Appendix N

Detailed Descriptions of Special-Status Wildlife Species Potentially Occurring in the Project Area

Federal or State Endangered and Threatened Species

Green Sturgeon (*Acipenser medirostris*). Federal Listing Status: Threatened; State Listing Status: Species of Special Concern. The NMFS listed the southern Distinct Population Segment (DPS) of the green sturgeon as threatened on 7 April 2006 (NMFS 2006). Critical habitat for the southern DPS of the green sturgeon was designated on 9 October 2009 (NMFS 2009). All tidally influenced areas of San Francisco Bay, up to the elevation of mean higher high water, including all tidal portions of the Sunnyvale Channels, have been designated as critical habitat.

The range of the green sturgeon extends from Ensenada, Mexico, to the Bering Sea; the species occurs in coastal waters from the San Francisco Bay to Canada. Green sturgeon occur widely in accessible estuarine habitat, and in summer and fall the species is found in estuaries not associated with known spawning activity and where there are no records of their occurrence farther up the river system (Adams et al. 2007). Spawning within the southern DPS occurs predominantly in the upper Sacramento River (Adams et al. 2007).

Little is known about green sturgeon in the South San Francisco Bay, and the species is currently known to spawn in San Francisco Bay tributaries only in the upper reaches of the Sacramento River. Green sturgeon apparently forage in the South Bay; however, we are aware of only one definitive record here – of a radio-tagged individual tracked to a telemetry receiver on the Dumbarton Railroad Bridge (Spenst et al. 2012)., and they likely occur in the South Bay only rarely. Because the Sunnyvale Channels are connected to the open waters of the Bay, there is a low probability that juvenile and adult green sturgeon may occasionally enter the Project Site to forage. However, the relatively short length of the Sunnyvale Channels, their shallow depth, and lack of spawning substrate preclude spawning by green sturgeon within the Project Site.

Although the species is able to tolerate a wide range of temperatures and salinities, the upper extent of tidal influence is likely the farthest upstream that they could be found in the Project Site. Should green sturgeon occur in the Sunnyvale Channels, they are most likely to forage only in the lower reaches of the Sunnyvale West Channel, from the confluence with Moffett Channel upstream to Carl Road, and in the Sunnyvale East Channel from its confluence with Guadalupe Slough upstream to the pedestrian bridge on the levee road. These portions of the Sunnyvale Channels are wider and deeper in comparison to less saline upstream reaches, and offer more potential subtidal and intertidal foraging habitat compared to the narrow portions of these channels located upstream. However, because the extent of tidal influence extends to East Java Drive along the Sunnyvale West Channel and the Highway 237 crossing of the East Channel, there is some potential for rare, stray green sturgeon to occur in these areas.

Longfin Smelt (*Spirinchus thaleichthys*). Federal Listing Status: Proposed Endangered Status; State Listing Status: Threatened. This southernmost population of longfin smelt is found as far north as Prince William Sound, Alaska, and

occurs in the San Francisco Bay. The longfin smelt was declared a threatened species under the CESA in March 2009 and has been petitioned for listing as endangered under the FESA (USFWS 2008).

Longfin smelt spawn in fresh water in the upper end of the San Francisco Bay, as well as in the Sacramento-San Joaquin Delta (Wernette 2000). The most abundant populations of nonbreeding smelt in the Bay area occur in Suisun and San Pablo bays, where salinity generally ranges from 2 to 20 parts per thousand. Longfin smelt occur in the South Bay year-round as pre-spawning adults and yearling juveniles (Wernette 2000), and have been collected in the Alviso area and in Alviso Slough (EDAW Inc. 2007a). However, fish sampling in Coyote Slough and the Island Ponds has detected the species only in January and March, suggesting that it may be absent during the summer (Hobbs et al. 2012). At the Project Site, freshwater input from the flood control channels could attract maturing adults. However, because both of the Sunnyvale Channels are relatively short, engineered, confined by steeply banked levees, and contain limited potential sand and gravel spawning substrate, the suitability of these channels for spawning is limited and it is highly unlikely that longfin smelt spawn within the Project Site. Rare, stray juvenile and adult longfin smelt may forage in tidally influenced portions of the channels, where refugia with cooler temperatures occur. However, high water temperatures may be a stressor (Stanford et al. 2009), and Moyle (2002) reported that the species is not commonly found in waters above 20 degrees Celsius. Thus, during the summer and fall, elevated water temperatures may create conditions too warm to support longfin smelt at the Project Site.

Central California Coast Steelhead (*Oncorhynchus mykiss*). Federal Listing Status: Threatened; State Listing Status: None. The steelhead is an anadromous form of rainbow trout that migrates upstream from the ocean to spawn in late fall or early winter, when flows are sufficient to allow them to reach suitable habitat in far upstream areas. In the South San Francisco Bay, adults typically migrate to spawning areas from late December through early April, and both adults and smolts migrate downstream from February through May. Steelhead typically spawn in gravel substrates located in clear, cool, perennial sections of relatively undisturbed streams, with dense canopy cover that provides shade, woody debris, and organic matter. Steelhead usually cannot survive long in pools or streams with water temperatures above 70 °F, however, they can use warmer habitats if adequate food is available. Steelhead populations have declined due to degradation of spawning and rearing habitat, introduction of barriers to upstream migration, over-harvesting by recreational fisheries, and reduction in winter flows due to damming and spring flows due to water diversion.

The NMFS has categorized steelhead into DPS. The Central California Coast DPS consists of all runs from the Russian River in Sonoma County south to Aptos Creek in Santa Cruz County, including all steelhead spawning in streams that flow into the San Francisco Bay. In 1998, the NMFS published a final rule to list the Central California

Coast DPS as threatened under the FESA (NMFS 1998). Critical habitat for this DPS was designated on 2 September 2005 (NMFS 2005). Critical habitat for this species within the Project Area includes the Moffett Channel, Guadalupe Slough, and the tidally influenced portions of the Sunnyvale Channels.

Steelhead historically occurred more abundantly in streams throughout the Project region but they are now relatively rare due to urbanization, the presence of barriers to movement, and loss of spawning and rearing habitat (Leidy et al. 2005). The species has not been documented in the Sunnyvale East and West Channels, Moffett Channel, or Guadalupe Slough. Further, the Sunnyvale East and West Channels are linear flood-control facilities, the majority of which are highly engineered, containing no suitable spawning habitat for steelhead. Due to the lack of suitable spawning habitat at the Project Site and in San Tomas Aquino Creek upstream, steelhead are not expected to spawn or occur regularly in the Sunnyvale Channels. It is possible that individual adults or smolts from other South Bay streams may occasionally stray into the lower, tidal reaches of the Project Site (i.e., Moffett Channel). However, these stray fish are expected to occur only irregularly and in small numbers, and most likely only in downstream tidal areas.

California Tiger Salamander (*Ambystoma californiense*). Federal Listing Status: Threatened (Central Population); State Listing Status: Threatened. The California tiger salamander's preferred breeding habitat consists of temporary (minimum of 3-4 months), ponded environments (e.g., vernal pool, ephemeral pool, or human-made ponds) surrounded by uplands that support small mammal burrows. California tiger salamanders will also utilize permanent ponds provided aquatic, vertebrate predators are not present. Such ponds provide breeding and larval habitat, while burrows of small mammals such as California ground squirrels and valley pocket gophers in upland habitats provide refugia for juvenile and adult salamanders during the dry season.

The range of the California tiger salamander is restricted to the Central Valley and the South Coast Range of California from Butte County south to Santa Barbara County. Tiger salamanders have disappeared from a significant portion of their range due to habitat loss from agriculture and urbanization and the introduction of non-native aquatic predators. The California tiger salamander was listed as threatened in August 2004 (USFWS 2004) and critical habitat was designated in August 2005 (USFWS 2005). No designated critical habitat is present at the Project Site.

California tiger salamanders occurred historically throughout suitable habitats in Santa Clara County; however, over the past 150 years the filling or draining of ponds and the development of upland habitats has restricted suitable habitat conditions in the County to a few undeveloped areas. Factors that have contributed to the decline of tiger salamanders throughout their range, including in Santa Clara County, include habitat loss via urbanization; groundwater overdraft resulting in the lowering of the water table

and drying of breeding ponds; construction and expansion of reservoirs; quarry operations (Shaffer et al. 1993, Jennings and Hayes 1994, Myers, unpublished M.S.); construction of artificial barriers (Shaffer et al. 1993; Jennings and Hayes 1994; Jennings 1995); vehicle mortality (Shaffer et al. 1993; Barry and Shaffer 1994); the introduction of non-native predators, such as fishes, crayfish, and bullfrogs (Morey and Guinn 1992; Jennings and Hayes 1994; Fisher and Shaffer 1996); the poisoning of California ground squirrels and resulting reduction in upland refugia; and hybridization with introduced tiger salamanders (Shaffer et al. 1993; Jennings, unpublished data). As a result, California tiger salamanders have been largely extirpated from the floor of the Santa Clara Valley.

H. T. Harvey & Associates has developed a map of areas where California tiger salamanders are believed to be extant and extirpated in the County based on mapping and analyses of developed areas, known occurrence records of California tiger salamanders, and the results of surveys for California tiger salamanders conducted in the County (H. T. Harvey & Associates 1999a, 2012b; SCVWD 2011). To account for the potential occurrence of California tiger salamanders at locations where they have not been surveyed, mapping was done conservatively and included relatively undisturbed grassland or pasture areas at the edges of the Santa Clara Valley floor even if there were no records of tiger salamanders from those areas. Tiger salamanders are considered extirpated from intensively cultivated areas and areas of extensive development, especially where ponds or seasonal wetlands are absent. No recent records of California tiger salamanders are located within 1.3 miles of the Project Site and California tiger salamanders are determined to be extirpated from the entire Valley floor in the vicinity of the Project Area.

