likely located, which can be predetermined using a bully probe (or similar), and collaborating with the project arborist.
  - f. Tilling, ripping and compaction within TPZs should be avoided.
  - g. Bender board or other edging material proposed beneath the canopies should be established on top of existing soil grade (such as by using vertical stakes).

#### **4.2 Before Demolition, Grading and Construction**

13. Any necessary pruning should only be performed in accordance with the most recent ANSI A300 standards, and by a California licensed and bonded tree-service contractor (D-49) which has an ISA certified arborist in a supervisory role, and carries General Liability and Worker's Compensation insurance.
14. Clear soil and rock to expose any buried root collars<sup>2</sup> of retained trees. This work must be manually and carefully performed to avoid damaging the trunk and roots during the process, and preferably by a tree-service company using an Air-Spade® to avoid unnecessary root and/or trunk damage.

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<sup>2</sup> A "root collar" is the distinct swollen area near the ground where buttress roots and the main trunk merge.

15. Where feasible, manually spread a 4- to 5-inch layer of coarse wood chips, 1/4- to 3/4-inch in size, over exposed ground beneath canopies; the type and source of these wood chips should be from a professional and licensed tree service, and absent of Sudden Oak Death infection (or the possibility thereof). The chips should not be piled against the trunks, and any existing leaf litter should remain in place and the chips spread on top.
16. Where within a TPZ, the removal of plant material and groundcover must be manually performed versus using heavy equipment operating and traveling on unpaved ground. Additionally, the removal of stumps shall only be performed using a stump grinder (versus excavating into the ground and inadvertently damaging roots).
17. Begin applying supplemental irrigation during the dry months of the year (e.g. May thru October), at a rate of approximately 10 gallons per inch of trunk diameter every two to three weeks via flooding the inside of a 12-inch tall berm established around the canopy perimeters (or as close to the perimeters as possible). Alternatives include using soaker hoses or through deep-root injection. Note, ultimately, the methodology, amount and frequency of irrigation can be best outlined closer to construction commencing, and any applicable dewatering may require a more intensive supplemental watering program than otherwise needed.
18. Install tree protection fencing prior to demolition or other site work for the purpose of restricting access into unpaved sections of ground within a TPZ. Fencing does not need to enclose any pavement remaining within a TPZ (in effect, the pavement allows access within a TPZ, while serving as a superior root zone buffer). Fencing should consist of 5- to 6-foot tall chain link mounted on 2-inch diameter steel posts, which are driven into the ground for vertical alignment. Fencing shall remain in place throughout site development, and will need to be installed, as needed, in various phases (e.g. demolition is phase 1, grading and construction phase 2). Also, note that removing hardscape within a TPZ may trigger fencing being modified to capture the newly exposed area.

### 4.3 During Demolition, Grading and Construction

19. Take great care during demolition of existing pavement and other features to avoid damaging a tree's trunk, crown and roots within a TPZ.
20. Great care must also be taken by equipment operators to position their equipment to avoid trunks and branches, including the scorching of foliage. Any tree damage or injury should be reported to the project arborist for review of treatment.
21. Removing existing hardscape (including curbs and gutters) within a TPZ should be carefully performed to avoid excavating roots and soil during the process, and removal of base material shall be performed under direction of the project arborist (and where necessary, shall remain in place and utilized as future base course).
22. Avoid using the trees' trunks as winch supports for moving or lifting heavy loads.
23. Any authorized access, digging or trenching within designated-fenced areas shall be foot-traffic only and manually performed without using heavy equipment or tractors.
24. Avoid damaging or cutting roots with diameters  $\geq 2$  inches without prior assessment by the project arborist. Should roots of this size become encountered, within one hour of exposure, either bury them with soil or wrap in moistened burlap, to remain continually moist until ultimately covered by soil. If approved for cutting, cleanly sever at 90° to the angle of root growth against the cut line (using loppers or a sharp hand saw), and then immediately after, bury the cut end with soil or cover with a plastic sandwich bag (and secured using a rubber band, and removed just before backfilling). Roots encountered with diameters less than 2 inches and require removal can be cleanly severed, using a new handsaw or loppers, at 90° to the direction of root growth.
25. Spoils created during digging shall not be piled or spread on unpaved ground within a TPZ. If essential, spoils can be temporarily piled on plywood or a tarp.
26. New irrigation and lighting features (e.g. main line, laterals, valve boxes, wiring and controllers) should be established so that no trenching occurs within a TPZ. In the

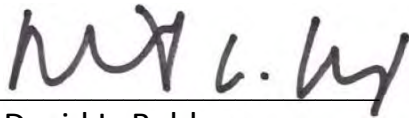
event this is not feasible, the trenches may require being installed in a radial direction to a tree's trunk, and terminate a specific distance from a trunk (versus crossing past it). The use of a pneumatic air device (such as an Air-Spade®) may be needed to avoid root damage. Additionally, any Netafim tubing used should be placed on grade, and header lines installed as mentioned above. All routes within and near a TPZ shall be reviewed with the project arborist several weeks or months prior to installation.

27. Digging holes for any new fence within a TPZ shall be manually performed, and in the event a root of  $\geq 2$  inches in diameter is encountered during the process, the hole should be shifted over by 12 inches and the process repeated.
28. Dust accumulating on trunks and canopies during dry weather periods should be periodically washed away (e.g. every three to four months).
29. Avoid disposing harmful products (such as cement, paint, chemicals, oil and gasoline) beneath canopies or anywhere on site that allows drainage within or near TPZs. Herbicides should not be used with a TPZ; where used on site, they should be labeled for safe use near trees.
30. Fertilization may benefit a tree's health, vigor and appearance. If applied, however, soil samples should first be obtained to identify the pH levels and nutrient levels so a proper fertilization program can be established. I further recommend any fertilization is performed under the direction and supervision of a certified arborist, and in accordance with the most recent ANSI A300 standards.

## 5.0 ASSUMPTIONS AND LIMITING CONDITIONS

- All information presented herein covers only the inventoried trees, and reflects their size, condition, and areas visible from the ground and project site on 6/19/18, 7/9/18 and 8/13/18.
- My observations were performed visually without probing, coring, dissecting or excavating.
- The assignment pertains solely to trees listed in Exhibit A. I hold no opinion towards other trees on or surrounding the project area.
- I cannot provide a guarantee or warranty, expressed or implied, that deficiencies or problems of any trees or property in question may not arise in the future.
- No assurance can be offered that if all my recommendations and precautionary measures (verbal or in writing) are accepted and followed, that the desired results may be achieved.
- I cannot guarantee or be responsible for the accuracy of information provided by others.
- I assume no responsibility for the means and methods used by any person or company implementing the recommendations provided in this report.
- The information provided herein represents my opinion. Accordingly, my fee is in no way contingent upon the reporting of a specified finding, conclusion or value.
- The numbers shown on the aerial map in Exhibit B are solely intended to roughly approximate a tree's location, and those added by me do not represent surveyed points.
- This report is proprietary to me and may not be copied or reproduced in whole or part without prior written consent. It has been prepared for the sole and exclusive use of the parties to who submitted for the purpose of contracting services provided by David L. Babby.
- If any part of this report or copy thereof be lost or altered, the entire evaluation shall be invalid.

Prepared By:



David L. Babby

Registered Consulting Arborist® #399

Board-Certified Master Arborist® #WE-4001B

CA Licensed Tree Service Contractor #796763 (C61/D49)

Date: August 17, 2018



**EXHIBIT A:**

**TREE INVENTORY TABLE**

(12 sheets)



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		

1	River red gum ( <i>Eucalyptus camaldulensis</i> )	9, 6, 2, 2	40%	40%	Poor	Low	X
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Comments: Measures 9 and 7 inches below where trunk divides at 12" high. NE lean of 9" trunk. Large deadwood. Weak attachment between leaders.

2	River red gum ( <i>Eucalyptus camaldulensis</i> )	7	20%	10%	Poor	Low	
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Comments: Roughly 75% dead. Deadwood throughout. Leans NE.

3	River red gum ( <i>Eucalyptus camaldulensis</i> )	9	70%	50%	Fair	Moderate	
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Comments: Low canopy, notably low limb towards south. Leans NE. Asymmetrical canopy with some dieback.

4	River red gum ( <i>Eucalyptus camaldulensis</i> )	7	40%	40%	Poor	Low	
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Comments: Leans NE. Deadwood.

5	River red gum ( <i>Eucalyptus camaldulensis</i> )	9	70%	50%	Fair	Moderate	
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Comments: Low crown and canopy. Trunk is 3.5' from communication vault. Leans NE.

6	River red gum ( <i>Eucalyptus camaldulensis</i> )	6, 6	70%	30%	Fair	Low	
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Comments: Pronounced NE lean. Low canopy and crown. Trunk bifurcates at 3.5' high, and below this point it measures 9".

7	River red gum ( <i>Eucalyptus camaldulensis</i> )	10	80%	30%	Fair	Low	
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Comments: Canopy grows against net. Leans NE. Multi-leader form with very weak attachments near bottom of crown.





## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		
8	River red gum ( <i>Eucalyptus camaldulensis</i> )	5, 4, 4	70%	20%	Poor	Low	
Comments: Trunks represent suckers, and grow at a wide angle away from another. Very low crown and canopy. One of the 4" trunks is dead.							
9	River red gum ( <i>Eucalyptus camaldulensis</i> )	4	50%	50%	Fair	Moderate	
Comments: Staked. Buried root collar and base is surrounded by toyon. Deadwood. Leans NE.							
10	River red gum ( <i>Eucalyptus camaldulensis</i> )	4	0%	0%	Dead	Low	
Comments: Dead. Leans NE.							
11	River red gum ( <i>Eucalyptus camaldulensis</i> )	7	40%	40%	Poor	Low	
Comments: Significant decline with deadwood. Low limb structure. Leans NE.							
12	River red gum ( <i>Eucalyptus camaldulensis</i> )	10	70%	60%	Fair	Moderate	
Comments: Slight lean. Small deadwood. Multi-leader structure begins at 8' high.							
13	River red gum ( <i>Eucalyptus camaldulensis</i> )	9	60%	60%	Fair	Moderate	
Comments: Deadwood.							
14	River red gum ( <i>Eucalyptus camaldulensis</i> )	7, 4, 2	30%	30%	Poor	Low	
Comments: Asymmetrical canopy. Roughly 50% dead.							
15	River red gum ( <i>Eucalyptus camaldulensis</i> )	5	40%	50%	Poor	Low	
Comments: Leans east. Large deadwood.							



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		
16	River red gum ( <i>Eucalyptus camaldulensis</i> )	8, 3	80%	60%	Good	Moderate	
Comments: Mostly one-sided. Low canopy. Leaders originate at 3' high. Excessive limb weight.							
17	River red gum ( <i>Eucalyptus camaldulensis</i> )	11	80%	50%	Fair	Moderate	
Comments: Trunk bifurcates at 4.5' high. History of limb failure. Leans NE. Has a large dead limb at base. Low canopy.							
18	River red gum ( <i>Eucalyptus camaldulensis</i> )	4	60%	50%	Fair	Low	
Comments: Small deadwood.							
19	River red gum ( <i>Eucalyptus camaldulensis</i> )	5	30%	30%	Poor	Low	
Comments: Trunk bifurcates at 4', and 1/2 of tree is dead. Measured just below 4'.							
20	River red gum ( <i>Eucalyptus camaldulensis</i> )	9	80%	50%	Fair	Moderate	
Comments: Asymmetrical and low canopy with excessive limb weight. Deadwood.							
21	River red gum ( <i>Eucalyptus camaldulensis</i> )	8, 3	70%	40%	Fair	Moderate	
Comments: Deadwood.							
22	River red gum ( <i>Eucalyptus camaldulensis</i> )	8, 5, 4, 4, 3	70%	20%	Poor	Low	X
Comments: Trunks represent suckers from an old stump (indicating they are weakly attached).							
23	River red gum ( <i>Eucalyptus camaldulensis</i> )	4	70%	10%	Poor	Low	
Comments: Partially failed in past.							



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		
24	River red gum ( <i>Eucalyptus camaldulensis</i> )	8, 4	30%	30%	Poor	Low	
Comments: Has a large, severely decaying cavity of 9" in diameter.							
25	River red gum ( <i>Eucalyptus camaldulensis</i> )	12	60%	40%	Fair	Moderate	
Comments: Leans towards fence. Deadwood.							
26	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	9	20%	20%	Poor	Low	
Comments: Roughly 60% dead. Large deadwood.							
27	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	11, 10, 9, 8, 8	40%	30%	Poor	Low	X
Comments: Multi-trunk, weak structure with deadwood. Broad crown.							
28	River red gum ( <i>Eucalyptus camaldulensis</i> )	6, 6	40%	30%	Poor	Low	
Comments: Very sparse canopy.							
29	River red gum ( <i>Eucalyptus camaldulensis</i> )	7, 6, 4, 4, 4	40%	30%	Poor	Low	X
Comments: Very thin canopy with large deadwood.							
30	River red gum ( <i>Eucalyptus camaldulensis</i> )	11	60%	10%	Poor	Low	
Comments: Pronounced NE lean from having partially uprooted in past.							
31	River red gum ( <i>Eucalyptus camaldulensis</i> )	9	60%	40%	Fair	Moderate	
Comments: Asymmetrical canopy grows away from #30. Deadwood.							



