C.2 Biological Resources Technical Report

Thousand Palms Flood Control Project
Biological Resources Technical Report

Prepared for:

Coachella Valley Water District
P.O. Box 1058
Coachella, CA 92236

Prepared by:

Aspen Environmental Group
5020 Chesebro Road, Suite 200
Agoura Hills, CA 91301

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1.0 EXECUTIVE SUMMARY

This report describes the biological resources present or potentially present on the proposed Thousand Palms Flood Control Project (Project). The Project consists of a series of earthen levees, discrete channels, and energy dissipaters to reduce flooding hazards in and around the community of Thousand Palms.

The Project is located in the central portion of the Coachella Valley, Riverside County, California, and is within the area covered by the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). The Project would be located partly within the Thousand Palms Conservation Area as identified in the CVMSHCP. The Project also would be partly within designated conservation lands. These areas help to protect a large dune system and its biological resources.

Multiple surveys for biological resources have been conducted on the Project site from 1997 through 2016, and a jurisdictional delineation was performed in 2012. Results of these efforts are detailed in this report and summarized below.

Special-status Biological Resources. Special-status biological resources that were observed or detected in the Project area during field surveys:

- One sensitive habitat type – desert dunes
- Two federally or state-listed species covered by the CVMSHCP
  - Coachella Valley milk-vetch (Astragalus lentiginosus var. coachellae)
  - Coachella Valley fringe-toed lizard (*Uma inornata*)
- Two non-listed special-status species covered by the CVMSHCP
  - Burrowing owl (Athene cunicularia)
  - Palm Springs (=Coachella Valley) round-tailed ground squirrel (*Xerospermophilus tereticaudus chlorus*)
- Four non-listed special-status species not covered by the CVMSHCP
  - Chaparral sand-verbena (*Abronia villosa* var. *aurita*)
  - Loggerhead shrike (*Lanius ludovicianus*)
  - Bendire's thrasher (*Toxostoma bendirei*)
  - Colorado Valley woodrat (*Neotoma albigula venusta*)

Special-status species that were not observed or detected during surveys, but are known from the vicinity and have potential for occurrence in the Project area:

- Two federally or state-listed or candidate species covered by the CVMSHCP
  - Desert tortoise (*Gopherus agassizii*)
  - Flat-tailed horned lizard (*Phrynosoma mcallii*)
- Three non-listed special-status species covered by the CVMSHCP
  - Coachella Valley giant sand-treader cricket (*Macrobaenetes valgum*)
  - Coachella Valley Jerusalem cricket (*Stenopelmatus cahuilaensis*)
  - Le Conte's thrasher (*Toxostoma lecontei*)
- 20 non-listed special-status species not covered by the CVMSHCP
  - See Tables 5 and 6

Jurisdictional waters. A jurisdictional delineation found no wetlands, but approximately 31.6 acres of state and federal jurisdictional non-wetland waters occur on the Project site. All of the potentially jurisdictional features are characterized as ephemeral desert dry washes.

2.0 INTRODUCTION

This report was prepared to characterize the biological resources that are present or potentially present on the proposed Thousand Palms Flood Control Project (Project) site, formerly known as the Whitewater River Basin Flood Control Project. The Project includes a series of flood control improvements to minimize flooding hazards for developed areas in and around the community of Thousand Palms. These improvements consist of earthen levees, energy dissipaters, and discrete channels. The Project is designed to support continued aeolian (windblown) transport of sand to the Coachella Valley Preserve to maintain habitat for the Coachella Valley fringe-toed lizard and other special-status species.

Biological information was obtained through review of literature, geospatial analysis, field surveys, consultation with local biologists and regional experts, and coordination with regulatory agency staff. This work was conducted by Aspen Environmental Group (Aspen) between 1997 and 2016.

3.0 PROJECT OVERVIEW

The Project is located in the Thousand Palms area of the Coachella Valley in Riverside County, California. The unincorporated community of Thousand Palms is about ten miles east of the City of Palm Springs and immediately north of the City of Palm Desert (Figure 1).

Components of the Project include levees, channels, energy dissipating structures, and soil deposition areas within four discrete reaches. All four reaches are north of the Interstate 10 freeway, and the Project area is bounded by Rio del Sol Road on the west and Washington Street on the east. Total impact area of the permanent project features is approximately 213 acres. Temporary impacts total approximately 36 additional acres; see Table 3. The levees and channels will be comprised of soil cement and the upslope sides of each levee will be armored with soil cement. Soil cement is a compacted, high-density mix of pulverized rock, soil, and cement.

In 2000, the U.S. Army Corps of Engineers (USACE) and Coachella Valley Water District (CVWD) published a Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR; USACE, 2000) for the Whitewater River Basin Flood Control Project. Based on the 2000 EIS/EIR, the USACE approved the Preferred Alternative (identified as Alternative 6); however, due to funding limitations this action was not implemented at that time. In 2012, USACE delegated authority for design of the Project to CVWD, and CVWD has assumed the lead role in design, construction, and environmental compliance for the Project.