California Red-legged Frog (*Rana draytonii*). Federal Listing Status: Threatened; State Listing Status: Species of Special Concern. The California red-legged frog inhabits perennial freshwater pools, streams, and ponds throughout the Central California Coast Range and isolated portions of the western slopes of the Sierra Nevada (Fellers 2005). Its preferred breeding habitat consists of deep perennial pools with emergent vegetation for attaching egg clusters (Fellers 2005), as well as shallow benches to act as nurseries for juveniles (Jennings and Hayes 1994). Nonbreeding frogs may be found adjacent to streams and ponds in grasslands and woodlands, and may travel up to 2 miles from their breeding locations across a variety of upland habitats (Bulger and Scott 2003; Fellers and Kleeman 2007).

The historic distribution of the California red-legged frog extended from the city of Redding in the Central Valley and Point Reyes National Seashore along the coast, south to Baja California, Mexico. The species' current distribution includes isolated locations in the Sierra Nevada and the San Francisco Bay area, and along the central coast (USFWS 2002). The California red-legged frog was listed as threatened in June 1996 (USFWS 1996) based largely on a significant range reduction and continued threats to

surviving populations (Miller 1994). Critical habitat was most recently designated in March 2010 (USFWS 2010). Designated critical habitat is not present within the Project Site.

It is presumed that the California red-legged frog formerly occurred in pools and streams throughout the Project region. However, California red-legged frogs have been extirpated from the majority of the region, including the entirety of the urbanized Valley floor, due to development, alteration of hydrology of aquatic habitats, and the introduction of non-native predators such as non-native fishes and bullfrogs (H. T. Harvey & Associates 1997). Further, although the Sunnyvale East Channel may provide ostensibly suitable red-legged frog habitat at the upstream end of the Project Site, California red-legged frogs have not been recorded in the channel (CNDDB 2013), and the nearest record of a red-legged frog is located over 3 miles to the west at the Gate of Heaven Cemetery Pond west of Cupertino (CNDDB 2013). This population is effectively isolated from the Project Area by dense urban development, Highway 85, and Interstate 280, and red-legged frogs are not expected to make their way into the Project Area from this location. Thus, California red-legged frogs are determined to be absent from the Project Site.

Bank Swallow (*Riparia riparia*). Federal Listing Status: None; State Listing Status: Threatened (Nesting). In the western hemisphere, the bank swallow is a neotropical migrant with a wide distribution, breeding locally in coastal and interior California as far south as Monterey County (Garrison et al. 1987; Roberson and Tenney 1993). Bank swallows are colonial nesters, excavating nesting burrows in vertical banks of streams, rivers, and ocean coasts (Garrison 1999). Nest sites in central California are typically composed of soft soils, with banks averaging at least 10 feet high and 0.25 mile long (Garrison et al. 1987). The historical range of the bank swallow in California has been dramatically reduced by streambed alterations, which have resulted in a widespread loss of nesting habitat (Garrison 1999). The nesting season for bank swallows begins in April and continues through July, when the birds depart for their wintering grounds in Mexico and Central America (Garrison 1999). The bank swallow was listed as threatened under the CESA in 1989.

The only record of bank swallows breeding in Santa Clara County is from the Pajaro River, and this colony has not been active in decades (Bousman 2007a). No suitable nesting habitat is present at the Project Site, and the species is not expected to nest here. Bank swallows occur in the Project Area only as rare transients.

California Clapper Rail (*Rallus longirostris obsoletus*). Federal Listing Status: Endangered; State Listing Status: Endangered and Fully Protected. The California clapper rail is a secretive marsh bird that is currently endemic to marshes of the San Francisco Bay. It formerly nested at several other locations, including Humboldt Bay (Humboldt County), Elkhorn Slough (Monterey County), and Morro Bay (San Luis

Obispo County), but is now extirpated from all sites outside of the San Francisco Bay (Harding-Smith 1993). California clapper rails nest in salt and brackish marshes along the edge of the Bay, and are most abundant in extensive salt marshes and brackish marshes dominated by Pacific cordgrass (*Spartina alterniflora*), pickleweed, and marsh gumplant (*Grindelia stricta*) and that contain complex networks of tidal channels (Harvey 1980). Shrubby areas adjacent to or within these marshes are also important for predator avoidance at high tides.

Since the mid-1800s, about 90 percent of the San Francisco Bay's marshlands have been eliminated through filling, diking, or conversion to salt evaporation ponds (Goals Project 1999). As a result, the California clapper rail lost most of its former habitat, and its population declined severely. The subspecies was listed as endangered by the USFWS in 1970 (USFWS 1970) and by the State of California in 1971. The USFWS approved a joint recovery plan for the salt marsh harvest mouse and the California clapper rail in 1984 (USFWS 1984), and an updated Tidal Marsh Species Recovery Plan is currently under development. Critical habitat has not been proposed for the California clapper rail.

Although California clapper rails are typically found in tidal salt marshes dominated by Pacific cordgrass, they have also been documented in brackish marshes in the South Bay, including in nearly pure stands of alkali bulrush along Guadalupe Slough in 1990 and 1991 (H. T. Harvey & Associates 1990a, 1990b, 1991). California clapper rails were detected in Guadalupe Slough during studies conducted by H. T. Harvey & Associates for compliance with discharge permits issued to the City of Sunnyvale. These surveys occurred during the 1990 and 1991 clapper rail nesting seasons (April – May). In 1990, a single pair of clapper rails was detected downstream from Pond A4 and Moffett Channel in a marsh directly north of the Sunnyvale WPCP pond that is west of Pond A4. In 1991, three pairs of clapper rails were detected in the same marsh. In 1991, two individual clapper rails were detected in the marsh directly north of Pond A4. At the time, these birds were considered most likely to be unmated males based on their behavior and vocalizations, and thus they may not have bred in this marsh.

There have been other observations of California clapper rails in Guadalupe Slough recorded in Santa Clara County Bird Data (unpublished) that indicate clapper rails use the slough at least sporadically. Precise locations within Guadalupe Slough are not available for these records, but they include two individuals on 24 May 1993, one individual on 3 October 1993, three calling individuals on 1 September 1997 ("near the WPCP pond"), and one individual on 11 February 1998 ("near the WPCP pond"). In addition, one or two rails were detected in Guadalupe Slough just downstream of Pond A4 and the Moffett Channel during surveys conducted in 2012 as part of the ISP (California Coastal Conservancy unpublished data). Occasional clapper rails have also been reported during the nonbreeding season in the vicinity of the Moffett Channel and along Guadalupe Slough (eBird 2013; Santa Clara County bird data unpublished data;

South Bay Birds List-serve 2013), although the precise locations and veracity of these reports are unknown.

Because California clapper rails typically nest in broader marshes with well-developed tidal channels (conditions that are absent from the Project Site), they are not expected to nest within or immediately adjacent to the Project Site. Based on current site conditions, there is suitable foraging habitat for California clapper rails in Moffett Channel within the Project Area and in the portion of Guadalupe Slough that is adjacent to the Project Site. However, the Sunnyvale West Channel upstream of Moffett Channel and all of the Sunnyvale East Channel do not provide suitable marsh habitat for use by this species. These channels are narrow with steep banks and are lacking enough suitable vegetative cover (e.g., Pacific cordgrass and alkali bulrush) that clapper rails use in more extensive salt marshes and brackish marshes. The nearest potential nesting areas for clapper rails are along Guadalupe Slough near its confluence with the Moffett Channel.

California Black Rail (*Laterallus jamaicensis coturniculus*). Federal Listing Status: None; State Listing Status: Threatened and Fully Protected. The California black rail is a small rail that inhabits a variety of marsh types. California black rails are most abundant in extensive tidal marshes with some freshwater input (Evens et al. 1991). They nest primarily in pickleweed-dominated marshes with patches or borders of bulrushes, often near the mouths of creeks. Black rails build nests in tall grasses or marsh vegetation during spring, and lay about six eggs. Nests are usually constructed of pickleweed, and are placed directly on the ground or slightly above ground in vegetation. Black rails feed on terrestrial insects, aquatic invertebrates, and possibly seeds (Trulio and Evens 2000). The California black rail was listed under the CESA in 1971 and is fully protected species under state Fish and Game Code.

The California black rail reportedly nested in the Alviso area in the early 1900s (Wheelock 1916), but until recently it was known in the South Bay primarily as a non-breeder. Black rails were detected in Triangle Marsh northeast of the Project Site in 2012. Fourteen of these rails were tracked throughout the 2012 nesting season in Triangle Marsh, suggesting that the species nests there (Hall pers. comm.). During the spring and early summer of 2013, small numbers of black rails were detected calling along lower and mid-Alviso Slough (http://groups.yahoo.com/group/south-bay-birds). These records suggest that small numbers of black rails have recently begun oversummering, and likely breeding, in the South Bay. However, black rails nest primarily in marshes in northern San Francisco Bay (i.e., San Pablo Bay and Suisun Bay), and this species is expected to occur in most parts of the South Bay primarily as a scarce winter visitor.

The scarcity of nesting black rails in the South Bay is presumably a result of habitat loss. Tidal marsh habitat has been lost, but perhaps more important to winter survival is the loss of high-tide refugia. Upland transition habitat, both on natural levees within

marshes and on landward edges of marshes, has been lost as a result of fill for development, and reductions in marsh size and resulting reductions in natural levees along higher-order channels. Predation of black rails by egrets, herons, gulls, and harriers has been observed in these marshes during winter high tides, as rails are forced into the open by rising water. The importance of this predation on a population level, especially in light of impacts on high tide refugia, is unknown, but it may be a significant factor in the extirpation of nesting populations of the species from the South Bay.