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		
32	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	12	40%	30%	Poor	Low	
Comments: Crown suppressed beneath #31. Bows east. Large deadwood.							
33	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	13	30%	40%	Poor	Low	
Comments: Sparse canopy with deadwood.							
34	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	7	10%	10%	Dead	Low	
Comments: Nearly dead, and can be considered dead for all practical purposes.							
35	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	16	0%	0%	Dead	Low	X
Comments: Dead.							
36	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	13	40%	50%	Poor	Low	
Comments: Ivy along trunk. Very sparse canopy.							
37	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	20	70%	60%	Fair	Moderate	X
Comments:							
38	Nichol's Willowleafed peppermint ( <i>Eucalyptus nicholii</i> )	10	60%	60%	Fair	Moderate	
Comments: Low asymmetrical canopy.							
39	River red gum ( <i>Eucalyptus camaldulensis</i> )	10	50%	50%	Fair	Moderate	
Comments: Low crown.							



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		
40	River red gum ( <i>Eucalyptus camaldulensis</i> )	8	60%	40%	Fair	Low	
Comments: Trunk bifurcates at 4.5' high. Asymmetrical. Sparse canopy with excessive limb weight. Excessive limb weight. Deadwood.							
41	Blackwood acacia ( <i>Acacia melanoxylon</i> )	11	30%	30%	Poor	Low	
Comments: Trunk bifurcates at 7' high. Extremely sparse canopy with large deadwood, the upper crown being mostly dead. Advanced decline.							
42	Blackwood acacia ( <i>Acacia melanoxylon</i> )	11, 8, 7	90%	60%	Fair	Moderate	X
Comments: At light pole. Low branching beginning at 2.5' high. Full crown.							
43	Blackwood acacia ( <i>Acacia melanoxylon</i> )	12	40%	50%	Poor	Low	
Comments: Sparse and low canopy. Leans E. Trunk bifurcates at 9' high, an crown sweeps E. Trunk's base is covered by grass.							
44	Spider gum ( <i>Eucalyptus conferruminata</i> )	7	50%	30%	Poor	Low	
Comments: Species formerly called 'Bushy yate.' Leans E. Has a one-sided crown which sweeps E. Low canopy with excessive limb weight. Ivy along trunk.							
45	Blackwood acacia ( <i>Acacia melanoxylon</i> )	3	70%	30%	Fair	Low	
Comments: Base is at, and has grown over, an irrigation valve box.							
46	Spider gum ( <i>Eucalyptus conferruminata</i> )	8, 5	80%	30%	Fair	Low	
Comments: Trunks grow against another and form a weak attachment. Low and asymmetrical canopy with excessive limb weight.							



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		

47	Spider gum ( <i>Eucalyptus conferruminata</i> )	7, 3, 2, 1	70%	40%	Fair	Low	
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Comments: Adjacent to #46's trunk. Crowded-growing conditions, and canopy arches towards course. Excessive limb weight.

48	Spider gum ( <i>Eucalyptus conferruminata</i> )	5	60%	30%	Poor	Low	
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Comments: Adjacent to #47's trunk. Crowded-growing conditions, and canopy arches towards course.

49	Spider gum ( <i>Eucalyptus conferruminata</i> )	4(3), 2(3), 1	40%	20%	Poor	Low	X
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Comments: Multi-trunk structure at path. Crowded conditions and a sparse canopy. At light pole.

50	Arroyo willow ( <i>Salix lasiolepis</i> )	4(4), 3(4), 2(4), 1	60%	20%	Poor	Low	X
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Comments: Low and asymmetrical canopy grows along ground, and encroaches a few feet above asphalt path along parking lot side. Ivy at base.

51	Arroyo willow ( <i>Salix lasiolepis</i> )	4, 3, 3	70%	10%	Poor	Low	
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Comments: Grows at pronounced angle due to having partially or mostly entirely fallen over in past.

52	Blackwood acacia ( <i>Acacia melanoxylon</i> )	10, 7	70%	30%	Fair	Low	X
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Comments: Trunk bifurcates at 3.5' high, forms a weak attachment, and measures 15" below union. Has a large old tear along SW limb. Excessive branch weight. Buttress root surfaces along walk. History of limb failure.

53	Blackwood acacia ( <i>Acacia melanoxylon</i> )	7	80%	40%	Fair	Low	
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Comments: Canopy is asymmetrical and grows along ground at pathway. Leans east.



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		

54	Purple hopbush ( <i>Dodonaea v. 'Purpurea'</i> )	3, 3, 2	60%	30%	Poor	Low	
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Comments: Along E side of #53's canopy. Low branching, and is roughly 17' tall.

55	Purple hopbush ( <i>Dodonaea v. 'Purpurea'</i> )	3, 3	90%	40%	Fair	Moderate	
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Comments: Behind shed, stands alone at NE corner of course. Is roughly 17' tall. Full canopy grows along ground.

56	Blackwood acacia ( <i>Acacia melanoxylon</i> )	8	30%	30%	Poor	Low	
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Comments: Adjacent to light pole. Vertical form. Top half of canopy is dead.

57	Blackwood acacia ( <i>Acacia melanoxylon</i> )	7	70%	20%	Poor	Low	
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Comments: Pronounced leans towards NE. Canopy is one-sided. Low branching form.

58	Blackwood acacia ( <i>Acacia melanoxylon</i> )	4	80%	40%	Fair	Low	
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Comments: Trunk bifurcates at 9' high and forms a narrow weakened attachment.

59	Blackwood acacia ( <i>Acacia melanoxylon</i> )	4	80%	70%	Good	Moderate	
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Comments:

60	Blackwood acacia ( <i>Acacia melanoxylon</i> )	5	80%	50%	Fair	Low	
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Comments: Adjacent to pole. Crowded-growing conditions.

61	Blackwood acacia ( <i>Acacia melanoxylon</i> )	4	80%	40%	Fair	Low	
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Comments: Adjacent to pole. Crowded-growing conditions. Multi-leader top.



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		
62	Arroyo willow ( <i>Salix lasiolepis</i> )	5, 4, 3, 2	80%	20%	Poor	Low	
Comments: Encroaches into pathway. Excessive limb weight. Crowded-growing conditions.							
63	Blackwood acacia ( <i>Acacia melanoxylon</i> )	3	80%	60%	Fair	Low	
Comments: Canopy is bound against fence.							
64	Blackwood acacia ( <i>Acacia melanoxylon</i> )	5, 4, 2	80%	30%	Fair	Low	
Comments: Canopy is bound against fence.							
65	Blackwood acacia ( <i>Acacia melanoxylon</i> )	8, 2	80%	40%	Fair	Low	
Comments: Canopy is bound against fence.							
66	Blackwood acacia ( <i>Acacia melanoxylon</i> )	3, 3	80%	40%	Fair	Low	
Comments: Canopy is bound against fence.							
67	Brisbane box ( <i>Lophostemon confertus</i> )	10	70%	50%	Fair	Moderate	
Comments: Leans upslope. Buried root collar.							
68	Brisbane box ( <i>Lophostemon confertus</i> )	10	60%	30%	Poor	Moderate	
Comments: Has a large decaying wound along trunk.							
69	Brisbane box ( <i>Lophostemon confertus</i> )	9	40%	40%	Poor	Moderate	
Comments: Excessive limb weight. Sparse and asymmetrical canopy.							





## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		
70	Brazilian pepper tree ( <i>Schinus terebinthifolius</i> )	6	60%	50%	Fair	Moderate	
Comments:							
71	Brazilian pepper tree ( <i>Schinus terebinthifolius</i> )	7	90%	60%	Good	Moderate	
Comments: Full canopy. Buried root collar.							
72	Coast live oak ( <i>Quercus agrifolia</i> )	6	80%	30%	Fair	Moderate	
Comments: Multi-leader structure beginning at 3.5' high. Buried root collar.							
73	Brisbane box ( <i>Lophostemon confertus</i> )	9	60%	40%	Fair	Moderate	
Comments: Leans NE and has a high crown. Excessive limb weight.							
74	Blackwood acacia ( <i>Acacia melanoxylon</i> )	9	70%	20%	Poor	Low	
Comments: Highly pronounced lean towards SE, away from parking lot but towards storage area, and buttress roots opposite lean are surfaced, indicating it partially uprooted in past.							
75	Lemon-scented gum ( <i>Corymbia citriodora</i> )	3	50%	10%	Poor	Low	
Comments: Pronounced leans towards E, and rootball found to be highly unstable (push-pull test). Has a very sparse canopy with deadwood.							
76	Lemon-scented gum ( <i>Corymbia citriodora</i> )	3	60%	30%	Poor	Low	
Comments: Large wound along lower trunk. Crook at 6.5' high where there is a decaying wound.							
77	Coast live oak ( <i>Quercus agrifolia</i> )	5	70%	70%	Good	High	
Comments: Twig dieback.							



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		
78	Brazilian pepper tree ( <i>Schinus terebinthifolius</i> )	5	60%	50%	Fair	Moderate	
Comments: Crowded-growing conditions.							
79	Brazilian pepper tree ( <i>Schinus terebinthifolius</i> )	7	60%	60%	Fair	Moderate	
Comments: Excessive limb weight. Low canopy.							
80	Brazilian pepper tree ( <i>Schinus terebinthifolius</i> )	5	70%	70%	Good	Moderate	
Comments: Low canopy.							
81	Brazilian pepper tree ( <i>Schinus terebinthifolius</i> )	5	0%	0%	Dead	Low	
Comments: Dead. No tag (adjacent to #80).							
82	Brazilian pepper tree ( <i>Schinus terebinthifolius</i> )	5	70%	50%	Fair	Moderate	
Comments: Staked. Buried root collar.							
83	Brazilian pepper tree ( <i>Schinus terebinthifolius</i> )	5	50%	40%	Poor	Low	
Comments:							
84	Fremont cottonwood ( <i>Populus fremontii</i> )	11	50%	40%	Poor	Moderate	
Comments: Excessive limb weight.							
85	Fremont cottonwood ( <i>Populus fremontii</i> )	6	20%	20%	Poor	Low	
Comments: Roughly 80% dead.							



## TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE	CONDITION			Suitability for Preservation (High/Moderate/Low)	Protected Tree
		Trunk Diameter (in.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)		

86	Fremont cottonwood ( <i>Populus fremontii</i> )	10	40%	60%	Poor	Moderate	
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Comments: Excessive limb weight.

87	Fremont cottonwood ( <i>Populus fremontii</i> )	9	30%	40%	Poor	Moderate	
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Comments: Very sparse canopy. Excessive limb weight.

88	Fremont cottonwood ( <i>Populus fremontii</i> )	5	60%	40%	Fair	Moderate	
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Comments: Excessive limb weight. Mostly one-sided canopy.

**EXHIBIT B:**

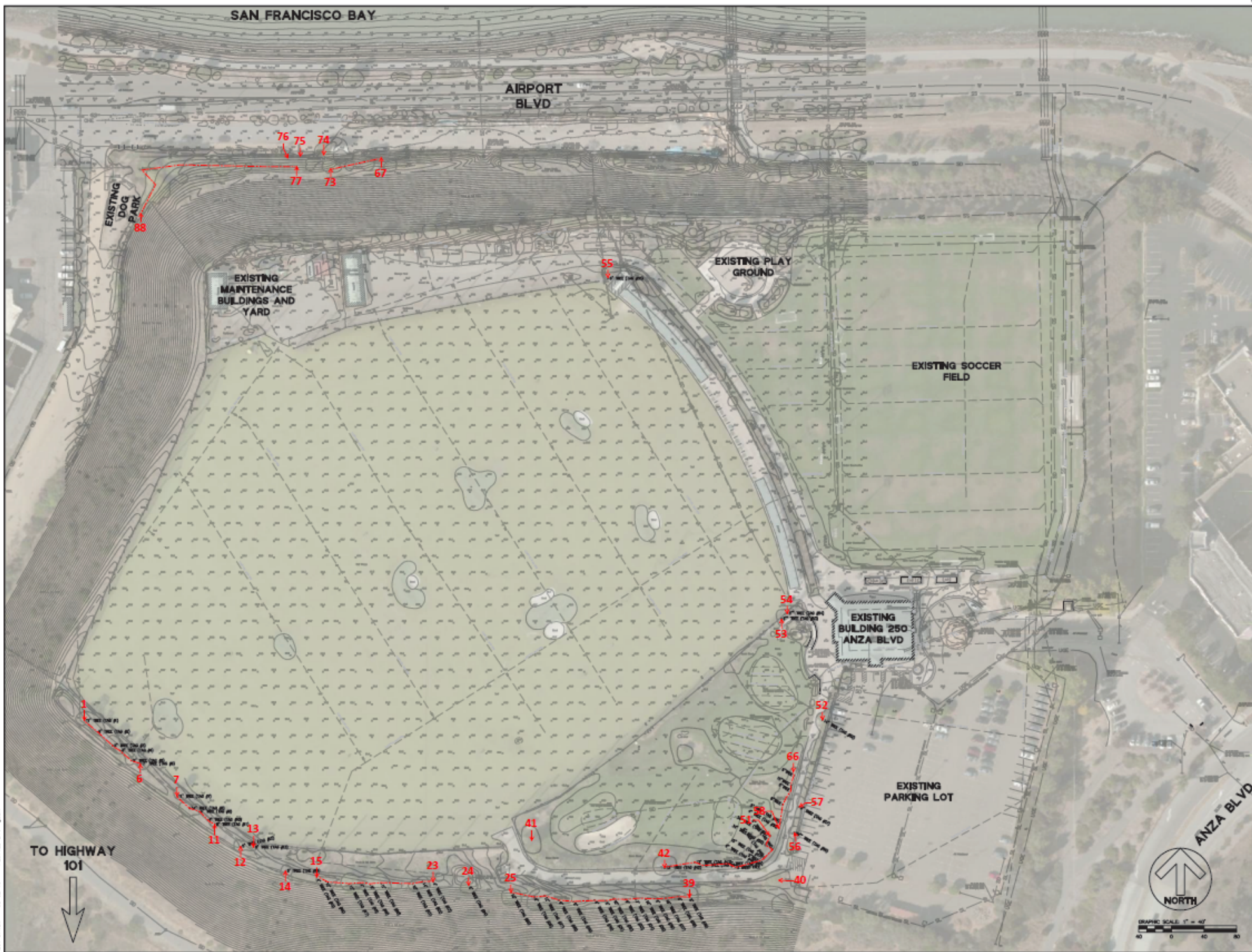
**AERIAL MAP**

(1 sheet)