3.1 Project Setting

The Project site is near the center of the Coachella Valley. The Coachella Valley is within the Colorado Desert and is defined by the San Jacinto and Santa Rosa Mountains to the southwest and the Little San Bernardino Mountains to the north and northeast. The Coachella Valley slopes gradually from the San Gorgonio Pass at its northwestern end, toward the Salton Sea over a distance of about 40 miles. The climate is characterized by extreme heat and aridity. Annual rainfall in the region averages about four inches, but varies by location and from year to year. The Whitewater River is the main drainage course in the Coachella Valley, originating on the southeastern slopes of the San Bernardino Mountains and flowing southeast through the valley to the Salton Sea. Elevations in the Valley range from about 30 feet above mean sea level (amsl) near Indio to 1,614 feet amsl at Edom Hill near the northwestern end of the Indio Hills.

Portions of the Coachella Valley are urbanized, with the majority of development at the bases of the San Jacinto and Santa Rosa Mountains, extending northward onto the valley floor. Urbanized areas extend from the City of Palm Springs in the west to the Cities of Indio, Coachella, and La Quinta in the southeast.

The only incorporated city on the north side of the Coachella Valley is Desert Hot Springs, located north of Palm Springs.

The project site is on a series of intersecting south-facing alluvial fans originating from the Little San Bernardino Mountains and the Indio Hills. Elevation of the Project site ranges from approximately 100 to 400 feet amsl.

There are several designated conservation lands in the Project vicinity (see Figure 2): the state-owned Coachella Valley Ecological Reserve; the Coachella Valley National Wildlife Refuge (CVNWR), which is mostly owned by the US Fish and Wildlife Service (USFWS) and includes part of the Coachella Valley Ecological Reserve; and the Coachella Valley Preserve which encompasses Bureau of Land Management (BLM) Area of Critical Environmental Concern (ACEC) land as well as the National Wildlife Refuge and privately owned conservation lands. Together these conservation lands help to protect a large dune system and its biological resources. The Project site intersects the southwestern margin of the 15,000-acre Coachella Valley Preserve, including the Coachella Valley National Wildlife Refuge.

The Project site is within the area covered by the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). The CVMSHCP is intended to conserve sensitive species and their habitats, and allow the incidental take of species covered by the CVMSHCP (CVAG, 2007). CVWD is a CVMSHCP permittee. As a permittee, CVWD has California and federal Endangered Species Act (CESA and ESA, respectively) 'take'[1] authorization for covered species or loss of their habitat, as specified in the CVMSHCP permits, so long as compliance with the requirements of the CVMSHCP is achieved.

The CVMSHCP identifies four conservation areas in the Coachella Valley: Thousand Palms, Whitewater Floodplain, Willow Hole, and Edom Hill. The Project site is adjacent to the Thousand Palms Conservation Area; see Figure 1. According to the CVMSHCP, the Project's levees as they were planned in the 2000 EIS/EIR would define the southern edge of this conservation area. The final Project design and alignment of the levees were expected to cause a minor adjustment of the conservation area boundary such that the levees would not be in the conservation area, but would define the edge of the area (CVMSHCP, page 4-96; CVAG, 2007). However, in the intervening years, the Conservation Area boundaries have been established as shown on Figure 1, and the current Project design has been modified somewhat from that described in the 2000 EIS/EIR. The CVWD, USACE and USFWS are working to resolve consistency of the current Project design with the CVMSHCP and associated Biological Opinion.

The Project site includes USFWS-designated critical habitat for Coachella Valley fringe-toed lizard and Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*) (see Figure 3 and discussions of both species in Sections 5.3.4 and 5.4.3). Critical habitat is defined as the specific areas within the geographical range occupied by the species that possess the physical or biological features essential for the conservation of the species and that may require special management protection. The Coachella Valley fringe-toed lizard requires aeolian sand habitat and the Coachella Valley milk-vetch requires fluvial or aeolian sand habitat. Therefore, the boundary of the designated critical habitat for each species extends beyond the limits of the species' distribution to include the upwind and upstream sand source, which is essential in maintaining fluvial and aeolian sand habitat (USFWS, 1985; USFWS, 2013).

[1] Under the Federal Endangered Species Act, 'take' is defined as, "…to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (USFWS, 2011b). Under Section 86 of the California Fish and Game Code, 'take' is defined as "…hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (CDFW, 2015d).

4.0 METHODS

The "Project site" is defined as all permanent and temporary impact areas associated with construction and operation and maintenance of the Project. For the most recent (2010 and after) habitat assessments, vegetation mapping, and plant and wildlife surveys (except Coachella fringe-toed lizard surveys), the "Study Area" is defined as the Project site and a surrounding buffer 200 feet wide. For Coachella fringe-toed lizard surveys, the Study Area is defined as the Project site and a surrounding buffer 500 feet wide. Data from surveys prior to 2010 are incorporated into this document, but project design and survey methodology may have varied slightly and is not described herein. For the jurisdictional delineation, the Study Area is defined as the Project site and select areas downstream (south) of the Project site. Field personnel for the 2013 surveys included Aspen biologists Chris Huntley, Jared Varonin, Justin Wood, Jamison Miner, and William Haas.