Suitable nonbreeding habitat for California black rails occurs in the tidal marshes in Moffett Channel as far south as the Project Site, as well as in Guadalupe Slough immediately adjacent to the Project Site. The brackish marsh vegetation (e.g., alkali bulrush) in these areas provides suitable foraging habitat for black rails. These tidal marshes could be used for foraging by black rails that disperse into the area after the nesting season, but they are not expected to be used for nesting, because this species has not been recorded in the Sunnyvale area (despite intensive birding activity here).

Western Snowy Plover (*Charadrius alexandrinus nivosus*). Federal Listing Status: Threatened; State Listing Status: Species of Special Concern. The snowy plover is a small shorebird that occurs on almost every continent. On the Pacific coast, snowy plovers nest on sandy beaches and salt panne habitat from Washington to Baja Mexico. Because they nest during the summer, primarily on beaches in a temperate climate, snowy plovers are susceptible to nest disturbance and other negative interactions with humans. Much of their nesting habitat, particularly in southern California, has been lost to development and high human use. In addition, introduced predators, especially the non-native red fox, have had dramatic effects on snowy plover nesting success (Neuman et al. 2004). In response to severe population declines, the USFWS listed the Pacific coast population of the western snowy plover as threatened in 1993. Critical habitat was designated for this population in 1999 (USFWS 1999a), and a revised recovery plan was released in 2007 (USFWS 2007). None of the species' nesting sites within San Francisco Bay are considered critical habitat.

In the South San Francisco Bay, snowy plovers nest on low, barren to sparsely vegetated saline managed pond levees and islands, at pond edges, and on salt panne areas of dry ponds (Page et al. 2000), and preferentially use light-colored substrates such as salt flats (Feeney and Maffei 1991; Marriott 2003). Nesting areas are located near water, where prey (usually brine flies and other insects) are abundant. In some areas, snowy plovers nest within dry saline managed ponds; in other areas where ponds typically hold water through the summer, nests are located primarily on levees. In Santa Clara County, the distribution of snowy plovers is restricted to a few managed ponds and other impoundments along the immediate edge of San Francisco Bay (Bousman 2007b).

Near the Project Area, snowy plovers have nested primarily in the vicinity of the Alviso managed salt pond complex in recent years, including Ponds A6 and A8, a small

impoundment immediately east of Pond A12, and in New Chicago Marsh in Alviso (Armstrong 1976; Ryan and Parkin 1998). During the 2009 nesting season, seven western snowy plover nests were located in the Alviso complex, including one snowy plover nest in Pond A8, one in the impoundment, and five nests in New Chicago Marsh (SFBBO 2009). Changes to pond management in the past few years have eliminated most potential nesting habitat in Pond A8, while other managed ponds in the area, such as A12 (which is currently being managed for low-water conditions that may provide suitable nesting habitat for snowy plovers), provide nesting habitat for this species.

Although western snowy plovers are known to nest in the Alviso complex to the north/northeast of the Project Site, they have not been reported from Pond A4 or from the WPCP ponds. Santa Clara County bird data (unpublished) contains no reports of plovers in these ponds in recent decades and they are not expected to occur in these ponds or elsewhere in the Project Area.

California Least Tern (*Sterna antillarum brownii*). Federal Listing Status: Endangered; State Listing Status: Endangered, Fully Protected. California least terns nest in California during the breeding season from April to September (Rigney and Granholm 1990, Baron and Takegawa 1994). Their nesting habitat consists of shallow depressions in sand or small gravel along large tracts of undisturbed beaches (Baron and Takegawa 1994; Marschalek 2008). The loss of available high quality nesting habitat for least terns resulted in a reduction in population size to only 600 known breeding pairs (Baron and Takegawa 1994). In response to severe population declines, the USFWS listed the California least tern as endangered in 1970 (USFWS 1970), and the State of California listed the species as both endangered and fully protected in 1971 (Baron and Takegawa 1994). No critical habitat has been designated for this species.

Habitat requirements for the California least tern typically consist of quiet, extensive beaches or tidal flats located close to an abundance of small fish (Baron and Takegawa 1994; Rigney and Granholm 1990). In San Francisco Bay, this species' largest colony is located on an old airport runway at the former Alameda Naval Air Station, although small numbers of least terns nest on islands and salt pannes in former saline managed ponds in a few areas.

Least terns do not nest in Santa Clara County. They nest in small colonies and, due to their endangered status, nesting locations are closely monitored and well known. In recent decades, the closest least terns have nested to the Project Site is in the Eden Landing Ecological Preserve, just south of Highway 92 in Fremont, Alameda County. California least terns are, therefore, not expected to nest adjacent to Pond A4, contrary to previous Project study findings (EDAW 2007b).

However, the South Bay is an important post-breeding staging area for least terns to gather before migration, and this species forages in late summer and early fall in saline

managed ponds and on the Bay from Mountain View through Sunnyvale into the Alviso area. Both adult and juvenile least terns roost on saline managed pond levees (both outboard levees and interior levees between ponds) and boardwalks, and forage both in the saline managed ponds and over the open waters of the Bay.

The closest records to the Project Site noted in the CNDDB (2013) are 1987 post-breeding records of nine least terns in Charleston Slough and 68 least terns in Pond AB2 (north of Moffett Field, west of the Project Site). In recent years, the primary post-breeding (late summer/fall) staging area for least terns in the South Bay has been in the complex of saline managed ponds immediately north of Moffett Field (Ponds AB1, A2E, and AB2). This site is used predictably for roosting and foraging by both adult and juvenile least terns in July and August each year, with typical counts of 20 to 100 birds. Least terns have also been recorded at A5, A7, A9, A10, A11, and A14 (Hurt pers. comm.; Krause pers. comm.). A search of records from Santa Clara County birders compiled by William G. Bousman and dating back to the mid-1970s yielded only one record for least terns from the immediate Project Area; 11 least terns were observed foraging in Pond A4 on 28 July 1993. Therefore, least terns are known to forage in Pond A4, but they have very rarely been observed doing so. Because they have been observed foraging in Pond A4 and their preferred post-breeding stating area (currently) is nearby (just north of Moffett Field), least terns may forage in the WPCP ponds and associated canals immediately adjacent to the Project Site on occasion. However, the Sunnyvale East and West Channels, Moffett Channel, and Guadalupe Slough do not provide suitable foraging habitat for least terns.

While foraging habitat is important to least terns during the post-breeding/pre-migration period when they may be found at the Project Site, there is a large complex of managed ponds away from intensive human activity that provides foraging habitat, particularly within the known staging area of saline managed ponds immediately north of Moffett Field (Ponds AB1, A2E, and AB2). Furthermore, the Bay itself provides vast areas of foraging habitat. The paucity of observations of least terns in the Project Area indicates it is only rarely used. Therefore, while the open water foraging habitat within the Project Area is used on occasion, it is not important habitat for the species or individual foragers.

California least terns roost on levees in managed pond complexes. However, during daylight, the levees around Pond A4 and the WPCP ponds are intensely used for recreation by people who live and work in the area. Because these areas are highly disturbed relative to other potential roosting sites in the South Bay, they are not expected to be used (and have not been observed to be used) by roosting least terns.

Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*). Federal Listing Status: Endangered; State Listing Status: Endangered and Fully Protected. The salt marsh harvest mouse is a rodent endemic to the salt and brackish marshes, and adjacent tidally influenced areas, of the San Francisco Bay estuary. At present, the

distribution of the northern subspecies, *R. raviventris halicoetes*, occurs along Suisun and San Pablo Bays north of Point Pinole in Contra Costa County, and Point Pedro in Marin County. The southern subspecies, *R. raviventris raviventris*, is found in marshes in Corte Madera, Richmond, and South Bay mostly south of the San Mateo Bridge (Highway 92).

The salt marsh harvest mouse has evolved to a life in tidal marshes. The species depends mainly on dense pickleweed as its primary cover and food source and may utilize a broader source of food and cover that includes saltgrass (*Distichlis spicata*) and other vegetation typically found in the salt and brackish marshes of this region. In natural systems, salt marsh harvest mice can be found in the middle tidal marsh and upland transition zones. Upland refugia are an essential habitat component during high tide events, when the marsh plain is inundated, as salt marsh harvest mice are highly dependent on cover (Shellhammer 1978, as cited in USFWS 1984). The harvest mouse does not burrow, but the northern subspecies may build nests of loose grasses. Salt marsh harvest mice are capable of breeding year-round, although most reproductive activity likely occurs between March and November, with a peak in mid-summer.

Cover-dependent salt marsh harvest mice are unlikely to move long distances over bare areas, and thus, isolation of suitable habitat may lead to genetic isolation of populations or local extinctions. While they are known to swim well, especially in comparison with western harvest mice, they have not been documented to move more than 13.1 to 16.4 feet across water or more than 16.4 feet over bare ground (Bias 1994; Geissel et al. 1988). The maximum movement through brackish or fresh water vegetation is reported by H. T. Harvey & Associates (Shellhammer 1982), in which two harvest mice moved several hundred feet along a levee side-slope at the upper edge of a brackish marsh. Based on this information, Shellhammer and Duke (2004) have hypothesized that barren areas of land more than 16.4 feet wide, reaches of water more than 42 feet wide, and brackish or freshwater marsh more than 820 feet wide act as barriers to movement of the southern subspecies of the harvest mouse, and hence barriers to gene flow. Areas of bare ground, water, or fresh/brackish marsh less than or equal to these distances may act as filters, reducing the movement of this species (and hence the rate of gene flow) between populations or between portions of a semi-fragmented population. The isolation of populations has contributed to the decline of the species (Shellhammer and Duke 2004) and could lead to local extinctions due to demographic processes or genetic "death."