Project No.	2017-016
Client	Topgolf
Design No.	001
Drawn	100
Checked	100
Approved	100
Job No.	100

Drawing Number:  
**C1.0**  
**1 of X**



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**EXHIBIT C:**

**PHOTOGRAPHS**

(9 sheets)

**Photo Index**

**Page C-1:** Trees #1 thru 10

**Page C-6:** Trees #52 thru 57

**Page C-2:** Trees #12 thru 22

**Page C-7:** Trees #67 thru 74

**Page C-3:** Trees #23 thru 29

**Page C-8:** Trees #75 thru 82

**Page C-4:** Trees #30 thru 39

**Page C-9:** Trees #84 thru 88

**Page C-5:** Trees #40 thru 51 & 58 thru 66





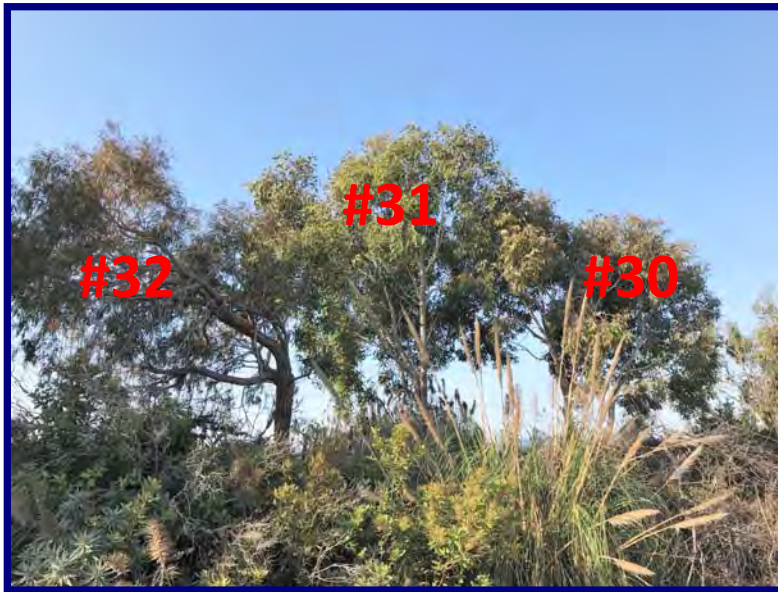












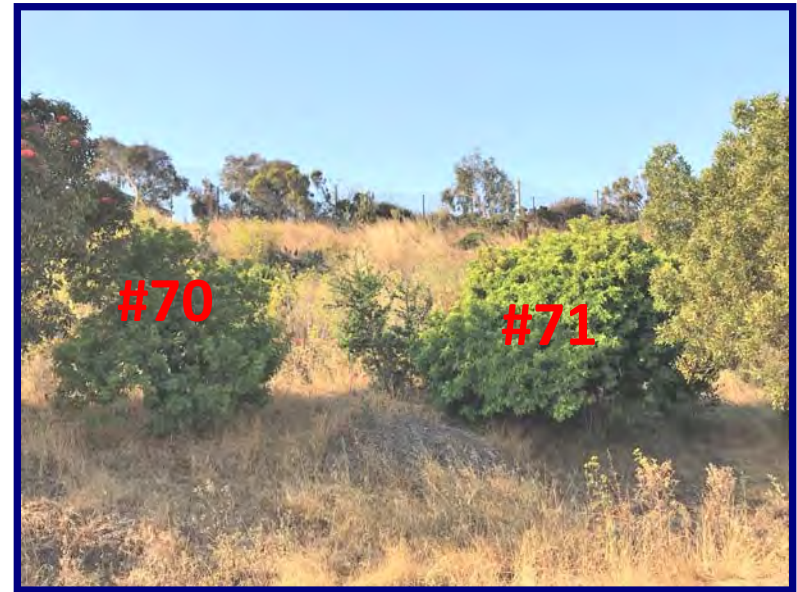




















# Memorandum

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July 15, 2019

Project #4254-01

**To:** Tali Ashurov, David J. Powers & Associates  
**From:** Steve Rottenborn, H. T. Harvey & Associates  
**Subject:** Topgolf Burlingame Biological Resources Assessment Peer Review (Updated)

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As requested, H. T. Harvey & Associates has conducted a peer review of the Biological Resources Assessment for the proposed Topgolf Burlingame project prepared by FirstCarbon Solutions (FCS) and dated April 19, 2019. The purpose of our peer review is to provide our best professional judgment regarding biological resources issues concerning the proposed Topgolf Burlingame project by supplementing information in the FCS report with our own observations and, where our best professional judgment conflicts with the contents of the FCS report, indicating how our opinion differs. David J. Powers & Associates and the City of Burlingame can then use the FCS report and our memo to prepare the biological resources section of the California Environmental Quality Act (CEQA) document for the project. This memo provides an update to our May 30, 2019 peer review memo.

To provide this peer review, H. T. Harvey ecologists reviewed existing information and performed several sets of observations. Because our role was to peer review the FCS report, and because the City of Burlingame had indicated that the FCS report should facilitate the performance of our evaluation, we began our work following receipt of the FCS report.

After reviewing the FCS report, H. T. Harvey senior wildlife ecologist Stephen L. Peterson, M.S., conducted reconnaissance surveys of the project site on May 7 and 8, 2019. During those surveys, he walked the project site comparing his observations of existing habitat conditions, presence/absence of habitat for special-status species, and presence/absence of potentially regulated habitats with the information in the FCS report and noting where his judgment differed from the contents of the FCS report. Because one of the primary issues we were scoped to address was the potential for avian collisions with the netting of the new facility, Peterson also spent time on both days observing avian flight behavior in the vicinity of the project site (10:00 a.m. to 1:00 p.m. on May 7 and 9:00 a.m. to 2:30 p.m. on May 8). Surveys were timed to conduct observations during low tide and rising tide conditions. He observed bird flight locations and behavior from both the bayside and Sanchez Lagoon side of the project site, watching the pathways birds took in flying in the vicinity (e.g., to determine whether they were flying through airspace that might be occupied or impeded by the proposed netting); observing the species and types (e.g., landbirds vs. waterbirds) of birds flying in the area; and observing



any interactions of birds with the existing netting around the driving range or with the adjacent electrical transmission lines.

During these observations, Peterson observed relatively few birds flying past or around the project site. Observations of mudflats along the edge of San Francisco Bay and in Sanchez Lagoon indicated that migrant and wintering shorebirds (e.g., plovers, curlews, and sandpipers) and waterfowl (e.g., ducks) had departed the area. These birds are most abundant in the South Bay from late summer (July/August) through mid-April, and although a few linger into May, the majority have departed the area by the time the surveys were conducted. However, a number of species of resident birds (i.e., birds that are present in the area year-round) were present, foraging in Sanchez Lagoon and on the southern slopes of the project site, just below the existing netting poles. He observed 20 or more American crows (*Corvus brachyrhynchos*) foraging around Sanchez Lagoon, then flying north and along the 35-foot tall netting poles, repeatedly perching on the poles. This flight path and behavior by the crows was observed on both days. Stephen also observed common resident waterbirds including mallards (*Anas platyrhynchos*) and Canada geese (*Branta canadensis*), both of which were observed foraging in Sanchez Lagoon with their young. However, no flights of either species was observed between the lagoon and the project site or between the lagoon and the Bay. Snowy egrets (*Egretta thula*) were observed foraging in Sanchez Lagoon as the tide was rising on May 8; these egrets were observed flying from the east into the portion of the lagoon immediately south of the site. No egrets or other waterbirds were observed flying across the project site. A variety of resident passerine species were observed foraging and flying in the vicinity of the project site, including violet-green swallows (*Tachycineta thalassina*) foraging over the grassy slope on the south side of the project site (moving east to west and back), with an occasional individual flying above the top of the netting at the top of the slope and out across the opening of the driving range, south to north. Other passerine species observed using the project site vicinity, in close proximity to the netting, were the California towhee (*Melospiza crissalis*), lesser goldfinch (*Spinus psaltria*), house finch (*Haemorrhous mexicanus*), and Anna's hummingbird (*Calypte anna*), all of which could potentially be nesting in the surrounding vegetation, shrubs, and trees found adjacent to the netting poles of the project site.

On May 7, Peterson observed a single Eurasian collared-dove (*Streptopelia decaocto*) flying from the northwest, approximately 20 feet above the ground, toward the southwest corner of the driving range. It flew into the existing netting, bounced off, dropped a bit, and then flew up and followed the netting around the southwest corner of the project site before continuing south. Peterson also surveyed the Bay side north of the project site, which parallels Airport Boulevard. He did not observe any direct bird flights over the driving range area and netting, with the exception of several gulls well over 400 feet high, moving toward the southeast. Very few birds were observed in the Bay itself with the exception of two willets (*Tringa semipalmata*), and 30+ western gulls (*Larus occidentalis*) foraging. No sandpipers or other shorebird species were observed in Sanchez Lagoon or in the project area on either day.

H. T. Harvey senior wildlife ecologist Steve Rottenborn, Ph.D., visited the site on May 20, 2019 to briefly (11:00-11:30 a.m.) observe avian flight behavior in the project vicinity. Like Peterson, Rottenborn also observed

resident birds flying around the existing facility. Most waterbirds, including Canada geese, mallards, and snowy egrets, were foraging in the marsh in Sanchez Lagoon. A pair of mallards flew into the lagoon from the direction of the Bay, taking a flight path immediately north of the existing driving range. As they began to descend into the lagoon, they encountered the electrical transmission lines, slowed considerably as they appeared to decide whether to fly over or under the lines, and nearly stalled out as they ultimately flew over the lines before descending into the lagoon. A snowy egret followed a similar flight path from the vicinity of the Bay to the west end of Sanchez Lagoon, flying under the power lines as it landed in the lagoon.

Because the proposed netting at the Topgolf Burlingame site will be much taller than the existing netting, we also wanted to assess how birds might interact with netting as tall as that proposed. To obtain such information, Peterson observed avian flight behavior at the Topgolf facility located in Roseville, California on May 29, 2019. The Roseville facility is similar in terms of design and netting height to the facility proposed in Burlingame. Although the landscape positions and bird communities in the vicinity of the two sites are very different (with the Roseville facility being adjacent to a small creek and some grassland but with no large waterbodies nearby, and the Burlingame facility being located between San Francisco Bay and Sanchez Lagoon), observations of avian behavior at the Roseville facility provided some insight into how birds flying through the area interact with the netting.

During his observations at the Roseville facility from 9:00 a.m. to 12:00 noon, Peterson observed common resident bird species, typical of this time of year, foraging and perching in the surrounding ruderal grassland fields, shrubs, and trees. Species observed included the house finch, northern mockingbird (*Mimus polyglottos*), Brewer's blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeniceus*), and western meadowlark (*Sturnella neglecta*). At one point, a northern mockingbird was observed perched at the top of one of the netting poles, which are 175 feet high. Three pairs of mourning doves (*Zenaida macroura*) were observed moving parallel to the netting within the trees and shrubs located adjacent to the netting poles. At no point did they fly to the top of the netting and over the driving range. A single European starling (*Sturnus vulgaris*) was observed flying approximately 75 feet above the ground across a field toward the driving range; approximately 50 feet before reaching the netting, the starling ascended and flew over the top of the netting and across the driving range. It appeared that all birds observed were aware of the netting and could see it, including three western kingbirds (*Tyrannus verticalis*) that were observed flycatching for moths against the netting on the outside of the driving range. The kingbirds would fly vertically up against the netting, chasing their prey, and then either perch on the netting itself or on the netting pole. At no time did Peterson observe the kingbirds fly up and over the top of the netting. The kingbirds repeatedly chased each other along the exterior portion of the netting, moving around the entire driving range facility from the north to the south side of the netting. Peterson observed a single red-tailed hawk (*Buteo jamaicensis*) soaring approximately 150 feet south of the facility at a height of 200 feet, gradually capturing thermals and soaring further to the west. The hawk was not observed moving across the top of the driving range or coming close to the netting. He also observed a single turkey vulture (*Cathartes aura*) soaring north to south approximately 150 feet high, across the field east of the driving range. The vulture was approximately 100 feet east of the nearest netting and did not approach the driving range area. Other birds

observed in the area adjacent to the netting were a pair of killdeer (*Charadrius vociferous*), foraging among the ornamental shrubs adjacent to the lower part of the netting.

In addition, H. T. Harvey ecologists reviewed relevant background information on biological resources in the vicinity of the Topgolf Burlingame project site, including previous reports we have prepared for other projects in the area. These included reports for the Burlingame Airport Boulevard Park Feasibility Study, Oyster Point Business Park Master Plan, San Mateo County Maintenance Program, and others. As a result of our review, we offer the following comments, in order of occurrence in the FCS report:

## **General Comment**

- The project site boundary depicted in the exhibits in the FCS report does not include the location of the potential driveway/access road shown as extending south from Airport Boulevard to the southwestern corner of the project site in the project plan set prepared by ARCO Murray and BKF Engineers and dated February 5, 2019. It is therefore unclear to us whether FCS evaluated the entire project site or used the latest version of the project plans in its evaluation. In our comments and assessment described below, we evaluated impacts from the entire project as shown on the February 5 plans.