Weather data were obtained from weather stations near the Study Area: the Indio Fire Station (Station 044259), approximately 6.0 miles southeast of Reach 4, and the Palm Springs weather station (Station 046635), approximately 8.0 miles west of Reach 1.

Information on biological resources was collected through review of literature; reconnaissance, protocol, and focused surveys; consultation with local biologists and regional experts; and coordination with regulatory agencies, including the USFWS, CDFW, and USACE.

Information from the literature review and observations from Aspen's field surveys were used to generate a list of special-status plant and animal species that are present or potentially present within the Study Area and adjacent habitats. For the purposes of this report, special-status species are:

- designated as either rare, threatened, or endangered by CDFW or USFWS, or are protected under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA);
- candidates for listing or proposed for listing under FESA or CESA;
- CDFW Species of Special Concern, Special Animals, and Watch List species;
- California Rare Plant Rank (CRPR) 1, 2, 3, or 4 plant species;
- protected under the California Fish and Game Code; or
- of concern to resource or regulatory agencies or local jurisdictions.

4.1 Literature Search

A preliminary assessment of sensitive biological resources that are present or potentially present in the Study Area was accomplished through a review of literature, including the California Natural Diversity Database (CNDDB; CDFW, 2016). The Study Area is located within the U.S. Geological Survey (USGS) Cathedral City and Myoma 7.5-minute topographic quadrangles, and these quadrangles were included in the CNDDB search. The following nine adjacent topographic quadrangles were also included: Desert Hot Springs, East Deception Canyon, Indio, Keys View, La Quinta, Palm Springs, Rancho Mirage, Seven Palms Valley, and West Berdoo Canyon. The Palm View Peak quadrangle is also adjacent, but represents higher elevations and very different habitats than those present in the Study Area. Therefore, data from this quadrangle was not included in the analysis.

Additional data regarding special-status species and sensitive habitats were obtained from the following sources:

- State and Federally Listed Endangered and Threatened Animals of California (CDFW, 2015a);
- Special Animals List (CDFW, 2015b);

- California Wildlife Habitat Relationships (CDFG, 2010);
- Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2016);
- Consortium of California Herbaria (CCH, 2015);
- Coachella Valley Multiple Species Habitat Conservation Plan (CVAG, 2007); and
- Aerial photographs of Thousand Palms and surrounding areas (1994 to 2014).

4.2 Field Surveys

A number of field surveys have been conducted for the Project prior to and since the publication of the 2000 EIS/EIR. Table 1 summarizes the survey efforts from 1997 through 2016. Survey methodologies are described below.

Surveys were conducted by experienced biologists familiar with the resources in the region and under appropriate conditions to detect and identify plant and wildlife species.

Table 1. Biological Surveys Conducted for the Thousand Palms Flood Control Project

Resource	Dates
Vegetation Mapping	1999 June 29-July 1, 2003 April 29-30, 2010 March 26-28, 2013 May 2013 May 10-12, 2016
Special-status Plants	June 29-July 1, 2003 (survey and habitat assessment for CV milk-vetch; Bloom Biological) April 29-30, 2010 March 26-28, 2013 May 10-12, 2016
Reconnaissance; General and Special-status Wildlife	1997 March 26, 2009 April 29-30, 2010 March 26-28, 2013 July 8-9, 2013 March 31, 2015 May 10-12, 2016
Burrowing Owls	April 29-30, 2010 March 26-28, 2013 May 10-12, 2016
Coachella Valley Fringe-Toed Lizard Habitat Assessment and Surveys	June 29-July 1, 2003 (survey and habitat assessment; Bloom Biological) May 2010 (habitat assessment) June 20, 2010 (survey) March 26-28, 2013 (survey) April 8, 2013 (habitat assessment) May 10-12, 2016 (survey)
Habitat Assessments for Coachella Valley Milk-vetch, Triple-ribbed Milk-vetch, and Desert Tortoise	May 2010
Jurisdictional Delineation	September 25 – 28, 2012

4.3 Vegetation Mapping

Vegetation maps were initially prepared by hand-drawing tentative boundaries of the vegetation types onto high-resolution aerial images. Preliminary mapping was done in 2010; maps were updated and field-verified and updated in May 2013 and May 2016. Maps were then digitized into Global Information Systems (GIS) using ArcGIS (version 10.1) with one-foot pixel aerial imagery on a 22" diagonal flat screen monitor. The smallest mapping unit is approximately 0.25 acre; GIS data for most mapped vegetation boundaries is accurate to within three feet. Vegetation types were classified according to Sawyer et al. (2009).