Salt marsh harvest mouse populations have declined substantially in recent decades due to habitat loss, degradation, and fragmentation, and as a result harvest mouse populations are very low. The loss of habitat for salt marsh harvest mice is due primarily to the diking and filling of marshes, subsidence, and changes in salinity brought about by increasing volumes of fresh water discharge into the Bay. In response to habitat loss and fragmentation and corresponding population declines, the salt marsh harvest mouse

was listed as endangered by the USFWS in 1970 (USFWS 1970) and by the State of California in 1971. Critical habitat has not been designated for this species. A *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* was issued in 2010 (USFWS 2010a) that is an expansion and revision of the *Salt Marsh Harvest Mouse and California Clapper Rail Recovery Plan* issued in 1984 (USFWS 1984).

To date there have been no small mammal trapping studies conducted within the Project Site. However, in 1990 H. T. Harvey & Associates conducted a focused salt marsh harvest mouse trapping effort in Guadalupe Slough downstream of the Project Site (H. T. Harvey & Associates 1991). Two locations in the slough were sampled, including a site close to the mouth of the slough adjacent to the northwest corner of Pond A5, and another site directly north of the WPCP pond that is directly west of Moffett Channel. Two salt marsh harvest mice were captured at the sample site near the mouth of Guadalupe Slough with an overall trapping effort of 1200 trap nights. Pickleweed was the dominant plant species at both capture locations, consisting of 100 percent cover in the marsh plain site and 50 percent cover on the levee. No salt marsh harvest mice were captured at the sample site closer to Pond A4, despite an effort of 1400 trap nights. However, the marsh plain at this site was considered too low to safely trap without inundation at high tide, thus all the traps were placed at higher elevation on the levee. This site had low pickleweed cover and generally consisted of more perennial peppergrass, alkali bulrush, alkali heath (*Frankenia salina*), and a mix of other species compared to the sample site near the mouth of the slough.

Additionally, the salt marsh harvest mouse database indicates that four salt marsh harvest mice were captured in the Sunnyvale Baylands Park in 1990 to the southeast of the mouth of Sunnyvale East Channel (USFWS and CDFG 2007). The exact location of the captures is not specified in the database, and the captures may have occurred in areas that were subsequently developed (e.g., the softball fields), but the site contains a salt marsh preserve that is managed to reduce human intrusion into the marsh and to partially mitigate for wetland impacts related to the construction of the Baylands Park in 1993. This managed marsh may currently be occupied by salt marsh harvest mice; however, no mice were found during trapping surveys conducted for the Baylands Park Master Plan Environmental Impact Report, and no impacts on salt marsh harvest mice were considered for development of the park (City of Sunnyvale 1988). This site is separated from the Sunnyvale East Channel by a levee. Based on the observations of Shellhammer and Duke (2004), this open levee would inhibit, and may preclude, harvest mice from dispersing through these unsuitable habitats.

H. T. Harvey & Associates wildlife ecologists Scott Demers, M.S., and Howard Shellhammer, Ph.D., conducted a focused field survey for potential salt marsh harvest mouse habitat in the Project Area on 8 November 2010 (H. T. Harvey & Associates 2011a). All portions of the Project Site were surveyed, as well as the brackish tidal

marshes on the exterior of Pond A4 and the pickleweed-dominated vegetation along the waterline of the interior of Pond A4 and in Moffett Channel and Guadalupe Slough, where harvest mice are most likely to occur.

Suitable pickleweed-dominated salt marsh habitat providing breeding habitat for this species is not present at the Project Site (H. T. Harvey & Associates 2011b). However, salt marsh harvest mice have been documented in the vicinity of Pond A4 (H. T. Harvey & Associates 1991; USFWS and CDFG 2007), and suitable habitat for this species occurs immediately adjacent to the Project Site along the southern edge of Pond A4, within Guadalupe Slough at its confluence with the Sunnyvale East Channel, and in a mitigation area located east of the Twin Creeks Sports Complex and south of the confluence of Guadalupe Slough and the Sunnyvale East Channel.

The marshes on the exterior of Pond A4, outside of the Project Site, are dominated by mostly open stands of alkali bulrush, perennial peppergrass, and California bulrush with some patches of pickleweed in the marsh plain. Although there have been few salt marsh harvest mouse studies conducted in this type of brackish marsh, H. T. Harvey & Associates conducted a trapping study in a brackish marsh near Newby Island in South San Francisco Bay in 2006 where the marsh was dominated by mature alkali bulrush consisting of deep, thick layer of thatch (H. T. Harvey & Associates 2007). Several salt marsh harvest mice were captured in this marsh, resulting in a capture rate approximately half that of a nearby salt marsh dominated by thick pickleweed, the vegetation normally associated with this species in the South Bay. Because salt marsh harvest mice are now known to occur in this brackish marsh vegetation in the South Bay, the brackish tidal marsh in Moffett Channel and Guadalupe Slough were mapped as potential salt marsh harvest mouse habitat based on Dr. Shellhammer's field review. Suitable habitat in Moffett Channel ends approximately 500 feet north of the confluence with the Sunnyvale West Channel, well outside of the Project Site. In Guadalupe Slough, suitable habitat is present immediately adjacent to the Project Site at the confluence of Guadalupe Slough and the Sunnyvale East Channel. However, the potential for salt marsh harvest mice to occur in this marsh is very low. This marsh habitat is generally sparse in terms of physiognomy (i.e., vegetation structure) and does not contain dense thatch that harvest mice have been documented using. In addition, the alkali bulrush is mixed in areas with cattail, California bulrush, perennial peppergrass, and other vegetation not known to support salt marsh harvest mice, resulting in fragmentation of suitable vegetation. Nonetheless, because salt marsh harvest mice have been captured in Guadalupe Slough and because the marsh contains stands of vegetation that this species has been documented using, the presence of salt marsh harvest mice (albeit in very low numbers) in marshes along Guadalupe Slough, immediately adjacent to the Project Site, cannot be dismissed.

California Species of Special Concern

Central Valley Fall-run Chinook Salmon (*Oncorhynchus tshawytscha*). Federal Listing Status: None; State Listing Status: Species of Special Concern. Like the steelhead, the Chinook salmon is an anadromous salmonid. Populations of Pacific salmon have been categorized into Evolutionarily Significant Units (ESUs) by the NMFS; an ESU represents a population of Pacific salmon that is reproductively isolated from other conspecific populations, and is recognized as a distinct evolutionary component of the species (1991). The Central Valley Fall-run ESU represents a population of Chinook salmon that migrate from the ocean to spawning streams in late fall and begin spawning in beds of coarse river gravels between October and December. Populations of fall-run Chinook salmon have suffered the effects of over-fishing by commercial fisheries, degradation of spawning and rearing habitat, added barriers to upstream migration, and reductions in winter flows due to damming. Approximately 40 to 50 percent of spawning and rearing habitats in Central Valley streams have been lost or degraded. Chinook salmon generally spawn in cool waters providing incubation temperatures no warmer than 55 °F. Compared to steelhead, Chinook salmon are more likely to spawn in coarse gravels located lower in the watershed.

Chinook salmon did not historically spawn in streams flowing into South San Francisco Bay. However, small numbers of fall-run Chinook salmon have been found in several such streams within the Project region since the mid-1980s including Coyote Creek, Los Gatos Creek, and the Guadalupe River (Leidy et al. 2003). Genetic analysis, timing of spawning, and the detection of coded wire-tagged hatchery fish in the Project region suggests that these fish are derived from Central Valley fall-run stock (Garcia-Rossi and Hedgecock 2002), possibly hatchery releases, and do not represent a native run.

Chinook salmon have not been documented in the Sunnyvale East and West Channels, Moffett Channel, or Guadalupe Slough. In addition, the Sunnyvale East and West Channels are narrow, linear flood-control facilities, the majority of which are highly engineered, containing no suitable spawning habitat for Chinook. It is possible that occasional strays from Central Valley streams may occur at the Project Site as they do in other South Bay creeks, but they are expected to occur at the Project Site irregularly at best and most likely would occur only in downstream tidal areas, such as Moffett Channel.

Foothill Yellow-legged Frog (*Rana boylii*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The foothill yellow-legged frog is a stream-breeding frog that was historically found in most Pacific drainages from the Coast Ranges to the western Sierra Nevada and San Gabriel mountain foothills (Jennings and Hayes 1994; CaliforniaHerps.com 2013). Currently, the foothill yellow-legged frog may occupy only 55 percent of its historical range (CaliforniaHerps.com 2013). It appears that the main reason for the reduction in the species' range is the alteration of stream

hydrology due to the presence of dams (Jennings and Hayes 1994; Wheeler et al. 2006).

Ideal habitat for the foothill yellow-legged frog consists of streams with riffles and cobble-sized rocks, with slow water flow (Jennings and Hayes 1994). The breeding ecology of the foothill yellow-legged frog requires consistently slow-moving flows, as well as the presence of upland areas surrounding breeding locations for use as nonbreeding habitat.

There are no recent records of the foothill yellow-legged frog from the Santa Clara Valley floor, and although it still occurs in foothill streams within the Project region, it is now presumed to be extirpated from the majority of this area (H. T. Harvey & Associates 1999b), including the entirety of the urbanized Valley floor. Further, the Project Area does not currently contain, nor is it considered to have historically contained, suitable habitat for the foothill yellow-legged frog (i.e., there are no records indicating that the species was ever present in the Project Area). The nearest known occurrence of foothill yellow-legged frog is over 10 miles away (CNDDB 2013), and there is no known connectivity between the Sunnyvale East and West Channels and occupied habitat. Thus, this species is determined to be absent from the Project Site.