## **Section 1. Introduction**

- Page 1 – The report states that the project site is roughly 14.3 acres. Per the project plan set dated February 5, 2019, the project area is approximately 12.7 acres.

## **Section 2. Regulatory Setting**

### **Section 2.1 – Federal**

No comment.

### **Section 2.2 – State**

- Page 8, bullet 3 – The report identifies the six California Environmental Quality Act (CEQA) guidelines that serve as thresholds for determining the significance of potential impacts on biological resources, including the following:

“Has a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.”

The California Natural Resources Agency revised this criterion in November 2018 as follows:

“Have a substantial adverse effect on state or federally protected wetlands ~~as defined by Section 404 of the Clean Water Act~~ (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.”

- Page 13, San Francisco Bay Conservation and Development Commission (BCDC) – The FCS report states, “the proposed development may be under the jurisdiction of the BCDC and subject to additional permitting requirements”. We do not disagree with this comment, but we would like to add detail regarding the project components that may necessitate a permit from BCDC. BCDC regulates activities within San Francisco Bay and certain adjacent areas, including a 100-foot Shoreline Band around the limits of the Bay and its tidal waters and marshes. Based on our review of the proposed project, the only project activity that may be located within BCDC jurisdiction is the northernmost end of the proposed access road, where this road meets the frontage road along Airport Boulevard. Based on the project’s plans, it appears that the northernmost extent of project work may be barely within the 100-foot Shoreline Band (being approximately 95 feet from the edge of tidal waters along the edge of San Francisco Bay). If construction work will be performed within 100 feet of the edge of San Francisco Bay in that area, a permit from BCDC would be required. However, no portions of the main project site itself are within 100 feet of tidal waters, either associated with the Bay or Sanchez Lagoon.

## Section 3. Methods

### Section 3.1 – Literature Review

- Page 15, Section 3.1.3 – The report indicates that the pertinent soil surveys maps were reviewed and cites “Soil Survey Staff 2015.” The reference included for Soil Survey Staff in Section 8: *References* lists the date as 2019.
- Page 15, Section 3.1.4 – The report indicates that searches were conducted of the California Department of Fish and Wildlife’s (CDFW’s) California Natural Diversity Database (CNDDDB) and California Native Plant Society’s (CNPS’s) Electronic Inventory, citing “CDFW 2018” and “CNPS 2018”. The references included for these two database searches in Section 8: *References* lists the date for both as 2019.

### Section 3.2 – Field Survey

- Page 16, Section 3.2.1 – The report cites several guides used to identify the vegetation and habitat types on the proposed project site. The following four citations are not included in Section 8: *References*: (1) McAuley 1995, (2) Munz 1974, (3) CDFW 1988, and (4) Oberbauer 1996.
- Page 17, Section 3.2.2 – The report cites “CDFW 2015” in reference to special-status wildlife determined to potentially occur on the project site. No such reference is included in Section 8: *References*. We assume the intent was to cite CDFW 2019, which is a reference for a CNDDDB database query.

- Page 17, Section 3.2.2 – The report cites the use of three field guides to assist in the identification of wildlife species observed during surveys. The following two citations are not included in Section 8: *References*: (1) Peterson 2010 and (2) Reid 2006.
- Page 17, Section 3.2.3 – The report indicates that FCS performed focused bird surveys at four golf course driving ranges (i.e., Mariners Point, Santa Clara Golf and Tennis Club, San Bruno Golf Course, and Sunken Gardens Golf Course) located in “similar environmental context” to the proposed project site to document any collision between avian species and the erected netting surrounding the driving ranges. For three of the four sites, we disagree with FCS’s assertion that they occur in a similar environmental context to the proposed project site. The proposed project site is located between two bodies of water, San Francisco Bay to the north and Sanchez Lagoon to the south. At its closest points, the proposed project site is approximately 320 feet south of San Francisco Bay and 200 feet north of Sanchez Lagoon. Of the four driving ranges listed, none except Mariners Point are located between, and very close to, two relatively large waterbodies. The species and types (e.g., waterfowl, shorebirds, passerines) of birds present, as well as bird flight patterns, are unique to any given location and are highly influenced by the surrounding environment, including the presence and juxtaposition of potential attractants (e.g., bodies of water) and impediments (e.g., power lines). For example, Rottenborn’s decades of experience watching birds and assessing their movements (e.g., for the South Bay Salt Ponds Restoration Project) along San Francisco Bay has indicated that waterfowl and shorebirds frequently move among various areas offering suitable habitat along the edge of the Bay (e.g., between mudflats on the edge of the immediate Bay and impoundments or lagoons located landward from the Bay). Observations by FCS of bird movements at the Santa Clara Golf and Tennis Club, San Bruno Golf Course, and Sunken Gardens Golf Course provide a one-day snapshot of bird activity at those locations, and the interactions (or lack thereof) between birds and netting at those driving ranges, but they would shed no light on the potential for waterbirds moving between San Francisco Bay and Sanchez Lagoon to interact with nets of the proposed Topgolf Burlingame facility.

The FCS report does not indicate the height of the netting at the locations that were surveyed. We understand that netting at the Mariners Point Golf and Range is up to 110 feet in height<sup>1</sup> but the proposed Burlingame project would include nets over 190 feet in height, substantially higher.

Bird interactions with the proposed project netting are expected to be highly influenced by time of day, time of year, and weather conditions, all of which affect bird flight patterns. For example, shorebirds forage nocturnally as well as diurnally<sup>2,3</sup> and move frequently between foraging locations in response to tide levels

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<sup>11</sup> City of Foster City. 2006. Mariners Point Golf – Increase Height of Driving Range Nets. Available at: <https://ceqanet.opr.ca.gov/2006028115>.

<sup>2</sup> McNeil R., and J. Ramon Rodriguez. 1996. Nocturnal foraging in shorebirds. *International Wader Studies*. 8:114-121.

<sup>3</sup> Dodd, S., M. A. Colwell. 1998. Environmental correlates of diurnal and nocturnal foraging patterns of nonbreeding shorebirds. *Wilson Bulletin*. 110:182-189.

and prey availability<sup>4</sup>. The proposed netting is expected to be much less visible to birds moving at night, or in foggy conditions. Migrants that are not as familiar with their surroundings may be more susceptible to collisions with netting than residents that have learned where the netting is located<sup>5,6</sup>. Also, surveys documenting a lack of observed collisions on a single day (as was the case with FCS's observations) do not represent the potential impacts of collisions that may occur over time. For example, if collisions are infrequent, but have the potential to affect an entire flock of birds (such as shorebirds moving between the Bay and Sanchez Lagoon), such an event would be very difficult to observe and document but could affect large numbers of individuals.

The FCS report suggests that surveys at each of the four existing driving ranges were conducted during both the morning and evening, yet two reference sites were surveyed on each day (two on January 21 and two on January 22). If a second biologist participated in those surveys to allow two sites to be surveyed in both the morning and evening on each day, the name of that second biologist should be provided in the report.

FCS's observations at the four reference sites took place in the morning and evening of a single day at each site and therefore did not capture variability in time of year, weather conditions, or nighttime vs. daytime movements. Thus, it is our opinion that FCS's observations of bird interactions with netting at the four reference sites, and especially at the Santa Clara Golf and Tennis Club, San Bruno Golf Course, and Sunken Gardens Golf Course, are unlikely to accurately reflect potential bird interactions with the proposed netting at the Topgolf Burlingame facility. H. T. Harvey's own observations reflect a relatively limited effort that cannot capture the range of temporal and weather-related variability in avian flight behaviors in the project vicinity. We understand that considerable effort (much more than was performed by FCS and H. T. Harvey combined), over multiple seasons and times of day, would be necessary to observe avian flight behavior and survey for collisions under the entire range of environmental and temporal conditions that may influence the potential for bird collisions with the proposed Topgolf Burlingame netting. For that reason, H. T. Harvey's observations of flight behavior at the project site and at the Roseville Topgolf facility were only intended to inform our interpretation of this potential risk, rather than to provide a definitive survey for the presence or absence of actual collisions. Nevertheless, we have pointed out the issues above to indicate that the lack of observed collisions by FCS, and the single collision observed by H. T. Harvey,

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<sup>4</sup> Calle, L., D. Gawlik, Z. Xie, L. Green, B. Lapointe, and A. Strong. 2016. Effects of tidal periodicities and diurnal foraging constraints on the density of foraging wading birds. *The Auk*. 133:378-396.

<sup>5</sup> Sabo, A., N. Hagemeyer, A. Lahey, and E. Walters. 2016. Local avian density influences risk of mortality from window strikes. *PeerJ* 4:e2170; DOI 10.7717/peerj.2170.

<sup>6</sup> Connors, P., J. Myers, C. Connors, and F. Pitelka. 1981. Interhabitat movements by sanderlings in relation to foraging profitability and the tidal cycle. *The Auk*. 98:49-64.

should not be interpreted as strong evidence that few bird collisions will occur with the proposed netting at the Topgolf Burlingame facility.

## Section 4. Results

### Section 4.1 – Environmental Setting

- The description of the project site indicates that a man-made waterway surrounds the area that contains the putting green. However, this feature is not shown on Exhibit 4 *Biological Resources* or discussed under Section 4.2-*Vegetation Communities*. We have added a description of this feature under our comments on Section 4.2 below and indicated its location on Figure 1. Figure 1 also depicts the vegetation community present within the proposed access road.
- Page 19, Topography – the majority of the site is relatively flat because the project site is located on top of a former landfill. However, the sides of the landfill slope down toward Airport Boulevard and San Francisco Bay to the north and toward Sanchez Lagoon to the south, and the western access road would be located along the western slope of the old landfill.
- Page 19, Soils – The report indicates that soils on the project site consist of previously excavated gravel and sand. It is worth noting that the project site is located in an area that was historically tidal marsh lands. The area was filled (soil and rubble concrete) in the 1920s and 1930s, after which it was used as a landfill until 1984<sup>7</sup>.

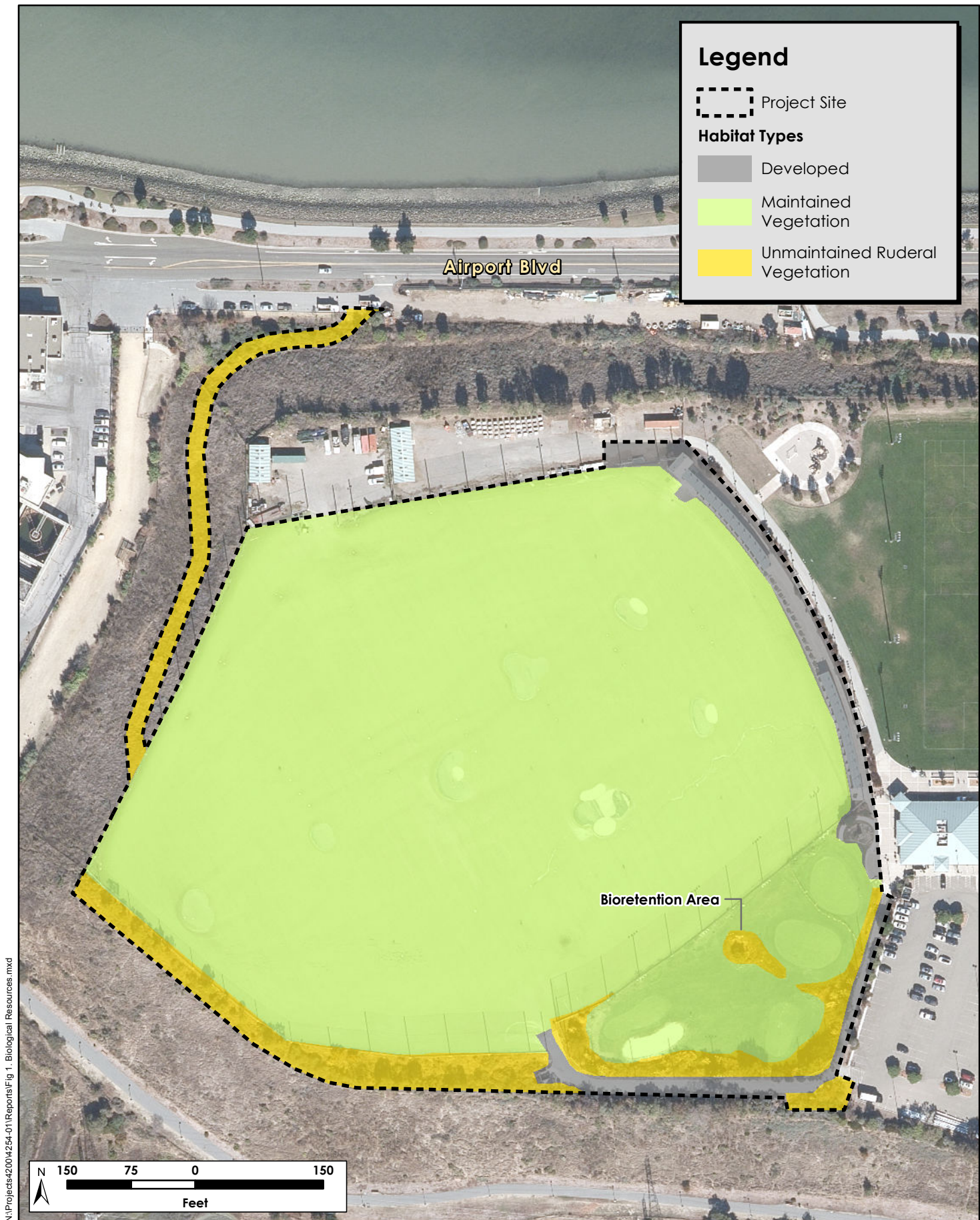
### Section 4.2 – Vegetation Communities

- Page 19 – The report indicates that the U.S. Fish and Wildlife Service’s (USFWS’s) Critical Habitat Portal was searched, citing “USFWS 2019”. However, that reference is not included in Section 8: *References*. Also, it is worth noting that no Critical Habitat designated by the National Marine Fisheries Service (NMFS) is present in the project area. While this may be intuitively obvious, given that no wetland or aquatic habitat is present, NMFS-designated critical habitat (e.g., for the Central California Coast steelhead [*Oncorhynchus mykiss*] and southern green sturgeon [*Acipenser medirostris*]) is present very close to the project site, within San Francisco Bay less than 100 feet from the northern limits of work along the access road.
- The description of the vegetation communities on the project site does not include the existing habitat in the area of the proposed driveway/access road depicted as extending south from Airport Boulevard to

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<sup>7</sup> City of Burlingame. 2012. Burlingame Bayfront Specific Plan. June 18. 2012.