4.4 Special-status Plant Surveys

Special-status plant surveys were conducted in the spring of 2010, 2013, and 2016. Surveys consisted of walking evenly spaced transects throughout the Study Area with particular attention given to areas of suitable habitat for special-status plants (e.g., desert dunes). All plants observed during the surveys were recorded and identified in the field or collected for later identification. Plants were identified using keys, descriptions, and illustrations in regional references such as Baldwin et al. (2002, 2012).

In conformance with resource agency guidelines (CDFG, 2009; BLM, 2009), surveys (a) were conducted during flowering seasons for the special-status plants known from the area, (b) were floristic in nature, (c) were consistent with conservation ethics, (d) systematically covered all habitat types in the Study Area, and (e) were well documented by this report and by voucher specimens to be deposited at Rancho Santa Ana Botanic Garden. Observations of special-status plants were reported to CDFW for inclusion in the CNDDB.

4.5 Wildlife Surveys

Wildlife surveys consisted of walking evenly spaced transects throughout the Study Area with particular attention given to areas of suitable habitat for special-status animals (e.g., desert dunes and sandy washes). All wildlife species observed or detected during the surveys were recorded.

Vegetation and substrate within the Study Area were searched for terrestrial insects and other invertebrates. Flying insects were noted when observed. Randomly selected areas within appropriate micro-habitats (e.g., wash margins, under shrubs, etc.) were hand-raked or visually inspected to determine the presence or absence of invertebrates. All micro-habitat sites were returned to their original state after inspection.

Surveys for reptiles were performed by methodically walking the Study Area and visually inspecting micro-habitat sites (e.g., basking sites, rock outcrops, shaded shelters (“pallets”), burrow openings, etc.). Reptile surveys were conducted during daylight hours when temperatures were favorable for reptile activity (i.e., between 75 and 95 degrees F).

Surveys for common birds, terrestrial mammals, and bats were conducted concurrently with other surveys. Biologists identified bird species in the Study Area by sight and sound, recorded all animal observations, visually searched for animal sign (e.g., scat, footprints, fur, burrows, etc.), and documented any potential bat roosts.

4.6 Special-status Wildlife Surveys

4.6.1 Burrowing Owl Surveys

Aspen biologists conducted protocol level surveys within the Study Area according to the 1993 California Burrowing Owl Consortium survey protocols (CBOC, 1993) in April 2010, and according to CDFW 2012 guidelines (CDFG, 2012) in March, 2013 and May 2016. Surveys consisted of 10-meter belt transects throughout all four reaches of the Project.

4.6.2 Coachella Valley Fringe-Toed Lizard Habitat Assessment and Surveys

Habitat for Coachella Valley fringe-toed lizards was assessed throughout the Study Area in June-July 2003, May 2010, and March and April 2013, and May 2016. Surveys consisted of 10-meter belt transects within appropriate habitat.

4.6.3 Desert Tortoise

Based on consultation with CDFW, USFWS, and CVAG (Coachella Valley Association of Governments, for Coachella Valley MSHCP), Aspen determined that protocol surveys for desert tortoise were not required. However, all other surveys in the Study Area were conducted by biologists with desert tortoise experience, and any tortoise sign identified during other surveys was noted.

4.7 Jurisdictional Delineation

Aspen biologists conducted a jurisdictional delineation for the Project in September 2012. The Preliminary Jurisdictional Delineation Report is provided in Attachment E and includes the complete methodology.

Jurisdictional waters were delineated using a routine determination according to the methods outlined in the USACE Wetland Delineation Manual (USACE, 1987) and the Arid West Supplement (USACE, 2008) based on three wetland parameters: dominant hydrophytic vegetation, wetland hydrology, and hydric soils. Jurisdictional non-wetland waters of the United States were delineated based on the limits of the ordinary high water mark (OHWM) as determined by physical and biological features, such as bank erosion, deposited vegetation or debris, and vegetation characteristics. CDFW jurisdiction was delineated to the top of the banks of the channel or to the edge of the adjacent riparian canopy/riparian habitat. The CDFW jurisdictional boundary may be equivalent to the OHWM, but may extend beyond it.

5.0 RESULTS

5.1 Weather Data

Rainfall data cited below are from the Western Regional Climate Center (WRCC, 2015; 2016). Average annual precipitation is 3.29 inches at the Indio Fire Station and 5.53 inches at Palm Springs. Rainfall during 2010 was higher than average for the region. Annual precipitation for the 2009-2010 rainfall year (July 1 through June 30) was 5.06 inches at the Indio Fire Station and 7.2 inches at Palm Springs.

Rainfall during the 2012-2013 and 2015-2016 was very sporadic and well below average in some areas. Precipitation in the 2012-2013 rainfall year was 2.02 inches at the Indio Fire Station and 2.44 inches at Palm Springs. Precipitation for the 2015-2016 rainfall year was 1.66 inches at the Indio Fire Station; current data were not available for the Palm Springs station.