Western Pond Turtle (*Actinemys marmorata*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The western pond turtle occurs in ponds, streams, and other wetland habitats in the Pacific slope drainages of California and northern Baja California, Mexico (Bury and Germano 2008). The central California population was historically present in most drainages on the Pacific slope (Jennings and Hayes 1994), but streambed alterations and other sources of habitat destruction, exacerbated by frequent drought events, have caused substantial population declines throughout most of the species' range (Stebbins 2003). Ponds or slack-water pools with suitable basking sites (such as logs) are an important habitat component for this species, and western pond turtles do not occur commonly along high-gradient streams. Females lay eggs in upland habitats, in clay or silty soils in unshaded (often south-facing) areas up to 0.25 mile from aquatic habitat (Jennings and Hayes 1994). Juveniles feed and grow in shallow aquatic habitats (often creeks) with emergent vegetation and ample invertebrate prey. Nesting habitat is typically found within 600 feet of aquatic habitat (Jennings and Hayes 1994), but if no suitable nesting habitat can be found close by adults may travel overland considerable distances to nest. Threats to the western pond turtle include impacts on nesting habitat from agricultural and grazing activities, human development of habitat, and increased predation pressure from native and non-native predators as a result of human-induced landscape changes.

In the Project vicinity, the western pond turtle has been documented within the Lockheed Channel and North Moffett Channel west of the Sunnyvale West Channel (TN & Associates, Inc. and Tetra Tech EC, Inc. 2006 as cited in EDAW 2007b). Consequently,

it's likely that small numbers of western pond turtles occur in the Sunnyvale Channels (H. T. Harvey & Associates 2012a), especially in the northern portion of the West Channel given its hydrological connection to North Moffett Channel. The cumulative stressors of urbanization including the release of non-native turtles, predation and harassment by pets and non-native mammals, capture by humans, degradation of water quality, loss of upland nesting habitat due to development, and the construction of barriers between creeks and nesting areas have reduced western pond turtle populations, and pond turtle numbers are expected to be low at the Project Site. It is possible that pond turtles nest along levees at the Project Site, albeit in low numbers.

Black Skimmer (*Rynchops niger*). Federal Listing Status: None; State Listing Status: Species of Special Concern (Nesting Colony). The black skimmer's unique physiology, with its lower mandible longer than its upper mandible, allows this species to fly over the surface of the water, "skimming" for small fish. Nesting habitat for black skimmers occurs primarily on the coasts of the southeastern United States, the Gulf of California, and from the Pacific Coast of Baja, California, north to San Diego. In the state of California, black skimmers are considered a species of special concern only when nesting.

Black skimmers were first detected nesting in California in 1972, and since that time their populations in California have increased considerably (e.g., to approximately 1200 pairs in 1995 [Collins and Garrett 1996]). The black skimmer was considered a rare nonbreeding visitor to the San Francisco Bay area until the mid-1990s. In 1994, one pair of black skimmers was documented nesting at saline managed Pond AB2 in Santa Clara County and a second pair nested at Hayward Regional Shoreline in Alameda County (Layne et al. 1996). Since 1994, black skimmers have occurred in the South Bay every year, nesting at several additional sites (Strong 2004). In the San Francisco Bay area, black skimmers typically nest among Forster's terns (*Sterna forsteri*), on small dredge-spoil islands (including both bare islands and islands vegetated, sometimes heavily, with pickleweed) in saline managed ponds. Exact nesting locations vary from year to year.

Since 1994, skimmer populations in the South Bay have slowly but steadily increased. Nesting success of black skimmers in the South Bay has apparently been very low, based on the number of chicks known to survive to fledging age, and therefore this population increase has likely been the result of immigration from the increasing southern California population. In the Project vicinity, skimmers have nested at ponds AB1, AB2, A1, A2W, A7, A8, and A16; Pond A12 and other managed ponds in Alviso may also provide nesting and foraging habitat (Bousman 2007c). However, suitable nesting islands are not present in or immediately adjacent to the Project Site, and despite the high level of both professional and recreational birding conducted in the Project vicinity, the species has not been documented nesting at Pond A4 or the WPCP ponds. Thus, although the species may forage in sloughs within the Project Site and in adjacent ponds, black skimmers are not expected to nest at the Project Site.

Northern Harrier (*Circus cyaneus*). Federal Listing Status: None; State Listing Status: Species of Special Concern (Nesting). The northern harrier nests in marshes and grasslands with tall vegetation and sufficient moisture to inhibit accessibility of nest sites to predators. This species forages primarily on small mammals and birds in a variety of open grassland, ruderal, and agricultural habitats.

Northern harriers forage in a variety of open habitats, especially during the nonbreeding season. The species is fairly widespread as a forager in grasslands, extensive wetlands, and agricultural areas in the Project region during migration and winter and is expected to occur as a forager at the Project Site. In addition, northern harriers nest in small numbers in more extensive patches of tidal marsh habitat close to San Francisco Bay, likely including marshes along the lower, tidal reaches of Moffett Channel and potentially in the tidal marsh habitat in the lower reaches of Guadalupe Slough outside of the Project Site. Thus, a single pair could potentially nest along Guadalupe Slough just east of the Project Site. This species may also forage over the levees and old landfills in the northern part of the Project Site.

B**urrowing Owl (*Athene cunicularia*). Federal Listing Status: None; State Listing Status: Species of Special Concern.** The burrowing owl is a small, terrestrial owl of open country. These owls prefer annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, burrowing owls are found in close association with California ground squirrels; owls use the abandoned burrows of ground squirrels for shelter and nesting. The nesting season as recognized by the CDFW (CDFG 1995) runs from 1 February through 31 August. After nesting is completed, adult owls may remain in their nesting burrows or in nearby burrows, or they may migrate (Rosenberg et al. 2007); young birds disperse across the landscape from 0.1 to 35 miles from their natal burrows (Rosier et al. 2006). Burrowing owl populations have declined substantially in the San Francisco Bay area in recent years, with declines estimated at 4-6% annually (DeSante et al. in press, in Rosenberg et al. 2007).

Burrowing owls occur year-round in the Santa Clara Valley (Trulio 2007), and are commonly present in open, agricultural, or grassland areas with active squirrel burrows. Burrowing owls exhibit strong site fidelity, and may return to a nesting site and attempt to nest even after the site has been developed. The ruderal habitat within the Project Site, particularly that surrounding the City of Sunnyvale Recycle Center and WPCP, provides suitable nesting and roosting habitat for burrowing owls.

Between 2007 and 2008, a habitat assessment, burrow mapping study, and standardized protocol surveys for burrowing owls were conducted along sections of multiple SCVWD-managed waterways in Palo Alto, Mountain View, Sunnyvale, Santa Clara, San Jose, Alviso, Milpitas, and Gilroy (EDAW 2008). On 16 January 2008, one burrowing owl was observed occupying a burrow within the SCVWD right-of-way on the west bank of the Sunnyvale East Channel opposite the Twin Creeks Sport Complex.

The burrow that the owl flew from had abundant whitewash and was located in ruderal and non-native grassland habitat. In addition, a burrow with sign of owl use was located along the Sunnyvale West Channel within the Project Site. The CNDDB (2013) includes two records of burrowing owls along the northernmost portion of the Sunnyvale West Channel and one record adjacent to the northernmost portion of the Sunnyvale East Channel. Ruderal habitats in and adjacent to the Project Site, particularly those on the former landfills surrounding the City of Sunnyvale Recycle Center and WPCP, provide suitable nesting, roosting, and foraging habitat for one or two pairs of burrowing owls. A number of records of burrowing owls (many likely pertaining to the same individuals) observed by birders from October 2003 to as recently as 6 February 2013 occur in the vicinity of the WPCP along the San Francisco Bay Trail and on the old landfills (eBird 2013; Santa Clara County bird data unpublished data; South Bay Birds List-serve 2013).

Based on the known locations of burrowing owls around the WPCP, former landfills, and Twin Creeks Sport Complex, this species could potentially nest, roost, or forage on the sides of the old landfills on either side of the West Channel north of Caribbean Drive and along the East Channel both on the landfill west of the channel and along the levees. During the January 2013 surveys, ruderal habitat with numerous burrows of California ground squirrels was observed within Staging Areas East A and West. Access to Staging Area West was limited by fencing, so the burrows could not be inspected closely, but no burrowing owls could be seen with scans using binoculars. However, given the relatively large size of the staging area, its proximity to occupied burrowing owl habitat approximately 0.25 mile to the north, the presence of numerous burrows of California ground squirrels, and the maintenance of short (i.e., mown) vegetation in this staging area, there is some potential for burrowing owls to forage, roost, and/or nest there. Staging Area East A was walked on foot during the January 2013 survey. This staging area was relatively small in size, but contained many burrows of California ground squirrels. Although no evidence of burrowing owls was observed during the survey, a pair of burrowing owls could potentially forage, roost, and/or nest there. Burrowing owls are unlikely to occur along portions of the Project Site south of Highway 237. Although burrows of California ground squirrels were observed along the East and West Channels throughout the Project Site, burrowing owls are unlikely to nest in such limited habitat areas surrounded by dense development and large trees and buildings that provide perches for predatory raptors. Nevertheless, owls are known to use extremely small areas of ruderal habitat in the South Bay, and it is possible that owls could occasionally roost along the Sunnyvale East and West Channels in developed areas.

Loggerhead Shrike (*Lanius ludovicianus*). Federal Listing Status: None; State Listing Status: Species of Special Concern (Nesting). The loggerhead shrike is a predatory songbird associated with open habitats interspersed with shrubs, trees, poles, fences, or other perches from which it can hunt (Yosef 1996). Nests are built in densely foliated shrubs or trees, often containing thorns, which offer protection from predators

and upon which prey items are impaled. The breeding season for loggerhead shrikes may begin as early as mid-February and lasts through July (Yosef 1996). Nationwide, loggerhead shrike populations have declined significantly over the last 20 years. Loggerhead shrikes are still fairly common in parts of the San Francisco Bay area, but urbanization has reduced available habitat, and local populations are likely declining (Cade and Woods 1997, Humple 2008). Loss and degradation of breeding habitat, as well as possible negative impacts of pesticides, are considered the major contributors to the population declines exhibited by this species (Cade and Woods 1997; Humple 2008).