N:\Projects\42004254-01\Reports\Fig 1. Biological Resources.mxd



**H. T. HARVEY & ASSOCIATES**  
Ecological Consultants

**Figure 1. Habitats Map**  
Biological Resources Assessment Peer Review (4254-01)  
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the southwestern corner of the project site in the project plan set dated February 5, 2019. Based on our reconnaissance survey of the project site, this area is composed of unmaintained ruderal vegetation.

- The feature described in the FCS report as a “man-made waterway surrounding the area that contains the putting green” is a bioretention basin located in the central portion of the putting green as shown on Figure 1. The area is designed to facilitate collection and rapid infiltration of runoff through rocks and grates. It supports some hydrophytic (i.e., wetland) vegetation because runoff is concentrated here briefly, but it drains rapidly, which was confirmed by golf course personnel who informed Stephen Peterson that the area has not ponded water in the last few years. As a result, this feature does not provide wetland or aquatic habitat.

### Section 4.3 – Wildlife

- This section only lists bird species that were observed on the project site. Although we do not expect many non-avian species to occur on the site, it is worth noting, for the sake of completeness, that animals in other species groups are expected to occur on the project site. For example, urban-adapted mammals such as the native raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*), as well as the non-native house mouse (*Mus musculus*), black rat (*Rattus rattus*), and Virginia opossum (*Didelphis virginiana*), are likely to occur on the site. Few reptiles or amphibians may be present, but the gopher snake (*Pituophis catenifer*) and western fence lizard (*Sceloporus occidentalis*) are common and widespread in the region and likely occur on the site.
- This section lists the blue-gray gnatcatcher (*Poliophtila caerulea*) as being observed on the project site during the February 25, 2019 site visit. This species is very scarce in the San Francisco Bay area in winter (see comments under Section 4.4 below).

### Section 4.4 – Focused Bird Surveys

- This section refers to Appendix A for detailed information regarding data collected during the avian surveys. The data sheets in Appendix A are not labeled in a way that indicates which data pertain to which of the sites surveyed, containing no information on location or date of observations.
- This section includes blue-gray gnatcatcher as one of the “dominant species” observed at the Sunken Gardens Golf Course in Sunnyvale during the January 22, 2019 survey. One data sheet in Appendix A lists a single blue-gray gnatcatcher at one site; another data sheet (presumably for another site) lists three gnatcatchers on a morning survey and 10 during an evening survey; and a third data sheet lists a count of three gnatcatchers. Blue-gray gnatcatchers are very scarce in the San Francisco Bay area in winter.<sup>8,9,10</sup> A few are present, in very low numbers, in the Bay area in January and February, but it is highly unlikely that

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<sup>8</sup> Small, A. 1994. California birds: their status and distribution. Ibis Publishing Company, Vista, California.

<sup>9</sup> Cornell Laboratory of Ornithology. 2019. eBird (<https://ebird.org/home>).

<sup>10</sup> Root, T. 1988. Atlas of wintering North American birds. An analysis of Christmas Bird Count data. University of Chicago Press, Chicago, Illinois.

the species was present at three of the five sites surveyed, and the occurrence of 10 at any of these sites in winter would likely be unprecedented for a single location in the Bay area at this time of year.

#### Section 4.5 - Trees

No comment.

### Section 5. Sensitive Biological Resources

#### Section 5.1 – Special-Status Plant Communities

No comment.

#### Section 5.2 – Special-Status Plant Species and Appendix B, Table 1: Special-Status Plants Potentially Occurring within the Project

- Page 27 – The report cites “USGS 1986” in regards to the San Mateo, California U.S. Geological Survey quadrangle in which the project site is located. However, that reference is not included in Section 8: *References*.
- Table 1 – Four of the column headings used in Appendix B, Table 1 are footnoted. Footnote 3 is associated with the third column in the table, which is labeled “CNPS”. However, the text under Footnote 3 at the bottom of the table provides the reference source for the habitat descriptions used in the table and should be labeled as Footnote 4. No definitions of the abbreviations used to indicate the CNPS rank of the listed special-status plants included in Table 1 are provided.
- Table 1 – Footnote 3 cites “CDFW 2018a”. No such reference is included in Section 8: *References*.

#### Section 5.3 – Special-Status Wildlife Species and Appendix B, Table 2: Special-Status Wildlife Species Potentially Occurring within the Project

- Page 28 and Table 2 – We concur with FCS’s conclusion that there is a low probability that the Alameda song sparrow (*Melospiza melodia pusillula*), a California species of special concern, may occur on the project site. However, we disagree with the statement in Table 2 that indicates the species may nest on the site. The Alameda song sparrow breeds primarily in marsh habitats<sup>11</sup>. Prime habitat consists of large areas of tidally influenced salt marsh, dominated by cordgrass (*Spartina* spp.) and gumplant (*Grindelia* spp.) and intersected by tidal sloughs, offering dense vegetative cover and singing perches. It is also occasionally

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<sup>11</sup> Chan, Y. and H. Spautz. 2008. Alameda Song Sparrow (*Melospiza melodia pusillula*). In: Shuford, W.D. and T. Gardali (eds.). California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California; and California Department of Fish and Game, Sacramento.

found in brackish marshes dominated by bulrushes (*Scirpus* spp.) and other species. Suitable nesting habitat for the species is not present on the project site. The species may nest in marsh habitat within Sanchez Lagoon to the south and may occur as an occasional forager in denser vegetation around the periphery of the project site, and there is some potential that it may nest in herbaceous vegetation a short distance up the slope between the project site and Sanchez Lagoon. However, it is not expected to nest close enough to the site (e.g., within 100 feet of impact areas) to be disturbed by project activities.

- Page 28 and Table 2 – Table 2 indicates that suitable nesting habitat for the peregrine falcon “can be found offsite” but does not discuss where such habitat is located. It is possible that peregrine falcons may nest in old common raven (*Corvus corax*) or raptor nests on electrical transmission towers in Sanchez Lagoon (a large stick nest currently occupied by ravens is present on a tower approximately 275 feet south of the site), or possibly on nearby buildings such as the Double Tree hotel to the east. Although the likelihood of nesting nearby is low given this species’ very low breeding densities around San Francisco Bay, nesting in nearby, offsite areas is possible.
- Page 27 and Table 2 – The report indicates that the California Ridgway’s rail (*Rallus obsoletus obsoletus*), federally and state listed as endangered and a state fully protected species, and the California black rail (*Laterallus jamaicensis coturniculus*), state listed as threatened and a state fully protected species, have the potential to occur “in the near vicinity of the project site”. Although we agree that neither species is expected to occur on the project site, we believe that the potential for the occurrence of these species in the vicinity of the project site is very low, and we would like to clarify that neither species is expected to breed close to the site. Salt marsh habitat is present in Sanchez Lagoon to the south of the project site. However, the vegetation throughout the majority of the marsh is too short in stature and too sparse to support breeding Ridgway’s rails, and due to the sparse, fragmented nature of dense vegetation, black rails are also not expected to breed in that marsh. Most of the taller vegetation is present as a narrow fringe along the edges of the marsh, which are easily accessible to these rails’ mammalian predators (e.g., raccoons, striped skunks, and feral cats [*Felis catus*]), as well as exposure to higher levels of anthropogenic disturbance. Several stands of cordgrass are also present; although California Ridgway’s rails breed in cordgrass in many parts of the Bay area, those cordgrass stands in Sanchez Lagoon are located in particularly low-lying areas that are flooded frequently enough that rails are not expected to use those stands for nesting. It is possible that dispersant California Ridgway’s rails or migrant California black rails may occasionally forage in Sanchez Lagoon, but these species are not expected to nest close enough to the site to be potentially disturbed by project activities, and they would occur in Sanchez Lagoon only as rare dispersants, if at all.
- Table 2 – We concur with FCS’s conclusion that the salt marsh harvest mouse (*Reithrodontomys raviventris*), federally and state listed as endangered, is absent from the project site. However, the report indicates that preferred habitat for the species is found offsite “in the near vicinity of the project site” in the form of pickleweed marsh. On the San Francisco Peninsula, the range of the salt marsh harvest mouse does not extend north of the San Mateo Bridge. Thus, the salt marsh harvest mouse is not expected to occur in the marsh habitat to the south of the project site in Sanchez Lagoon.

## Section 5.4 – Nesting Birds

- The report states, “Potential impacts on special-status and migratory birds that could result from the construction and operation of the project include the destruction of eggs or occupied nests, mortality of young, and the abandonment of nests with eggs or young birds prior to fledging.” In our opinion, the only special-status bird species that may nest close enough to the site that construction may result in disturbance is the peregrine falcon. A nest of this species could be impacted only if an active nest is present close enough to the project site that noise and operation of construction equipment could result in disturbance to the point of abandonment of eggs or young. In our opinion, there is some potential (albeit low) for peregrine falcons to use nests previously constructed by other birds on electrical transmission towers in Sanchez Lagoon, such as the existing common raven nest on a tower approximately 275 feet south of the project site. Otherwise, no special-status bird species’ nests could be disturbed by project activities.
- The report indicates that impacts on the nests, eggs, and young of migratory birds would be significant. In our opinion, impacts on non-special-status nesting birds would be less than significant for reasons discussed in our comments on Section 6.2 below. However, the nests of all native birds on and near the site are protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code, and we therefore agree that preconstruction nesting bird surveys for any breeding season (February 1 – August 31) construction, and buffers between construction activities and any active nests detected, should be implemented. Our comments on those surveys and buffers are provided in our discussion of Section 6.2 below.

## Section 5.5 – Wildlife Movement Corridors

- Page 28 – The report concludes that the project “...will not interfere substantially with the movement of native resident or migratory fish or wildlife species or impede wildlife use of nursery sites and no impacts would occur.” This conclusion is based on the presence of large fences and protective netting surrounding the majority of the site, which is said to restrict wildlife movement; the urban context of the project site; and the lack of surface waters on the project site. It is our opinion that the report does not adequately describe avian movement in the vicinity of the proposed project site.

The San Francisco Bay Estuary provides habitat for more migrating and wintering shorebirds than any other coastal wetland on the U.S. Pacific coast south of Alaska<sup>12</sup>. Over one million shorebirds use the Bay annually, with over 300,000 occurring during the winter months (November – March)<sup>6</sup>. As described above, the project site is located between two bodies of water, San Francisco Bay to the north and Sanchez Lagoon

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<sup>12</sup> Point Blue Conservation Science. 2019. Pacific Flyway Shorebird Survey. Available at: <http://webcache.googleusercontent.com/search?q=cache:aRBg3qYyYfAJ:data.prbo.org/apps/pfss/index.php?page%3Dsfbay&hl=en&gl=us&strip=1&vwsrsrc=0>.

to the south. A review of the eBird database<sup>13</sup>, which has been established by the Cornell University Laboratory of Ornithology to archive records of birds seen worldwide, indicates that 130 species of birds have been documented at Sanchez Lagoon just south of the proposed project site, including numerous species of shorebirds. As many as 300 short-billed dowitchers (*Limnodromus griseus*), 200 western sandpipers (*Calidris mauri*), and 156 semipalmated plovers (*Charadrius semipalmatus*) were recorded on a single day in April 2009, and 497 greater scaup (*Aythya marila*) were recorded on November 18, 2007. Data from eBird for other nearby sites, such as Anza Lagoon (with 100 species recorded) 1,900 feet east of the site and Coyote Point (with 253 species recorded) 1.5 miles east of the site, further indicate the high diversity and abundance of migratory birds in the project vicinity. Because shorebirds move frequently between foraging locations in response to tide levels and prey availability, it is our opinion that large numbers of birds are likely moving over or around the project site, between San Francisco Bay and Sanchez Lagoon, particularly during the spring and fall migration periods. Thus, it is our opinion that a more detailed analysis of the potential for the project to interfere with the movement of resident or migratory birds is warranted (see *Additional Impact Analysis – Wildlife Movement* below).

#### Section 5.6 – Trees

No comment.

#### Section 5.7 – Jurisdictional Waters and Wetlands

No comment.

#### Section 5.8 – Habitat Conservation Plan

No comment.