In general, cover and diversity of annual plants will be lower in years of below average rainfall and higher in years of above average rainfall. Observed wildlife abundance and diversity will also tend to follow this pattern, but varies with species and other factors.

5.2 Habitat and Land Use

The Study Area is largely undeveloped, with vegetation typical of the western Colorado Desert. Plant communities include allscale scrub, cheesebush scrub, creosote bush scrub, and other shrub-dominated vegetation communities. Desert dunes are found in some portions. Ruderal (weedy) and non-native vegetation and unvegetated areas occur in several locations, such as roads and roadsides, windrows, and land uses such as disused agriculture (a former jojoba farm), development, and landscaping. Representative photographs of the Study Area are included in Attachment A.

Developed areas are found within and adjacent to the Study Area. Development includes single family homes, golf courses, Xavier High School, the Southern California Edison (SCE) utility corridor, a CVWD water tank (Reservoir 4602), sand and gravel mines, and nurseries. There are paved and dirt roads throughout the general area. The Project site is in an urban-wildland interface, and habitat disturbance in the Study Area is primarily from illegal trash dumping, off-highway vehicle (OHV) use, and varying densities of invasive weed infestation.

The Project is divided into four reaches (Figures 1 and 2). Vegetation and habitat within the Project Area is shown on Figures 4a, 4b, and 4c. The following paragraphs provide overviews of the land use and habitat types for each reach.

Reach 1. Reach 1 begins near the corner of Rio del Sol Road and Vista Chino and terminates about 0.5 miles east of Via Las Palmas. It is parallel to and north of the SCE utility corridor. Chain link fences surround multiple parcels along the reach, and a quarry on the north side of Vista Chino generates regular truck traffic along the road adjacent to the northwest end of Reach 1. Most of Reach 1 is within the MSHCP-designated Thousand Palms Conservation Area, and portions of Reach 1 are on or adjacent to Coachella Valley Ecological Reserve lands.

Vegetation and habitat in this reach includes primarily creosote bush mixed scrub, with inclusions of cheesebush scrub along washes, creosote bush-white bursage scrub at the western and eastern portions of the reach, and ruderal and unvegetated areas (Figure 4a). The westernmost portion of the reach includes the largest amount of ruderal habitat, with smaller ruderal areas near development in the central portion of the reach and adjacent to Reservoir 4602. Unvegetated areas in this reach are generally limited to roadways and rural residential development, which also include some non-native vegetation.

In the western portion of the reach, soils are mostly consolidated sandy and rocky alluvium with very little windblown sand on the surface, primarily along road edges and at the bases of larger shrubs. Several stands of non-native athel (*Tamarix aphylla*) are scattered throughout the area. Illegal trash dumping and debris are prevalent across the western portion of Reach 1, especially in areas mapped as ruderal habitat. Compared to other reaches, this reach has the highest level of habitat disturbance.

Some areas support open creosote bush scrub and creosote-white bursage scrub with windblown sand hummocks at the bases of larger shrubs. Weeds, including mustards, occur at varying densities. A few small north-south ephemeral drainages cross the alignment. The eastern portion of Reach 1 is near a small community, and scattered residences, transmission lines, a nursery, and Reservoir 4602 are located within otherwise open creosote bush mixed scrub.

Reach 2. Reach 2 is the shortest reach, and is immediately north of an existing electrical substation. Vegetation along this reach is open creosote bush-white bursage scrub (Figure 4a) with silty soils and no loose windblown sand. Dirt roads cross the area, including roads used to access the power lines associated with the substation. Reach 2 is within the MSHCP-designated Thousand Palms Conservation Area, and the northwestern end of Reach 2 is near Coachella Valley Ecological Reserve lands.

Reach 3. At the western end of Reach 3, vegetation consists of creosote bush scrub with windblown sand hummocks, transitioning to creosote bush-allscale scrub and allscale scrub over the majority of the alignment. There is a large ruderal component in the southeastern portion of the alignment (Figure 4b). Electrical distribution and subtransmission lines are present. Localized areas of cracked soil indicate depressions that experience brief episodes of ponded water after stormflow. There is no wetland vegetation present in these depressions and they are not vernal pools. Soils are hard-packed in some areas, and the western portion of this reach contains complex topography with several incised channels, some over six feet deep. About half of Reach 3 is within the MSHCP-designated Thousand Palms Conservation Area, the northwestern end of Reach 3 is on or adjacent to Coachella Valley Ecological Reserve lands, and a small portion of Reach 3 is within the CVNWR.

The southeastern half of Reach 3 is within or adjacent to the Coachella Valley National Wildlife Refuge. Soils here vary from loose, windblown sand dunes to compacted areas. Weeds are present, including non-native annual grasses and mustards, and a few scattered tamarisk groves are located north and east of Xavier High School. Evidence of bonfires and illegal dumping were observed at the tamarisk groves near the center of the reach. This area has heavy OHV use. Vegetation is sparse creosote-allscale scrub with large open sandy areas nearly devoid of vegetation. Reach 3 crosses a detention basin on the northern portion of the Xavier High School property. Soils in this area are hard-packed, and there is evidence of periodic vegetation clearing and grading. Sand dunes occur to the north of the property, just outside the Study Area.