Loggerhead shrikes nest in a number of locations in the Project region where open grassland, ruderal, or agricultural habitat with scattered brush, chaparral, or trees that provide perches and nesting sites occurs (Bousman 2007d). This species occurs slightly more widely (i.e., in smaller patches of open areas providing foraging habitat) during the nonbreeding season. Ruderal habitats at the Project Site, particularly those on the former landfills surrounding the City of Sunnyvale Recycle Center and WPCP, provide suitable nesting, roosting, and foraging habitat for one or two pairs of loggerhead shrikes, but the species is not expected to occur elsewhere at the Project Site due to the limited extent of open habitat.

Yellow Warbler (*Setophaga petechia*). Federal Listing Status: None; State Listing Status: Species of Special Concern (Nesting). The yellow warbler is a widespread neotropical migrant that inhabits wet deciduous forests throughout North America (Lowther et al. 1999). In California, yellow warblers occupy wooded riparian habitats along the coast, on both eastern and western slopes of the Sierra Nevada up to approximately 1700 feet, and throughout the northern portion of the state (Heath 2008). Their range has remained relatively stable over time, but populations have declined substantially in many localities due to habitat loss (Cain et al. 2003; Heath 2008) and expansion of the brood-parasitic brown-headed cowbird. As a result, nesting yellow warblers have been largely extirpated from the Santa Clara Valley (Heath 2008). Ideal nesting habitat for yellow warblers consists of riparian corridors with dense, shrubby understory and open canopy (Lowther et al. 1999; Cain et al. 2003; Heath 2008). Yellow warblers nest from early May through early August and construct open cup nests in upright forks of shrubs or trees in dense willow thickets or other dense vegetation (Lowther et al. 1999).

Yellow warblers are uncommon breeders in the Project region due to loss of riparian habitat, invasion by non-native plants, development along riparian corridors, and the abundance of the brown-headed cowbird in the San Jose area. However, small numbers of yellow warblers still nest in remnant riparian areas within Santa Clara County (Bousman 2007e). Suitable nesting habitat consists of riparian corridors, often with an overstory of mature cottonwoods and sycamores, a midstory of box elder and willow, and a substantial shrub understory (Bousman 2007e). Riparian areas with reduced

understory due to grazing or disturbance are generally not used by this species, and riparian corridors lacking open ruderal or herbaceous vegetation along the edges of the corridors or with development up to the corridor edge are often avoided as well. Thus, suitable nesting habitat is absent from the Project Site. However, the yellow warbler is an abundant migrant throughout the Project region during the spring and fall, and it occurs along the Sunnyvale Channels as an occasional forager during the nonbreeding season.

San Francisco Common Yellowthroat (*Geothlypis trichas sinuosa*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The San Francisco common yellowthroat inhabits emergent vegetation and nests in fresh and brackish marshes and moist floodplain vegetation around the San Francisco Bay. Common yellowthroats will use small and isolated patches of habitat as long as groundwater is close enough to the surface to encourage the establishment of dense stands of rushes (*Scirpus* and *Juncus* spp.), cattails, willows, and other emergent vegetation (Nur et al. 1997; Gardali and Evens 2008). Ideal habitat, however, is comprised of extensive, thick riparian, marsh, or herbaceous floodplain vegetation in perpetually moist areas, where populations of brown-headed cowbirds are low (Menges 1998). San Francisco common yellowthroats nest primarily in fresh and brackish marshes, although they nest in salt marsh habitats that support tall vegetation (Guzy and Ritchison 1999). This subspecies builds open-cup nests low in the vegetation, and nests from mid-March through late July (Guzy and Ritchison 1999; Gardali and Evens 2008).

The San Francisco common yellowthroat is one of approximately 12 subspecies of common yellowthroat recognized in North America, two of which occur in the Project region. Because subspecies cannot be reliably distinguished in the field, determination of the presence of San Francisco common yellowthroat can be achieved only by locating birds that are actively nesting within the breeding range known for the subspecies. Common yellowthroats nesting in the Project Area are of the special-status *sinuosa* subspecies (SFBBO 2012).

In the South Bay, the San Francisco common yellowthroat is a fairly common breeder in fresh and brackish marshes. It is known to nest near the edge of the South Bay, as well as in herbaceous riparian habitat and ruderal floodplain habitat along streams entering the Bay. Within the Project vicinity, the species has been recorded in both the spring and summer in Pond A4 (SCVWD 2000) as well as along Moffett Channel and Guadalupe Slough. The lower, tidal reaches of the Sunnyvale East and West Channels also provide suitable nesting and foraging habitat for this species.

Alameda Song Sparrow (*Melospiza melodia pusillula*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The Alameda song sparrow is one of three subspecies of song sparrows that nest only in salt marsh habitats in the San Francisco Bay area (Chan and Spautz 2008). Prime habitat for Alameda song sparrows consists of large areas of tidally influenced salt marsh

dominated by cordgrass and gumplant and intersected by tidal sloughs, offering dense vegetative cover and singing perches. Although the special-status *pusillula* subspecies (the "species" of special concern) is occasionally found in brackish marshes dominated by bulrushes, it is apparently very sedentary and is not known to disperse upstream into freshwater habitats (Basham and Mewaldt 1987). While the range of the Alameda song sparrow has remained relatively unchanged over time, populations have been reduced substantially and are continually threatened by the loss and fragmentation of salt marshes around the Bay (Nur et al. 1997; Chan and Spautz 2008).

Song sparrows nest as early as March, but peak nesting activity probably occurs in May and June. Song sparrows that nest in salt marshes in the Bay area (including *pusillula*) are known to nest about two weeks earlier than the more widespread *gouldii* subspecies, which nests farther inland in freshwater habitats (Johnston 1954; Johnston 1956). This early nesting by *pusillula* is apparently an adaptation to breeding in a tidal environment, as high tides in late spring and early summer may destroy large numbers of nests.

This primary habitat for the *pusillula* subspecies of song sparrow is fully tidal salt marsh. These song sparrows apparently nest along the lengths of tidal sloughs and the creeks that flow into them. Where suitable nesting habitat is continuous along such creeks, the species appears to nest continuously from tidal salt marshes, where the breeding subspecies is *pusillula*, upstream to freshwater marsh and woody riparian habitats, where the breeding subspecies is *gouldii*. The line of demarcation (or perhaps more accurately, the zone of intergradation) along these sloughs between these two subspecies is unknown (Rottenborn 2007); a recent study indicates that song sparrows nesting along the lower portions of the Sunnyvale Channels may belong to the *pusillula* or *gouldii* subspecies, or may be intergrades between the two (SFBBO 2012). The Alameda song sparrow is thus presumed to be present (and relatively common) in the Project Site in brackish-marsh habitat, such as along Moffett Channel.

Bryant's Savannah Sparrow (*Passerculus sandwichensis alaudinus*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The Bryant's savannah sparrow is one of four subspecies of savannah sparrows that nest in California. The *alaudinus* subspecies occurs primarily along coastal and bay shore areas from Humboldt Bay to Morro Bay, and is found year-round in low-elevation tidally influenced habitat. Specifically, this subspecies prefers pickleweed-dominated salt marshes, although it also occurs in adjacent grasslands and ruderal areas. In South San Francisco Bay, levee tops with short vegetative growth and levee banks with high pickleweed are the preferred nesting habitat of this subspecies (Fitton 2008).

Bryant's savannah sparrows nest in the South Bay primarily in short pickleweed-dominated portions of diked/muted tidal salt marsh habitat, and in adjacent ruderal habitat. In the Project vicinity, Bryant's savannah sparrows may nest in low numbers around the edge of Pond A4 immediately adjacent to the Project Site, and additional

suitable nesting habitat occurs in the City of Sunnyvale mitigation area (for impacts on wetlands and salt marsh harvest mice) located immediately south of the Project Site near the confluence of the Sunnyvale East Channel and Guadalupe Slough. However, no suitable nesting habitat occurs within the Project Site itself due to the frequency of disturbance by pedestrians and SCVWD activities (any savannah sparrows nesting in the vicinity of these levees are expected to do so somewhat farther from the levee roads). During the nonbreeding season, *alaudinus* and other savannah sparrow subspecies may forage in open areas throughout the Project Site.

Tricolored Blackbird (*Agelaius tricolor*). Federal Listing Status: None; State Listing Status: Species of Special Concern (Nesting Colony). Tricolored blackbirds are found primarily in the Central Valley and in central and southern coastal areas of California. This species is considered a California species of special concern (at its nesting colonies) due to concerns over the loss of wetland habitats in the state. The tricolored blackbird is highly colonial in its nesting habits, and forms dense nesting colonies that, in some parts of the Central Valley, may consist of up to tens of thousands of pairs. This species typically nests in tall, dense, stands of cattails or tules, but also nests in blackberry, wild rose bushes, and tall herbs. Nesting colonies are usually located near fresh water. Tricolored blackbirds form large, often multi-species flocks during the nonbreeding period and range more widely than during the nesting season.

Suitable nesting habitat for the tricolored blackbird is not present in the Project Area, as this species is not known to breed in tidal marsh in the South Bay, where all ostensibly suitable emergent vegetation is located. However, the species is known to forage in the Project Area during the nonbreeding season, particularly along the lower Sunnyvale West Channel, on the former landfills, and to roost in marshes along Moffett Channel.