### Section 6. Impact Analysis and Recommendations

#### Section 6.1 – Special-Status Wildlife Species

- The report concludes that project development has the potential to adversely impact two special-status animals, the Alameda song sparrow and American peregrine falcon. The report does not identify the type of potential impact that could occur, but indicates that the impact could be avoided through the implementation of preconstruction surveys for nesting birds. Thus, we assume that the potential impact being referred to is the loss of active nests (including abandonment of eggs or young) due to construction activities during the nesting season. As discussed above in our comments on the potential occurrence of these two species, we do not expect Alameda song sparrows to nest close enough to the project site (within 100 feet) that construction activities would result in physical disturbance or indirect disturbance of active nests to the point that eggs or young would be lost or abandoned due to construction or operation of the

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<sup>13</sup> Cornell Lab of Ornithology 2019. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: May 2019).

project. Alameda song sparrows may occasionally occur on the project site as dispersants or foragers; however, adult birds are not expected to be killed or injured as a result of project construction activities, as they could easily fly from the work site prior to such effects occurring (but see discussion of potential impacts due to bird collisions below).

In our opinion, the potential for peregrine falcons to nest close enough to the site to be disturbed by project activities (i.e., within 300 feet) is very low due to the low density of nesting peregrine falcons in the Bay area, but there is some potential for this species to use an old raven nest on electrical towers in Sanchez Lagoon, within 300 feet of the project site. Therefore, this is some potential for nesting peregrine falcons to be disturbed by construction activity to the point of nest abandonment. Given the scarcity of this species as a breeder in the region, the loss of an active nest would represent a significant impact. Implementation of the mitigation measure for nesting birds described in Section 6.2, with the changes we note below, would reduce the potential impact on active nests of the peregrine falcon to a less-than-significant level.

## Section 6.2 – Nesting Birds

- Page 31 – FCS concludes that project impacts on nesting birds protected under the MBTA may be considered significant under CEQA. With the exception of the American peregrine falcon, which is discussed above, we disagree with this conclusion. Due to the absence of sensitive habitats, the project site supports only regionally common, urban-adapted breeding birds and supports only a very small proportion of these species' regional populations. In addition, many birds are expected to continue to nest and forage on the project site after project construction is completed. These birds are habituated to disturbance related to the existing golf course, and the project incorporates trees, shrubs, and forbs into the landscape design, which will provide some food and structural resources for the common, urban-adapted birds of the area, as well as for migrants that may use the area during spring and fall migration. Therefore, project impacts on non-special-status nesting and foraging birds that use the site, due to habitat impacts or disturbance of nesting birds, would not rise to the CEQA standard of having a substantial adverse effect, and these impacts would not constitute a significant impact on these species or their habitats under CEQA. However, nests of all native bird species are protected from direct take by federal and state statutes. Therefore, we recommend that measures be implemented to ensure that project activities comply with the MBTA and California Fish and Game Code (see below).
- Page 31, first bullet – FCS defines the typical avian nesting season as February 15 through August 31. In our opinion, the typical nesting season for most birds in the project area should be considered February 1 through August 31, as mourning doves and Anna's hummingbirds in particular can begin nesting by February 1 in the South Bay.
- Page 31, first bullet – FCS states that a preconstruction survey "...for American peregrine falcon, pallid bat, and other migratory birds" will be conducted. The pallid bat is not a bird and is not expected to breed on or near the project site.

- Page 31, second bullet – FCS indicates that the USFWS and/or CDFW will be notified regarding the status of any active bird nest found during preconstruction surveys. Consultation with the USFWS and CDFW in regards to the presence of an active nest of a non-special-status bird is not required for compliance with CEQA, and may result in unnecessary project delays. If a suitable buffer is identified by a qualified biologist, that biologist will possess appropriate knowledge of the ecology of the species in question and of typical guidance provided by the USFWS and CDFW regarding such issues, and should be able to identify necessary protections for the nest without the need to consult with the agencies.
- Page 31, Active Nest Avoidance Measures – Below we provide the recommended measures to avoid active nests of birds protected under the MBTA or California Fish and Game Code during construction. These measures are based on those prepared by FCS, but have been revised per our comments above:
  - If construction or tree removal is proposed during the nesting season for migratory birds (typically February 1 through August 31), a qualified biologist will conduct preconstruction surveys for American peregrine falcon and other nesting birds within the construction area, including a 300-foot survey buffer for raptors such as the American peregrine falcon and a 100-foot buffer for non-raptors. The survey will be conducted no more than three days prior to the start of ground disturbing activities in the construction area.
  - If an active nest is located during pre-construction surveys, construction activities will be restricted as necessary to avoid disturbance of the nest until it is abandoned or a qualified biologist deems disturbance potential to be minimal. Restrictions may include establishment of exclusion zones (no ingress of personnel or equipment) around an active nest (typically 300-foot buffer for raptors and 100-foot for non-raptors)) or alteration of the construction schedule.
  - A qualified biologist shall delineate the buffer using nest buffer signs, Environmentally Sensitive Area (ESA) fencing, pin flags, and or flagging tape. The buffer zone will be maintained around the active nest site(s) until the young have fledged and are foraging independently.

### Section 6.3 – Trees

No comment.

### Additional Impact Analysis – Wildlife Movement

The FCS report did not analyze potential project impacts related to wildlife movement. For the reasons indicated in Section 5.5 above, it is our opinion that two issues related to wildlife movement (i.e., the potential for bird collisions with the proposed building and the potential for bird collisions with the proposed netting) warrant analysis in sufficient detail to facilitate evaluation under CEQA.

## **Impacts from Building Collisions**

Once the proposed Topgolf building is constructed, the risk of avian injury or mortality due to collisions with the building may increase due to the incorporation of glass into the building's facade. Because birds do not perceive glass as an obstruction the way humans do, they may collide with glass when the sky or vegetation is reflected in glass (e.g., they see the glass as sky or vegetated areas); when transparent windows allow birds to perceive an unobstructed flight route through the glass (such as at corners); and when the combination of transparent glass and interior vegetation (such as in planted atria) results in attempts by birds to fly through glass to reach that vegetation. The majority of avian collisions with buildings occur within the first 60 feet of the ground<sup>14</sup>, where birds spend the majority of their time engaged in foraging, territorial defense, nesting, and roosting activities, and where vegetation is most likely to be reflected in glazed surfaces.

By necessity, the proposed building is within the "Bird Collision Zone", within the first 60 feet above the ground. However, the project would not include any vegetated atria wherein vegetation is present behind glass, nor any glass skyways, glass walkways, or freestanding glass walls. Neither the north-facing nor west-facing building facades would include any glazing at all, based on the project plans. We estimate that the south-facing façade, which would contain the largest amount of glazing, would be composed of less than 15% glazing. In addition, architectural features of the proposed building would reduce the potential for avian collisions with glass windows. Based on the architectural renderings in the project plan set, no windows extend to the corners of the building such that birds could see a clear flight path through to the other side, and all windows include multiple mullions (i.e., vertical and horizontal bars) that break up the transparent or reflective areas of the glass, thereby increasing the ability of birds to detect and avoid the windows. Further, the proposed building layout does not create any open vegetated or aquatic areas that provide substantial or high-quality habitat for birds. The landscaping on the site is interspersed with walkways and other paved areas that provide only limited foraging opportunities for a few urban-adapted bird species, such as those that currently use the site. For these reasons, it is our professional opinion that the frequency of collisions between native birds and the facades of the proposed building would be low and would not result in the loss of a substantial proportion of any species' Bay-area populations or any Bay-area bird community. Thus, impacts due to avian collisions with the proposed building would be less than significant under CEQA.

## **Impacts from Netting Collisions**

The proposed project would enclose the outfield perimeter on three sides with netting strung between poles up to 190 ft tall, 140 feet taller than the existing netting on the site, which ranges from approximately 35 to 50 feet in height. Avian collisions with this netting are expected to occur due to the airspace occupied by such tall netting, the large number of birds known to occur (and be moving around) in the project vicinity, and the various conditions (including nocturnal movements and foggy conditions) that may make the netting inconspicuous to some birds. During our relatively brief observations at the project site, we observed one bird

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<sup>14</sup> City of San Francisco. 2011. Standards for Bird-Safe Buildings. San Francisco Planning Department. Adopted July 14, 2011.



collide with the netting at the existing driving range, which is much lower and less extensive than the proposed Topgolf netting. Although this Eurasian collared-dove did not seem to be harmed by the collision, this observation demonstrates that collisions do occur.

During some portions of the year, large numbers of birds are present in the immediate vicinity of the project site, and many of these birds are migrants<sup>15</sup>. As described above, eBird records for Sanchez Lagoon indicate that 130 species of birds have been documented at Sanchez Lagoon just south of the proposed project site, and hundreds of individual shorebirds (e.g., dowitchers, sandpipers, plovers) have been documented in the area on a single day. Similarly, large numbers of birds have been documented at other nearby locations. For example, 100 species have been recorded at Anza Lagoon Park approximately 2,000 feet to the east, including over 300 scaup (*Aythya* spp.) on a single day. At Coyote Point, approximately 1.5 miles to the east, 253 species of birds have been documented, including over 16,000 shorebirds (e.g., dowitchers, sandpipers, plovers) on mudflats along the Bay during a single visit. In the project area, migrant shorebirds and waterbirds are expected to move along the coastline and drop in to high-quality habitat at locations such as mudflats along the Bay edge, Sanchez Lagoon, and Coyote Point. Thus, migrants are expected to occur at low altitudes over the project site as they ascend from and descend to these locations. Shorebirds and waterfowl also move among various habitat areas depending on tidal conditions, prey depletion on mudflats (i.e., birds move from areas where foraging activity has been heavy to areas where more food is available), disturbance by predators, and other factors. As a result, waterbirds are expected to move frequently between the edge of the Bay, Sanchez Lagoon, Anza Lagoon, and Coyote Point. Although our observations at the project site were performed after most migrant and wintering shorebirds and waterfowl had migrated from the South Bay, we saw a pair of mallards and a snowy egret flying past the project site between the bay and Sanchez Lagoon in the brief time we were present. We expect much more bird movement between Sanchez Lagoon and other areas, and much more movement in the immediate vicinity of the site, during spring and fall migration and during the winter period, when shorebirds and waterfowl are much more abundant. As these birds ascend from or descend into Sanchez Lagoon, they will be flying at altitudes that could lead to collisions with the proposed netting.

Although the project site and its immediate surroundings do not provide high-quality habitat for migrant landbirds, nearby Coyote Point attracts very large numbers of landbirds during migration. Examples of such high counts, just based on eBird data, include counts of up to 160 violet-green swallows (*Tachycineta thalassina*), 315 cedar waxwings (*Bombycilla cedrorum*), 150 mourning doves, and 156 white-crowned sparrows (*Zonotrichia leucophrys*). Even higher counts exist that are not in the eBird database, but that have been reported to the Peninsula-Birding list (<https://groups.io/g/peninsula-birding>). Examples include counts of 234 violet-green swallows and 2,065 cedar waxwings on May 12, 2019<sup>16</sup>. Many species of warblers, vireos, flycatchers, swallows and other landbirds occur along the edge of the bay in the project vicinity during migration.

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<sup>15</sup> Cornell Lab of Ornithology 2019. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: May 2019).

<sup>16</sup> <https://groups.io/g/peninsula-birding/message/18946>

Given the project's landscape position relative to important bird habitats such as the San Francisco Bay, Sanchez Lagoon, and Coyote Point, and the presence of large numbers of migrants moving through the general area, the flight paths of birds could result in collisions with the netting, potentially resulting in injury, mortality, or entanglement. Although many resident birds are likely to learn where the netting is located and adapt to its presence by flying around the proposed facility, migrants moving into the region for the first time (e.g., young birds in their first fall migration) will not be familiar with the facility and therefore have greater risk of colliding with the netting.