Reach 4. The west end of Reach 4 crosses a former jojoba farm near the Interstate 10 freeway. This reach is adjacent to the southern boundary of designated conservation lands but it is not located within the Thousand Palms Conservation Area, Coachella Valley Ecological Reserve lands, or the CVNWR Preserve. Soils are sandy, windblown dunes. North-south windrows of tamarisk are regularly spaced from Reach 4 south to Varner Road, and large sandy berms have formed along the windrows. Open sandy flats occur between the berms, supporting creosote bush scrub in the western end of the reach and ruderal vegetation in the eastern half (Figure 4c). To the north of 38th Avenue, in the Refuge, sand dunes are more extensive and less disturbance is evident than on the south side where Reach 4 would be constructed. Trash is scattered throughout the Reach 4 area, and it is heavily infested with Sahara mustard (*Brassica tournefortii*). However, compared to other reaches, this reach has the lowest level of habitat disturbance. Industrial development is located just south of the eastern end of the reach.

Downstream. The area downstream of the Project site consists of interspersed developed and undeveloped areas. Some of the undeveloped habitat is in isolated patches surrounded by development. Development includes housing tracts, golf courses, and industrial facilities. Interstate-10 is located southwest of the Project site (see Figures 1 and 2). Downstream habitat is similar to that in the adjacent reaches. An area of approximately 178 acres south of Reach 4 would be used for storage of spoils from the Project (see Figure 1).

Downwind. The prevailing winds are from the northwest to the southeast and support aeolian sand habitat in the CVNWR. Downwind areas have similar habitat as the adjacent reaches, with large areas of dune and sandfield habitat, particularly near Reach 4.

Floodway. The levees will direct water into the floodway, a 550-acre area between Reaches 1 and 3. Habitat in the floodway is similar to that in the adjacent reaches.

Sand Transport

Sandfields and dune habitat on the Project Site consist of moving sand, which is replenished from upwind and upslope sources. During heavy rain events, sediment is carried by fluvial transport from the surrounding hills and mountains and deposited in the Coachella Valley. The sediment is then available for aeolian (i.e., wind) transport, which carries it toward the southeast, throughout the valley. Sand that has been subject to aeolian transport is often referred to as blowsand, which is generally very fine sand that creates a loose and unstabilized surface. The combined effect of the fluvial and aeolian transport of sand creates a series of sand formations that form dynamic and continuously altering environments. Many plant and wildlife species in the Coachella Valley are uniquely adapted to this habitat. Figure 5 illustrates the sand transport pattern in the Project vicinity.

Sand dunes increase and decrease over time, depending on the amount of sand being deposited and eroded by the wind. If upwind sources of sand are reduced or eliminated, wind deposition of sand will be insufficient to replace sand lost by wind erosion and dunes and hummocks will become depleted. This results in degradation or loss of suitable habitat for Coachella Valley fringe-toed lizard and other special-status species. Maintenance of blowsand processes is therefore essential to sustaining habitat for these species.

Wildlife Movement and Biological Connectivity

Fragmentation and isolation of natural habitat may cause loss of native species diversity in fragmented habitats. Wildlife movement among habitat areas is important to long-term genetic variation and demography. In the short term, wildlife movement may also be important to individual animals' ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations are especially important for rare, threatened, or endangered species, and wide-ranging species such as large mammals, which exist in low population densities.

In landscapes where native habitats exist as partially isolated patches surrounded by other land uses, planning for wildlife movement generally focuses on local "wildlife corridors" to provide animals with access routes among habitat patches. In largely undeveloped areas, wildlife habitat is available in extensive open space areas throughout the region, but specific land uses or linear barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on sites where animals can cross linear barriers, but generally need not emphasize corridors among habitat areas. At a larger scale, landscape-level biological connectivity relies on substantial linkages among large open space areas.

Movement and dispersal corridors that connect large blocks of habitat are essential to the long-term viability of plant and wildlife populations. At every scale, planning for biological connectivity must consider species or populations that may travel through a corridor or linkage regularly (perhaps seasonally or even

daily), and other species that may "move" through a corridor or linkage over multiple generations, at a population scale rather than as individual animals.

Movement and dispersal corridors that connect large blocks of habitat are essential to the long-term viability of plant and wildlife populations. The California Essential Habitat Connectivity Project (Connectivity Project) was commissioned by the California Department of Transportation (Caltrans) and CDFW to create a statewide assessment of essential habitat connectivity to be used for conservation and infrastructure planning (Spencer et al., 2010).

One goal of the Connectivity Project was to create the Essential Connectivity Map, which depicts large, relatively natural habitat blocks that support native biodiversity (natural landscape blocks) and areas essential for ecological connectivity between them (essential connectivity areas). This map does not reflect the needs of particular species, but is based on overall biological connectivity and ecological integrity (Spencer et al., 2010).