Salt Marsh Wandering Shrew (*Sorex vagrans halicoetes*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The salt marsh wandering shrew occurs primarily in medium to high wet tidal marsh (6 to 8 feet above mean sea level) with abundant driftwood and other debris for cover (Shellhammer 2000). This species has also been recorded in diked marsh habitat. Within these habitats, individuals typically prefer patches of tall pickleweed, in which they build nests. Salt marsh wandering shrews breed and give birth during the spring, however, very little is known about the natural history of this species.

The salt marsh wandering shrew was historically more widely distributed in the San Francisco Bay, but it is currently confined to salt marshes in the South Bay (Findley 1955). Salt marsh wandering shrews are occasionally captured during salt marsh harvest mouse trapping studies, but the difficulty in identifying them to species has precluded a better understanding of their current distribution in the South Bay. The shrew was formerly recorded from marshes of San Pablo and San Francisco Bays in

Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara counties, but captures in recent decades have been very infrequent in these areas.

Although this species' distribution and habitat associations in the South Bay are not well known, this species, pickleweed-dominated salt marsh habitat is not present at the Project Site (H. T. Harvey & Associates 2011b). Thus, this species is not expected to breed at the Project Site. However, suitable habitat for this species occurs immediately adjacent to the Project Site along the southern edge of Pond A4, within Guadalupe Slough at its confluence with the Sunnyvale East Channel, and in a mitigation area located east of the Twin Creeks Sports Complex and south of the confluence of Guadalupe Slough and the Sunnyvale East Channel.

Pallid Bat (*Antrozous pallidus*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The pallid bat is a light brown or sandy-colored, long-eared, moderate-sized bat that occurs throughout California with the exception of the northwest corner of the state and the high Sierra Nevada (Zeiner et al. 1990a). Pallid bats are most commonly found in oak savannah and in open dry habitats with rocky areas, trees, buildings, or bridge structures that are used for roosting (Zeiner et al. 1990a; Ferguson and Azerrad 2004). Coastal colonies commonly roost in deep crevices in rocky outcroppings, in buildings, under bridges, and in the crevices, hollows, and exfoliating bark of trees. Night roosts often occur in open buildings, porches, garages, highway bridges, and mines. Colonies can range in size from a few individuals to over a hundred (Barbour and Davis 1969), and usually consist of at least 20 individuals (Wilson and Ruff 1999). Pallid bats typically winter in canyon bottoms and riparian areas. After mating during the late fall and winter, females leave to form maternity colonies, often on ridge tops or other warmer locales (Johnston et al. 2006). Pallid bat roosts are very susceptible to human disturbance, and urban development has been cited as the most significant factor contributing to their regional decline (Miner and Stokes 2005).

Pallid bats were likely present throughout the South Bay historically, but they are slowly being extirpated from the area due to anthropogenic disturbance and habitat loss. No trees with suitably large cavities to provide roosting habitat for pallid bats are present at the Project Site. Further, pallid bats have been extirpated from highly urbanized areas close to the Bay in the region, and thus this species is not expected to roost in the Project vicinity. It is possible that individuals from more roosts could forage in the Project Area, although due to the urbanized nature of the surrounding areas, it is unlikely that pallid bats are present in the vicinity at all.

Western Red Bat (*Lasiurus blossevillii*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The western red bat is a locally common bat in coastal California and the Central Valley, and its range extends from Shasta County to Baja California, Mexico (Zeiner et al. 1990a). Western red bats are strongly associated with intact cottonwood and sycamore valley riparian habitats in low

elevations (Pierson et al. 2006), and the loss of such habitats throughout the species' range threatens the persistence of the western red bat (Western Bat Working Group 2005). Both day and night roosts are usually located in the foliage of trees; red bats in the Central Valley show a preference for large trees and extensive, intact riparian habitat (Pierson et al. 2006). Day roosts are often located along the edges of riparian areas, near streams, grasslands, and even urban areas (Western Bat Working Group 2005). During the breeding season, red bats establish individual tree roosts and occasionally small maternity colonies in riparian habitats (Zeiner et al. 1990a). Little is known about the habitat use of western red bats during the nonbreeding season (Pierson et al. 2006). The red bat uses echolocation to capture insects in mid-flight, and requires habitat mosaics or edges that provide close access to foraging sites as well as cover for roosting (Zeiner et al. 1990a).

The Central Valley is assumed to be the primary breeding location of western red bat populations in California, and red bats likely occur in the San Francisco Bay area only during winter and migration (Pierson et al. 2006). Western red bats are expected to be regular migrants and winter residents within the Project Area, but they are not known or expected to breed here. Individual male and female bats may occur as occasional migrants during the fall and spring or as foragers during the winter, and nonbreeding individual males may occur during the summer. No breeding females occur in the Project Area during the summer. Western red bats may roost in the foliage in trees virtually anywhere throughout the Project vicinity, but they are expected to roost primarily in wooded riparian areas, which are absent from the Project Site.

San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The San Francisco dusky-footed woodrat occurs in a variety of woodland and scrub habitats throughout the South Bay and the adjacent central coast range, south to the Pajaro River in Monterey County (Hall 1981; Zeiner et al. 1990a). Woodrats prefer riparian and oak woodland forests with dense understory cover, or thick chaparral habitat (Lee and Tietje 2005). Although woodrats are locally common in many areas, habitat conversion and increased urbanization, as well as increasing populations of introduced predators, such as domestic cats, pose substantial threats to this subspecies (H. T. Harvey & Associates 2008). Dusky-footed woodrats build large, complex nests of sticks and other woody debris, which may be maintained by a series of occupants for several years (Carraway and Verts 1991). Woodrats are also very adept at making use of human-made structures, and can nest in electrical boxes, pipes, wooden pallets, and even portable storage containers. Woodrat nest densities increase with canopy density and with the presence of poison oak (Carraway and Verts 1991). While the San Francisco dusky-footed woodrat is described as a generalist omnivore, individuals may specialize on local plants that are available for forage (Haynie et al. 2007). The breeding season for dusky-footed woodrats begins in February and sometimes continues through

September, with females bearing a single brood of one to four young per year (Carraway and Verts 1991).

Because dusky-footed woodrats are extremely sensitive to non-native predators, their distribution in the mostly-urban Project Site is limited. Currently, with the exception of records along the northern portion of Coyote Creek and along the edges of the Valley, San Francisco dusky-footed woodrats do not occur in the more urbanized portions of the county (H. T. Harvey & Associates 2010). During a reconnaissance-level survey in January 2013, an H. T. Harvey & Associates wildlife ecologist looked specifically for nests of this species at the Project Site. Marginally suitable habitat for dusky-footed woodrats was noted in areas of thick, shrubby vegetation and arundo along the Sunnyvale East Channel; however, no woodrats or woodrat nests were observed. Thus, this species is determined to be absent from the Project Site.

State Fully Protected Species

California Brown Pelican (*Pelecanus occidentalis californicus*). Federal Listing Status: Delisted; State Listing Status: Delisted, Fully Protected. California brown pelican populations were decimated by the effects of the pesticide DDT, resulting in the species being listed as endangered both under the FESA and CESA. While the species began to recover after the chemical was banned in 1972, the California population continued to be threatened by other environmental contaminants, habitat loss, and human disturbance, to which this species is extremely sensitive (Jacques et al. 1996; Shields 2002). A recovery plan that laid out recovery goals was developed for the species in 1983 (USFWS 1983). In 2009, the California brown pelican population was determined to have sufficiently recovered as indicated by the increase in the breeding population size, expansion of nesting sites, increased productivity, and increased recruitment to the population to be delisted by both the federal (USFWS 2009) and state agencies (California Fish and Game Commission 2009).

The California brown pelican ranges along the west coast of North America, being most common from the San Francisco Bay Area south to Baja California but occasionally dispersing in numbers north into Oregon and Washington. Established nesting colonies occur along the coast from the Channel Islands in California south through Baja California and inland at the Salton Sea; many individuals disperse northward after nesting, and communal nonbreeding roosts occur throughout the species' range (Shields 2002). Pelicans are highly gregarious in all seasons, often forming large communal nonbreeding roosts from which they range miles to forage (Shields 2002). Preferred nonbreeding roost sites are comprised of estuaries, sand bars, spits, or beaches that are close to aquatic foraging grounds, allow the birds to dry off after foraging, and offer shelter from predators and the elements (Jacques et al. 1996; Shields 2002). Sites that are completely or almost completely surrounded by water are required for night roosts, to maximize protection from predators (Jacques et al. 1996). Pelicans forage in

relatively warm brackish and ocean waters where fish are close enough to the surface to be captured by plunge-diving birds (Shields 2002).

Brown pelicans are uncommon nonbreeding visitors in Santa Clara County. The nesting season begins in early spring, from approximately January to May (Anderson and Gress 1983; Shields 2002) and by June many post-breeding birds are present in central California. Their abundance in central California usually peaks from August to October (Briggs et al. 1987; Jacques 1994). Although a small number of nonbreeding birds may be found locally year-round, most brown pelicans return to their southern nesting grounds by January. They are found foraging in San Francisco Bay and in managed ponds containing fish at the edges of the Bay. Managed ponds generally provide suitable brown pelican foraging habitat consisting of relatively warm, fairly shallow brackish water where fish are close enough to the surface to be captured by these plunge-diving birds. Brown pelicans and other piscivorus birds have been recorded foraging for fish on Pond A4, and were observed foraging in Pond A4 and the pond west of Mowry Slough during the January 2013 survey.