A review of the scientific literature as well as available CEQA documents revealed little information concerning the potential for birds to collide with, or become entangled in, golf barrier netting – the issue does not seem to have been studied closely. However, concern over the potential for such impacts has been raised in regard to proposed Topgolf sites at other locations, including the San Jose facility<sup>17</sup>, the Brooklyn Center facility in Minnesota<sup>18</sup>, and the Louisville facility in Kentucky<sup>19</sup>. A search of the internet found several accounts of birds becoming entangled in golf course netting, including a red-tailed hawk (*Buteo jamaicensis*) rescued from a golf driving range net in Kalamazoo, Michigan<sup>20</sup>; a red-tailed hawk tangled in a golf course net in Billerica, Maine<sup>21</sup>; a crested goshawk (*Accipiter trivirgatus*) entangled in netting around a golf driving range in Singapore<sup>22</sup>; a pariah kite (*Milvus migrans*) caught in netting around a golf club in Bangalore<sup>23</sup>; and a hooded merganser (*Lophodytes cucullatus*) entangled in netting at the Topgolf driving range in Virginia Beach, Virginia<sup>24</sup>. The hooded merganser is a species of small duck, and this Topgolf facility is located near two large ponds, one approximately 500 feet to the west and one approximately 400 feet to the north of the site. Although the merganser was reportedly determined to be unharmed and released back to the wild, the red-tailed hawk was said to have suffered soft tissue injury of its leg requiring several weeks to heal. As noted previously, we observed a single collision with the existing netting at the project site during our relatively limited observations. For these reasons, it is our

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<sup>17</sup>City of San Jose. 2016. Comment letters received on the initial study. Available at: <http://www.sanjoseca.gov/DocumentCenter/View/62381>

<sup>18</sup> Sun Post. 2018. Brooklyn Center Topgolf facility may become hazard to wildlife. Available at: [https://www.hometownsource.com/sun\\_post/photo-brooklyn-center-topgolf-facility-may-become-hazard-to-wildlife/article\\_0d1870c8-3780-11e8-867c-4fa3e9918ad6.html](https://www.hometownsource.com/sun_post/photo-brooklyn-center-topgolf-facility-may-become-hazard-to-wildlife/article_0d1870c8-3780-11e8-867c-4fa3e9918ad6.html)

<sup>19</sup> WDRB. 2018. Vote on Topgolf case set for Thursday. Available at: [https://www.wdrb.com/news/vote-on-topgolf-case-set-for-thursday/article\\_5361541a-5a6c-52b4-9dcc-7252542ca41b.html](https://www.wdrb.com/news/vote-on-topgolf-case-set-for-thursday/article_5361541a-5a6c-52b4-9dcc-7252542ca41b.html)

<sup>20</sup> Fox17 West Michigan. 2018. Master falconer climbs 50 feet, rescues red-tailed hawk tangled in net. Available at: <https://fox17online.com/2018/04/25/master-falconer-climbs-50-feet-rescues-red-tailed-hawk-tangled-in-net/>

<sup>21</sup> Lowal Sun. 2014. Hawk freed after getting tangled in net at Billerica golf course. Available at: <https://fox17online.com/2018/04/25/master-falconer-climbs-50-feet-rescues-red-tailed-hawk-tangled-in-net/>

<sup>22</sup> Coconuts Singapore. 2016. Hawk rescued after two days of being trapped in golf range netting at Choa Chu Kang Country Club. Available at: <https://coconuts.co/singapore/news/hawk-rescued-after-two-days-being-trapped-golf-range-netting-choa-chu-kang-country-club/>

<sup>23</sup> Bangalore Mirror. 2015. Not a nice birdie! Golf club nets are death trap for city birds and bats. Available at: <https://bangaloremirror.indiatimes.com/bangalore/others/not-a-nice-birdie-golf-club-nets-are-death-trap-for-city-birds-and-bats/articleshow/49822429.cms>

<sup>24</sup> The Virginian-Pilot. 2016. Stuck duck saved by truck at Topgolf in Virginia Beach. Available at: [https://pilotonline.com/news/local/environment/article\\_123b1b50-6274-5788-825b-4aa055021617.html](https://pilotonline.com/news/local/environment/article_123b1b50-6274-5788-825b-4aa055021617.html)

opinion that a cautionary approach is warranted in the analysis of the potential impact of the project on birds due to collisions with the proposed netting.

The FCS report mentions that no bird collisions of any sort were observed during their surveys of the project site and the four reference sites. In addition, the applicant for the San Jose Topgolf facility indicated that they had talked with a number of golf facilities and none had reported any bird entanglements, injuries, or mortality due to netting. However, such events may go unnoticed – a bird (or flock) may collide with a net, some may be injured or killed, and subsequently predated relatively quickly, before being noticed, or they may be concealed by dense vegetation. For example, a study on the persistence of songbird carcasses in agricultural fields found that on average 75% of carcasses were removed by scavengers within 24 hours<sup>25</sup>. Thus, in the absence of standardized, focused surveys, the lack of observations of collisions should not lead to the conclusion that such collisions do not occur.

Because no scientific research has been conducted regarding the potential for birds to be injured by collisions with golf course netting, we compared the physical characteristics of the proposed golf barrier netting to the typical characteristics of nests used to capture birds (i.e., mist nets) in considering potential collision impacts. It is well documented that bird entanglement in mist netting can result in a variety of injuries (e.g., abrasions, lacerations, wing strain, soft tissue damage, feather loss, broken bones), or even mortality<sup>26,27</sup>.

Mist nets are generally large panels of either nylon, polyester, or monofilament mesh. Horizontal shelf strings of thicker, stronger thread are woven through the mesh at the top and bottom of the net and at equal distances in between. The net is strung between poles, which hold it upright. The shelf strings form pockets of netting. Birds fly into the net and usually drop into the pockets and become entangled (Photo 1). Mesh size is measured by stretching the net diagonally and measuring the diagonal distance of a square. Different meshes have different catching efficiencies for different species. Based on information provided in the *North American Banding Council Banders' Study Guide*<sup>28</sup>, a 1-inch stretched mesh is appropriate to catch hummingbirds, 1.25-inch stretched mesh is appropriate to catch small to moderate-sized birds,



**Photo 1. Mist net**

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<sup>25</sup> Balcomb, R. 1986. Songbird carcasses disappear rapidly from agricultural fields. *The Auk*. 103:817-820.

<sup>26</sup> Smith, H., J. McCracken, D. Shepherd, and P. Velez. 1997. *The Mist Netter's Bird Safety Handbook. A Bird Bander's Guide to Safe and Ethical Mist Netting and Banding Procedures*. Available at: [https://www.birdpop.org/docs/pubs/Smith\\_et\\_al\\_1997\\_Mist\\_Netters\\_Bird\\_Safety\\_Handbook.pdf](https://www.birdpop.org/docs/pubs/Smith_et_al_1997_Mist_Netters_Bird_Safety_Handbook.pdf).

<sup>27</sup> Spotswood, E., K Goodman, J. Carlisle, R. Cormier, D. Humple, J. Rousseau, S. Guers, and G. Barton. 2012. How safe is mist netting? Evaluating the risk of injury and mortality to birds. *Methods in Ecology and Evolution*. 3:29-38.

<sup>28</sup> North American Banding Council. 2001. *The North American Banders' Study Guide*. February 2001.

1.5-inch stretched mesh is appropriate for larger songbirds, and 2.5-4-inch stretched mesh is appropriate for larger hawks. Small birds can become unduly tangled in large-mesh nets, whereas large birds often bounce out of small-mesh nets.

In addition to mesh size, another factor that affects the likelihood of birds becoming caught in netting is the denier (weight) of the component thread. The bulkier the strand, the lower the likelihood of entanglement. Material with a high denier count tends to be thick, sturdy, and durable, whereas material with a low denier count tends to be sheer, soft, and silky. In general, 75 denier strands are recommended for most mist nets<sup>14</sup>.

Although the type of netting proposed for the Topgolf Burlingame project was not specified in the plan set, it is expected to be similar to that proposed for the nearby Topgolf facility in San Jose, California, which was identified as Redden #930 polyester golf range netting, 250 denier, with 2.6-inch stretched mesh (1-inch square mesh), manufactured with ultraviolet treated yarn and coated with a black resin dye<sup>29</sup>. All sections of the netting would be connected to a 3/8-inch black perimeter rope, and all net panels would be erected in a manner that would result in taut panels upon completion.

The mesh size of the proposed golf barrier netting is much larger than that typically used to catch birds other than large hawks and large waterfowl. In addition, it is substantially bulkier (250 denier versus 75 denier) than the material typically used for mist nests, making it much more likely that birds would see the netting in time to avoid it and less likely that birds, even larger birds like hawks, would become entangled should they fly into it. Finally, golf barrier netting, once installed, is taut (Photo 2), whereas, mist nests are set loosely to prevent birds from bouncing out (Photo 1). Thus, the mesh size, denier, and tautness of the proposed golf ball safety netting reduce the likelihood that the net would result in bird collisions.



**Photo 2. Golf barrier netting at an existing Topgolf facility.**

However, the color black is the least visible of colors used in mist netting construction, and given the location of the proposed netting, it is possible that birds descending toward Sanchez Lagoon from the north, or ascending from Sanchez Lagoon towards the Bay, could be moving at speeds at which the net could not be detected in time to avoid a collision, especially at night or in foggy conditions. Although specific data regarding the number of days with fog could not be found for Burlingame, data for nearby San Francisco indicates the

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<sup>29</sup> H. T. Harvey & Associates. 2016. Topgolf Biological Resources Report. Prepared for David J. Powers & Associates. July 2016.

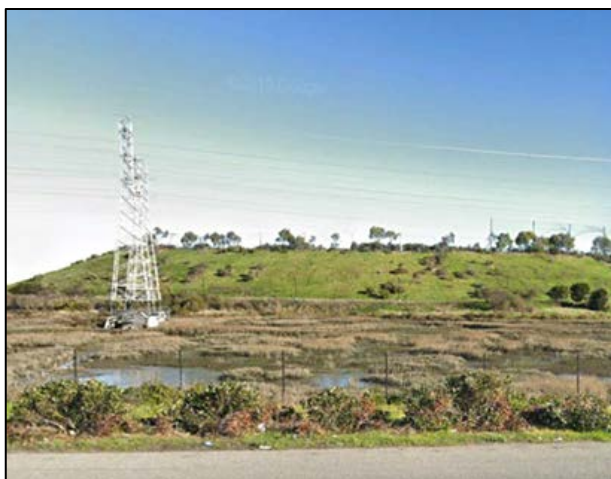
occurrence of 108 foggy days per year<sup>30</sup>; even foggy conditions for a fraction of that number of days could result in substantially reduced visibility of the net to birds flying through the area.

As discussed above, it is well documented that members of many families of shorebirds forage both by day and night and move frequently between foraging locations in response to tide levels and prey availability. In addition, a study on nocturnal foraging patterns of nonbreeding shorebirds in Humboldt Bay found that the nocturnal presence of species such as the marbled godwit (*Limosa fedoa*), dowitcher (*Limnodromus* spp.), black-bellied plover (*Pluvialis squatarola*), and semipalmated plover (*Charadrius semipalmatus*) increased during the fall and on nights with a visible moon<sup>31</sup>. Thus, there is a reasonable expectation that shorebirds would be moving between the Bay and Sanchez Lagoon during nighttime hours, when netting would be much less visible, to some extent.

Although netting is often used in bird sanctuaries and zoos to enclose birds, when used in that context, the birds that are enclosed (a) are not flying at high speeds as birds moving over the project site would be, (b) would very quickly learn that the netting is present, and (c) would not be subject to attack by predators that could increase collision risk. The proposed netting would be 140 feet higher than the current netting on the site, and it would thus extend farther into potential flight paths of birds moving through the area.

H. T. Harvey's brief observations of bird movements in the vicinity of the project site and at the Roseville Topgolf facility, suggest that resident birds may become familiar with the presence of the netting, flying around it or even perching on top of it. Certainly, many birds will be able to reside in the vicinity of the project site without colliding with the net. However, migrants that are not familiar with the site (e.g., those that are just arriving in the area to winter or to feed during migration, or migrants passing through the area) may be more vulnerable to collisions. In addition, as noted above, conditions of low visibility (such as flights at night or in the fog) could subject any birds to collision risk.

Several transmission lines cross Sanchez Lagoon in an east-west direction immediately south of the proposed project site (Photo 3), and the presence of these lines may interact with the presence of the proposed netting to increase the risk of collisions with the netting. Birds attempting to move north from the marsh habitat in the lagoon to the Bay may be forced to fly under the



**Photo 3. Looking north across Sanchez Lagoon (foreground) towards the proposed project site (background).**

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<sup>30</sup> Current Results Publishing. 2019. Total Cloudy and Foggy Days at US Cities. Accessed at: <https://www.currentresults.com/Weather/US/cloud-fog-city-annual.php>.

<sup>31</sup> Dodd, S., M. A. Colwell. 1998. Environmental correlates of diurnal and nocturnal foraging patterns of nonbreeding shorebirds. *Wilson Bulletin*. 110:182-189.

transmissions lines before needing to rapidly ascend up the steep embankment on which the project site would be located, and then an additional 190 feet to clear the proposed netting. Alternately, birds may interrupt their normal flight patterns to fly over the transmission lines, slowing down to the point that it may then be more difficult to fly over the 190-foot netting; this possibility is suggested by Rottenborn's observations of a pair of mallards nearly "stalling" when having to decide whether to fly over or under the transmission lines when entering Sanchez Lagoon (described above).

Thus, the proposed netting could result in a substantial increase in the number of collisions between birds and the netting, as compared to existing conditions. Not all birds that collide with the netting will be injured or killed (e.g., the Eurasian collared-dove seen by Stephen Peterson colliding with the existing netting on the site did not seem to be harmed). However, the potential for injuries or mortality may vary depending on the flight speed, size of the bird, and structure of the bird (e.g., birds with long, thin bills such as shorebirds may be more likely to become entangled), and we expect there is potential for bird injuries and/or mortalities to increase substantially relative to the baseline level. Given the large number of birds that occur in the project area (and especially the large number of migrants) and the high number of species represented by these migrants, it is our determination that potential injury or mortality of birds as a result from increased collisions with netting associated with the Topgolf facility would be potentially significant under CEQA due to the potential to interfere substantially with the movement of native resident or migratory wildlife species. The thresholds of significance may vary depending on the type and scarcity of the species impacted; for example, as described in Attachment A, injury or mortality (as a result of netting interactions) of birds according to the following criteria would serve as triggers for remedial action to reduce collision risk:

- One individual of a state or federally listed species
- More than one individual/three months of the white-tailed kite [*Elanus leucurus*] (a California fully protected species);
- More than one individual/two months of a California species of special concern; or
- More than five individuals/month of any native bird species (given the potential for impacts to large numbers of species)

These thresholds recognize that some injury or mortality of birds could occur without resulting in a significant impact. When determining whether impacts to a species are substantial, per the CEQA guidelines, H. T. Harvey considers the impacts to the species' populations, rather than to single individuals of those species. Even with measures to reduce collision risk (as described in Attachment A), we expect some collisions, and some low level of injury or mortality, to occur.