The California Desert Connectivity Project provided a more detailed analysis of local and regional needs for connectivity and developed linkage designs based on the requirements of individual species (Penrod et al., 2012). In addition, biological connectivity was considered in the design of CVMSHCP reserves and conservation areas (CVAG, 2007).

The Project forms part of the south and southwestern boundary of the Thousand Palms Conservation Area. The CVMSHCP designates all of the Thousand Palms Conservation Area as a movement corridor or linkage that maintains biological connectivity with other conservation areas and Joshua Tree National Park (CVAG, 2007). These linkages with the Thousand Palms Conservation Area are located to the north, east, and west. Connectivity is limited to the south and southwest by urban development and by the Interstate 10 (I-10) freeway. The Essential Connectivity Project identifies an essential connectivity area extending from these linkages across the I-10 to the San Jacinto Mountains, to the north of Palm Springs and well north of the Project site (Spencer et al., 2010). The California Desert Connectivity Project identified potential habitat for several special-status plant and animal species in the Project area, all of which are included in Table 6 of this document, but did not identify any specific linkages (Penrod et al., 2012).

5.3 Vegetation

This section includes descriptions of the vegetation types found within the Study Area, the invasive weeds, and the special-status plants occurring or potentially occurring within the Study Area. Surveys resulted in the documentation of 78 species of native and non-native plants within the Study Area. All plant species observed within the Study Area are listed in Attachment B.

5.3.1 Vegetation Types

The alluvial fans, sand fields, and shallow drainages present in the Study Area support a broad assemblage of native xerophytic[2] vegetation and invasive non-native species. Vegetation mapping of the Project Study Area has been completed several times over the last 15 years, to support the 2000 EIR/EIS and for subsequent Project-related efforts. The conditions in the Study Area fluctuate due to anthropogenic (e.g., development, OHV use, trash dumping, etc.) and natural processes (fluvial and aeolian sand transport and associated shifts in vegetation composition). Vegetation maps were updated in 2013 to reflect current vegetation communities. The vegetation types described in this report use the Sawyer et al. (2009) classification. Table 2 provides a comparison of the Sawyer et al. (2009) vegetation classifications and the Holland (1986) vegetation classifications used in the 2000 EIR/EIS and the CVMSHCP.

[2] Xerophytic plants are adapted to dry conditions.

Table 2. Comparison of Vegetation Communities from Standard Vegetation Manuals	
Vegetation Community Classification	
Biological Resources Technical Report Sawyer et al. (2009)	2000 EIR/EIS and CVMSHCP Holland (1986)
Allscale scrub	Allscale scrub and desert saltbush scrub
Cheesebush scrub	Mojave wash scrub, desert wash, and desert dry wash woodland
Creosote bush scrub	Sonoran creosote bush scrub, creosote hummocks
Creosote bush – allscale scrub	Desert saltbush scrub
Creosote bush – white bursage scrub	Sonoran creosote bush scrub and Sonoran mixed woody and succulent scrub, burro-weed scrub
Creosote bush mixed scrub	Sonoran creosote bush scrub and Sonoran mixed woody and succulent scrub, burro-weed scrub
Desert dunes	Active desert dunes and stabilized and partially stabilized desert dunes, sand fields
Other Cover Types	
Non-native vegetation	
Ruderal	
Unvegetated	

Allscale scrub

Allscale scrub is dominated by cattle saltbush (*Atriplex polycarpa*), also referred to as allscale. It tends to grow in nearly monotypic stands with low species diversity. It best matches the description of *Atriplex polycarpa* Shrubland Alliance (allscale scrub) in Sawyer et al. (2009). It also matches descriptions of desert saltbush scrub in Holland (1986) and alkali desert scrub in Rowlands (1988). It is similar to desert saltbush scrub described in the 2000 EIR/EIS. Allscale scrub is only found within Reach 3 where it grows in low, poorly drained areas with sandy or loamy alkali soils, as well as along the margins of sand fields. The soils within the areas mapped as allscale scrub are playa and stabilized sand fields. Allscale scrub is ranked by CDFW as S4 (apparently secure) and is not a sensitive vegetation type (CDFG, 2010).

Cheesebush scrub

Cheesebush scrub is dominated by cheesebush (*Ambrosia salsola*). Other associated plants include smoke tree (*Psorothamnus spinosus*), desert lavender (*Hyptis emoryi*), and catclaw (*Senegalia greggii*), which occur in limited numbers. This vegetation corresponds to *Ambrosia salsola* Shrubland Alliance (cheesebush scrub) in Sawyer et al. (2009), Holland's (1986) description of Mojave wash scrub, and desert wash as described by Laudenslayer (1988). This vegetation is similar to desert wash described in the 2000 EIR/EIS. Cheesebush scrub is found in the sandy washes crossed by Reach 1, which are subjected to scour by intermittent storm flows. Cheesebush scrub is ranked by CDFW as S4 (apparently secure) and is not a sensitive vegetation type (CDFG, 2010).