As recorded by the SCVWD (2000), William Bousman reported brown pelicans in Pond A4 in 1998 and Thomas Ryan reported over-flights only during 52 surveys at Pond A4 between 28 April and 24 June 1998 and between 28 December 1998 and 9 February 2000 (SCVWD 2000). Our review of additional records complied by William Bousman (Santa Clara County Bird Data, unpublished) spanning the period from 1986 to 2002 show many records from the San Francisco Bay, Charleston Slough, managed salt ponds north of Moffett Field, and various Alviso-area managed ponds, but fewer from Pond A4. Specifically on Pond A4, small numbers of brown pelicans (frequently only one) were reported fairly regularly; 14 were observed on 25 August 1989, up to seven were observed on many dates from 8 July to 7 November 1990, and one was observed at various times between 23 August and 1 December 1991 and on 26 February 1992, 17 October 1995, 22 December 1996, 7 December 2000, and 4 January 2001. In addition, records of piscivorus (fish-eating) birds recorded in the Santa Clara County Bird Data from “the Sunnyvale WPCP” often included observations at Pond A4 or Pond A3W, which is on the west side of the plant; therefore, some of the records of brown pelicans listed as being from the Sunnyvale WPCP included birds in Pond A4. On 41 separate occasions between July 1993 and December 2000, small numbers of brown pelicans were reported at the Sunnyvale WPCP; while most of these were likely at Pond A3W, which tends to support higher numbers of brown pelicans than Pond A4, some would have been in Pond A4.

While the California brown pelican may occur regularly on Pond A4, and occasionally at the WPCP ponds as well, the Sunnyvale East and West Channels, Moffett Channel, and the reach of Guadalupe Slough within the Project Site are too narrow to provide suitable foraging habitat for brown pelicans, as this species typically forages in broader expanses of water. Brown pelicans are thus not expected to occur at the Project Site.

American Peregrine Falcon (*Falco peregrinus anatum*). Federal Listing Status: None; State Listing Status: Fully Protected. The American peregrine falcon occurs throughout much of the world, and is known as one of the fastest flying birds of prey. Peregrine falcons prey almost entirely on birds, which they kill while in flight. These falcons nest on ledges and caves on steep cliffs, as well as on human-made structures such as buildings, bridges, and electrical transmission towers. In California, they are known to nest along the entire coastline, the northern Coast, and the Cascade Ranges and Sierra Nevada.

A severe decline in populations of the widespread North American subspecies *anatum* began in the late 1940s. This decline was attributed to the accumulation of DDE, a metabolite of the organochlorine pesticide DDT, in aquatic food chains. When concentrated in the bodies of predatory birds such as the peregrine falcon, this contaminant led to reproductive effects, such as the thinning of eggshells. The American peregrine falcon was listed as endangered by the USFWS in 1970 (USFWS 1970) and by the State of California in 1971. Recovery efforts included the banning of DDT in North America, and captive breeding programs to help bolster populations. The USFWS removed the American peregrine falcon from the endangered Species List in 1999 (USFWS 1999b), and from the state endangered species list in 2009.

The only locations within the Project vicinity where peregrines have been detected nesting are in old raven and hawk nests on electrical transmission towers within managed ponds in the Mountain View/Alviso area, more than 2 miles north/northwest of the Project Site. The species is not known or expected to nest in the immediate Project Area. However, peregrines nesting elsewhere in the South Bay, as well as migrants and wintering birds, forage occasionally in the Project Area, particularly in the vicinity of Pond A4 and the WPCP ponds.

Golden Eagle (*Aquila chrysaetos*). Federal Listing Status: None; State Listing Status: Fully Protected. In California, the golden eagle is an uncommon permanent resident and migrant throughout the state. The species' breeding range within California excludes only the Central Valley, the immediate coast in the far north, and the southeastern corner of the state (Zeiner et al. 1990b). Recent declines of golden eagle populations have occurred in several western states in North America, including California, primarily because of loss of habitat and mortalities resulting from human activities (Kochert et al. 2002; Good et al. 2007). Further declines in eagle populations are expected to occur as long as habitat loss and anthropogenic landscape alteration continue (Good et al. 2007).

The golden eagle nests in a range of open habitats, including desert scrub, foothill cismontane woodlands, and annual or perennial grasslands (Zeiner et al. 1990b; Kochert et al. 2002). Golden eagle nesting habitat is characterized by large, remote patches of grassland or open woodland; a hilly topography that generates lift; an

abundance of small mammal prey; and tall structures that serve as nest platforms and hunting perches (Kochert et al. 2002). Once a breeding pair establishes a territory, they may build a number of nests in tall structures such as tall trees or snags, cliffs, or utility towers (Zeiner et al. 1990b; Kochert et al. 2002), only one of which is used in any given year (Kochert et al. 2002). The eagle breeding season begins in late January and continues through August (CDFG 2008). Following the nesting period, adult eagles usually remain in or near their breeding territory (Zeiner et al. 1990b). Young birds in California tend to be sedentary, remaining in or near their parental home ranges (Kochert et al. 2002).

In the South Bay, golden eagles nest widely in the Diablo Range and less commonly in the Santa Cruz Mountains (Bousman 2007f) primarily outside the Project Area; however, Valley floor areas adjacent to the foothills may be used (e.g., Coyote Valley and southern Santa Clara Valley) and grasslands along the San Francisco Bay margin, where perches are available, may be used for foraging. No suitable nesting habitat for golden eagles occurs within or adjacent to the Project Site. Nesting pairs within the Project vicinity are expected to occur primarily in the foothills of the Diablo Range and Santa Cruz Mountains. Nesting on the Valley floor occurs more rarely, although a pair has nested on an electrical tower below Calero Reservoir for a number of years, and another pair has nested in a residential backyard in western Morgan Hill. Suitable foraging habitat for golden eagles occurs in the northern portion of the Project Site (i.e., north of Caribbean Drive), and nonbreeding eagles may forage there on occasion. For example, an immature golden eagle was observed along the canals west of the WPCP in January 2012 (South Bay Birds List-serve 2013). However, this species occurs very infrequently around the immediate edge of the baylands in the South Bay, and based on the infrequency with which it has been reported in this heavily birded area by birders, it is expected to forage in open habitats within and adjacent to the Project Site (such as on the old landfills) only on rare occasions.

White-tailed Kite (*Elanus leucurus*). Federal Listing Status: None; State Listing Status: Fully Protected. In California, white-tailed kites can be found in the Central Valley and along the coast, in grasslands, agricultural fields, cismontane woodlands, and other open habitats (Zeiner et al. 1990b; Dunk 1995; Erichsen et al. 1996). White-tailed kites are year-round residents of the state, establishing nesting territories that encompass open areas with healthy prey populations, and snags, shrubs, trees, or other nesting substrates (Dunk 1995). Nonbreeding birds typically remain in the same area over the winter, although some movements do occur (Polite 1990). The presence of white-tailed kites is closely tied to the presence of prey species, particularly voles, and prey base may be the most important factor in determining habitat quality for white-tailed kites (Dunk and Cooper 1994; Skonieczny and Dunk 1997). Although the species recovered after population declines during the early 20th century, its populations may be exhibiting new declines as a result of recent increases in habitat loss and disturbance (Dunk 1995; Erichsen et al. 1996).

In Project vicinity, white-tailed kites are known to nest along the northern edge of Santa Clara County throughout the open areas edging the San Francisco Bay (Bousman 2007g). Although neither the *Breeding Bird Atlas of Santa Clara County, California* (Bousman 2007g) nor the Santa Clara County Bird Data (unpublished) contained specific mention of the species as occurring at the Project Site, there are a number of records from Moffett Field to the west and some from Sunnyvale Baylands Park to the east (Santa Clara County Bird Data unpublished data; South Bay Birds List-serve 2013).

White-tailed kites nest in trees or shrubs, typically in areas away from high human activity and those with extensive open foraging habitat with adequate prey. In the Project Area, there are foraging areas of adequate size to support white-tailed kites on the closed landfills adjacent to the Sunnyvale East and West Channels. The juxtaposition of suitable trees for nesting and open ruderal habitat for foraging makes these old landfills suitable for nesting by up to one or two pairs.

Other Special-Status Species

Pacific Harbor Seal *(Phoca vitulina richardsi*). Federal Listing Status: None; State Listing Status: None. Pacific harbor seals occur along the Pacific coast of North America from Alaska south to Baja, California. In the San Francisco Bay, harbor seals haul out at sites that typically consist of mudflats located far from areas used regularly by humans, and near deeper water where the seals forage. Haul-out sites are used for resting and pupping (giving birth); pupping typically occurs during spring, with a peak in April (Fancher and Alcorn 1982). Harbor seals forage in nearshore marine habitats on a variety of fishes and invertebrates. The major harbor seal dietary components in the South Bay include yellowfin goby (*Acanthogobius flavimanus*), staghorn sculpin (*Leptocottus armatus*), and white croaker (*Genyonemus lineatus*) (Kopec and Harvey 1995).

During the spring, female harbor seals nurse pups for about 28 days, during which time they are susceptible to being separated from their young as a result of human disturbance. The NMFS (the agency that oversees the protection of marine mammals) recommends a 100-yard disturbance-free buffer around harbor seals. Disturbance can lead to separation of pups from nursing mothers, can add physiological stress to adults, and can lead to long-term abandonment of historic haul-out sites (Lidicker and Ainley 2000). Although they are not listed by the state as a species of special concern or covered by the second administrative draft Habitat Plan, Pacific harbor seals are protected under the federal Marine Mammal Protection Act, and are sensitive to human disturbance.

Any undisturbed intertidal habitat that is accessible to the open bay can potentially be used by harbor seals (Lidicker and Ainley 2000). A known, primary haul-out site for harbor seals in the South Bay is present approximately 5 miles northwest of the Project Site at Mowry Slough in Fremont. Although no pupping locations or major haul-out sites

are present within the Project Site, harbor seals are occasional visitors to Moffett Channel and Guadalupe Slough.

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