As described above, we are aware of no research that has been conducted on the potential impacts of golf barrier netting on birds or methods to avoid such impacts. However, information is available regarding methods



to reduce bird impacts with power lines. Jenkins et al.<sup>32</sup> (as cited in Avian Power Line Interaction Committee<sup>33</sup>) concluded that any sufficiently large line marking device that thickens the appearance of a power line for at least 7.8 inches in length and is placed with at least 16.4- to 32-foot spacing is likely to lower collision rates by 50 to 80%. During our work assessing impacts of the San Jose Topgolf facility, the only feasible mitigation measure that, in our opinion, would reduce collision probability and frequency, and therefore reduce collision impacts to less-than-significant levels, entailed marking the nets with devices similar to those used to reduce power line collisions. As noted above, some level of collision risk, and therefore some risk of injury or mortality, would be present even with net marking devices. However, implementation of Mitigation Measure BIO-1 would reduce collision impacts between birds and netting associated with the Topgolf Burlingame project to less-than-significant levels by making the netting more visible to birds (including birds flying through the area at night), thereby reducing collision frequency, or by studying the frequency of bird collisions and retrofitting the netting if collision frequency exceeds certain thresholds.

#### Mitigation Measure BIO-1: Minimize Potential for Bird Collisions with Netting

Implementation of either of the following two measures would reduce the risk of impacts due to avian collisions with netting to less-than-significant levels under CEQA.

- Alternative 1. Install Bird Flight Diverters. Net marking devices, such as FireFly (<https://pr-tech.com/product/firefly-hw-bird-diverter/>) or BirdMark (<https://pr-tech.com/product/birdmark-bird-diverter/>) that glow in the dark, will be placed along all sections of the netting perimeter rope and rib lines, to form vertical rows of flight diverters in the center of each area of netting between support poles. The maximum distance between such marking devices, and/or between such marking devices and support poles, will be 15 feet.
- Alternative 2. Monitoring and Adaptive Management. Because no Topgolf facility or other driving range exists with the combination of the specific landscape/habitat configuration and netting dimensions of the proposed Burlingame facility, it is impossible to predict precisely the frequency of avian injury or mortality from bird-netting collisions, the types of species involved (e.g., whether these are common, widespread species or more scarce species of conservation concern), and the locations on the netting where collisions occur most frequently. Acknowledging the absence of hard data on this issue, Topgolf may implement a monitoring and adaptive management program (in lieu of initially applying flight diverters as netting is installed) to study these issues and determine whether, and where, bird flight diverters need to be applied to netting to minimize bird-netting collisions. This plan is provided as Attachment A. The monitoring and adaptive management plan

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<sup>32</sup> Jenkins, A. R., J. J. Smallie, and M. Diamond. 2010. Avian collisions with power lines: a global review of causes and mitigation with a South African perspective. *Bird Conserv. Int.* 20:263–278.

<sup>33</sup> Avian Power Line Interaction Committee. 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.



that will be implemented, which is incorporated into this mitigation measure, requires installation of flight diverters if certain triggers involving the number of avian injuries or mortalities, and the types of species involved, are reached. Installation of flight diverters in response to those triggers would prevent the number of injuries or mortalities from then reaching levels where they could affect regional or species-level populations, which would prevent a significant impact.

These two alternatives are provided in case (a) Topgolf prefers to install the flight diverters prior to or during netting installation (e.g., in case retrofitting the nets is too difficult), or (b) Topgolf prefers to let the results of monitoring determine whether, and specifically where on the netting, flight diverters need to be provided to reduce collision frequency. Applying the flight diverters as netting is installed would result in somewhat fewer collisions than the monitoring and adaptive management approach, as some birds may collide with the net during monitoring that might be deterred from colliding if flight diverters had been present. However, by establishing thresholds for when flight diverters need to be installed (as discussed in the Monitoring and Adaptive Management Plan in Attachment A), numbers of collisions can be kept sufficiently low to avoid a significant impact prior to the application of flight diverters.

# Attachment A. Monitoring and Adaptive Management Plan

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## Personnel and Schedule

- Bird-netting collision surveys will be performed seven days/week for two years by facility personnel who have received training in such monitoring (or Topgolf may have a biologist conduct such surveys, if desired).
- For two years, bird-netting interaction monitoring will be performed for two consecutive days, twice/month in April, September, and either December or January (i.e., during spring and fall migration and winter), for a total of 12 survey days/year. This monitoring will be performed by a biologist hired by Topgolf.
- The two-year survey period will begin once all netting has been installed.

## Personnel Qualifications, Training, and Materials

Facility personnel that will act as monitors will receive the training described under “Education” below. At a minimum, the facility personnel trained as monitors will have an adequate understanding of bird/carcass detection and good observation skills. Monitors without previous experience conducting carcass surveys will receive the following training from a qualified individual<sup>34</sup>:

- How to search for dead birds along the edges of the facility.
- Example pictures of bird carcasses on the ground and on various types of ground cover.
- How to record data on data sheets in the field.
- How to organize and secure data sheets so that the data collected are not lost.
- Procedures to follow if a dead or injured bird is detected during surveys (e.g., contacting an authorized biologist or bird rehabilitation organization, as described below).

The training may also utilize materials available here: <https://sites.google.com/a/augustana.edu/carcass-survey-materials/>. Each monitor will be provided with the following equipment to help with data collection:

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<sup>34</sup> Hager, S. B. and B. J. Cosentino. 2014. Surveying for bird carcasses resulting from window collisions: a standardized protocol. No. e406v1. PeerJ PrePrints

flashlight, camera, and data sheet. In addition, a ruler, gloves, small and large zip lock bags, and field guides to bird identification will be kept on the site for use by an authorized biologist or bird rehabilitation organization, in the event that a dead or injured bird is detected (see below).

### **Bird-Netting Collision Survey Procedures:**

- The survey will begin within two hours of sunrise (and preferably earlier, to minimize the potential for dead or injured birds to be removed by predators or scavengers). The monitor will first scan the interior of the site, using binoculars (and a spotting scope if necessary), for any conspicuous birds that are injured, dead, or trapped within the facility's netting. This scan can occur from one of the facility's golf-driving bays.
- The monitor will then walk around the outside of the facility, looking for dead or injured birds (including "feather spots" where dead or injured birds may have been predated or scavenged) both inside the facility (i.e., looking through the netting) and within a 20-foot strip on the outside of the netting. The monitor may need to walk a zigzag route to adequately cover the 20-foot strip. If during the study the monitors notice dead or injured birds that are more than 20 feet from the edge of the netting, and it appears that the injury/fatality resulted from collision with the netting, the width of this exterior survey area will be increased accordingly for all future surveys.
- All whole birds and feather spots will be considered injuries or fatalities. Feather spots consist of groups of feathers composed of at least two or more primary flight feathers, five or more tail feathers, or 10 or more feathers of any type concentrated together in an area 1 square meter or smaller; feathers with significant skin or flesh, or any bone, attached will be considered fatalities.
- The monitor will divide the survey area into sectors to identify the location of the specimen, which will assist with identifying any collision "hotspots" as discussed below. A map of the survey area and sectors will be created prior to the initiation of surveys. The locations of any dead or injured birds will be marked on the map during each survey.
- If a dead or injured bird is located and the monitor is not a biologist with permits to handle dead or injured birds, the monitor will contact a biologist at organizations such as the San Francisco Bay Bird Observatory, Point Blue Conservation Science, or other organization having a biologist permitted to handle such birds ("authorized biologist"). The authorized biologist will follow collection protocols outlined in the organization's permits. The authorized biologist will identify the bird to species and, if possible and if relevant for the issue of determining whether the bird is of a special-status taxon, to subspecies. The authorized biologist will photograph the head, body profile, and feet of the bird, as well as any other features useful in determining the cause of injury or death. If the bird is dead, then using gloves, the authorized biologist will place specimens in sealable plastic bags; write the date of collection, species involved, and time of day in permanent marker on the outside of the bag; and store all specimens in a freezer.

- A spreadsheet for data collection will be created with the following columns – Date, Time, Monitor, Location, # of Dead Birds, # of Injured Birds, and Disposition of Bird.
- Because the survey area outside the netting will include vegetation too tall and dense to allow dead or injured birds to be readily found by monitors, carcass detection trials would need to be conducted to estimate the proportion of carcasses present that are actually detected (vs. overlooked) by monitors. Detection trials would be conducted four times/year, and they would be overseen by a biologist. The biologist would place at least five carcasses of non-protected species (e.g., nonnative birds such as rock pigeons [*Columba livia*], house sparrows [*Passer domesticus*], or European starlings [*Sturnus vulgaris*]) in randomly selected locations (though at least two such locations would be within vegetation in the exterior survey area). The personnel conducting the regular monitoring surveys (i.e., which may be Topgolf staff or a biologist hired by Topgolf) cannot know any details regarding the detection trial, such as when the trial is being conducted, how many specimens are used in the trial, or where those specimens are located; the monitors would only be told at the beginning of the study that a detection trial may be conducted, and that if such a trial is conducted, the birds used in the detection trial would be marked with an inconspicuous marker (e.g., a small piece of clear tape on a leg) so that the monitors would know to report and collect those individuals as "trial carcasses", but without collecting detailed data or including them in the survey results.

### **Procedures if an Injured Bird is Observed**

- If an injured bird is found, the monitor or facility personnel will contact the local Animal Control and the Peninsula Humane Society & SPCA (650-340-7022) or other organization qualified to handle injured birds ("bird rehabilitation organization") and follow any instructions given.
- For a bird that is easily accessible, the monitor or facility personnel will use gloves and a towel or cloth to collect the bird, place the injured bird into a carrier or box with cloth at the bottom and slats for air circulation, cover the box or carrier with a towel, and keep it in a cool dry area until a bird rehabilitation organization provides instructions or picks up the injured bird.
- If a bird is stuck high in the net, facility personnel will work with crane operators to access the area of the net where the bird is trapped, then work with the bird rehabilitation organization to remove the injured animal and give it to the bird rehabilitation organization for examination and rehabilitation as needed.
- If a bird is trapped within the interior of the facility, facility personnel will stop play, contact a bird rehabilitation organization, and follow provided instructions. If appropriate, a long-handled net may be used to attempt to capture the trapped bird.

## **Bird-Netting Interaction Monitoring**

During the period identified above for bird-netting interaction monitoring, one or more biologists will monitor how birds interact with the netting. Using binoculars and spotting scopes, and scanning from one of the facility's upper bays or other suitable vantage points, the biologist(s) will observe birds flying in the vicinity of the site to determine whether their behavior (such as flight path) is affected by the netting; determine whether flight paths over and around netting are modified well in advance (indicating that birds see the netting far ahead) or suddenly (indicating that birds see the netting only at close range); look for birds that run into the netting; determine whether birds within the facility have difficulty escaping; and otherwise record any information that can inform impact assessment or mitigation strategies for the Topgolf Burlingame project or future Topgolf projects. All relevant information will be recorded in writing or electronically.

## **Education**

A biologist will develop a brief training curriculum for Topgolf on-site facilities personnel and other pertinent personnel on how to conduct daily perimeter surveys; protocols for collecting data; and procedures to follow if a dead or injured bird is detected during surveys (e.g., contacting an authorized biologist or bird rehabilitation organization).

## **Reporting**

A report on the results of monitoring will be prepared by Topgolf every six months and provided to a qualified biologist for review. The report will include information on monitoring (e.g., who conducted the surveys, dates, and maps); a summary of detections of trapped, injured, or dead birds; and an estimate of the number of injuries/fatalities during that period. The estimated number of injuries/fatalities will be adjusted based on the outcome of carcass detection trials (i.e., based on the proportion of detection trial carcasses that were detected by monitors). The semi-annual report will also include summaries of observations during bird-netting interaction monitoring. Once the biologist confirms the findings in the report, the biologist will submit the report to the City of Burlingame for inclusion in the file.

## **Adaptive Management/Remedial Measures**

If one individual of a state or federally listed species is injured or killed as a result of netting interactions, Topgolf will hire a qualified biologist to begin the process of identifying and implementing remedial measures to reduce collisions.

Otherwise, upon receipt of the monitoring report every six months, the biologist hired by Topgolf will review the bird-netting collision data to determine whether injuries or fatalities indicate that remedial measures are necessary to reduce collisions. Examples of metrics that would necessitate remedial measures include injury or fatality of:

- More than one individual/three months of the white-tailed kite [*Elanus leucurus*] (a California fully protected species);
- More than one individual/two months of a California species of special concern; or
- More than five individuals/month of any native bird species

Remedial measures may include, but are not limited to, installing deterrence devices to make the netting more conspicuous to birds or deter birds from flying in that area. If Topgolf proposes an alternative deterrence device (i.e., other than flight diverters), it will hire a biologist to prepare a report documenting why the alternative deterrence device is appropriate, which report will be submitted to the City of Burlingame for inclusion in the file. The locations of the deterrence devices may be informed by review of monitoring data to determine whether any collision “hotspots” (i.e., where collisions seem to be occurring more frequently) are present. For example, if the majority of injuries/fatalities are concentrated in a few areas, then only those hotspots would need to be treated with deterrence devices. The extent of installation, and the type of deterrence devices would be determined by the biologist, based on a review of the monitoring data. If the remedial measures involve spacing of deterrence devices at a density less than what was required in *Mitigation Measure BIO-1 Alternative 1. Install Bird Flight Diverters*, the two-year monitoring period would restart for each treated hotspot area. Monitoring for each treated hotspot area(s) will be completed when two years of monitoring have indicated that collisions are below the metrics defined above, or the netting is entirely treated as indicated in *Mitigation Measure BIO-1 Alternative 1* (or using alternative deterrence devices approved by the biologist).