Creosote bush scrub

Creosote bush scrub is dominated by creosote bush (*Larrea tridentata*), which tends to form nearly monotypic stands. There is a limited number of other shrubs present; some of these include burrobush (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and dyebush (*Psorothamnus emoryi*), as well as seasonal annuals such as birdcage evening primrose (*Oenothera deltoides*) and desert palafox (*Palafoxia arida*). This vegetation best matches the description of *Larrea tridentata* Shrubland Alliance (creosote bush scrub) in Sawyer et al. (2009), Sonoran creosote bush scrub in Holland (1986), and desert scrub in Laudenslayer and Boggs (1988). It is similar to creosote hummocks described in the 2000 EIR/EIS. The western portions of Reaches 3 and 4 are the only portions of the Study Area that support creosote bush scrub. Where creosote bush occurs with other dominant shrub species, the stands are classified as

different vegetation types, described below. The soils within the areas mapped as creosote bush scrub are primarily stabilized sand fields. Creosote bush scrub is ranked by CDFW as S5 (demonstrably secure) and is not a sensitive vegetation type (CDFG, 2010).

Creosote bush – allscale scrub

Creosote bush – allscale scrub is characterized by co-dominant cattle saltbush and creosote bush. It is similar to allscale scrub as described above, with a larger proportion of creosote bush. This vegetation best matches the description of *Larrea tridentata-Atriplex polycarpa* Association of *Larrea tridentata* Shrubland Alliance (creosote bush scrub) in Sawyer et al. (2009), desert saltbush scrub in Holland (1986), and desert scrub in Laudenslayer and Boggs (1988). It is similar to desert saltbush scrub described in the 2000 EIR/EIS. Creosote bush – allscale scrub is only found within Reach 3 of the Study Area. It occurs at the margins of low-lying, poorly drained areas and at the transition from these areas to adjacent stabilized sand fields. The soils within the areas mapped as creosote bush – allscale scrub are composed of playa and stabilized sand fields. Creosote bush-allscale scrub is ranked by CDFW as S5 (demonstrably secure) and is not a sensitive vegetation type (CDFG, 2010).

Creosote bush – white bursage scrub

Creosote bush – white bursage scrub is characterized by co-dominant creosote bush and burrobush, also called white bursage. Other shrubs occur less commonly, including Schott's dalea (*Psorothamnus schottii*) and cheesebush. Creosote bush – white bursage scrub is similar to creosote bush scrub, but burrobush is much more abundant. Some common annuals observed within this vegetation include pincushions (*Chaenactis* spp.), hairy desert sunflower (*Geraea canescens*), and brittle spineflower (*Chorizanthe brevicornu*). It best matches the description of *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance (creosote bush – white bursage scrub) in Sawyer et al. (2009), Sonoran creosote bush scrub in Holland (1986), and desert scrub in Laudenslayer and Boggs (1988). It is similar to burro-weed scrub described in the 2000 EIR/EIS. This vegetation type covers portions of Reach 1 and all of Reach 2. The soils within the areas mapped as creosote bush – white bursage scrub are primarily rocky and sandy bajada. Creosote bush-white bursage scrub is ranked by CDFW as S5 (demonstrably secure) and is not a sensitive vegetation type (CDFG, 2010).

Creosote bush mixed scrub

Creosote bush mixed scrub is characterized by creosote bush co-occurring with Schott's dalea, Wiggin's cholla (*Cylindropuntia echinocarpa*), beavertail cactus (*Opuntia basilaris*), burrobush, and cheesebush. It is the only community in the Study Area with a substantial proportion of cacti and other stem succulents. It is similar to creosote bush scrub, but more varied in composition and usually with a higher plant density. It best matches the description of *Larrea tridentata-Ambrosia dumosa-Psorothamnus schottii* Association of *Larrea tridentata-Ambrosia dumosa* Shrubland Alliance (creosote bush – white bursage scrub) in Sawyer et al. (2009), Sonoran creosote bush scrub and Sonoran mixed woody and succulent scrub in Holland (1986), and desert scrub in Laudenslayer and Boggs (1988). It is similar to burro-weed scrub described in the 2000 EIR/EIS. This vegetation covers the majority of Reach 1. The soils within the areas mapped as creosote bush mixed scrub are primarily rocky and sandy bajada. Creosote bush mixed scrub is ranked by CDFW as S5 (demonstrably secure) and is not a sensitive vegetation type (CDFG, 2010).

Desert dunes

Several portions of the Study Area are covered by active and inactive desert dunes that are largely unvegetated. In years of good rainfall, the dunes have a high cover of native annuals such as desert twinbugs (*Dicoria canescens*), desert sand verbena (*Abronia villosa* var. *villosa*), milk-vetch (*Astragalus* ssp.), hairy desert sunflower, pincushion, and birdcage evening primrose. There are a few cattle saltbush

and burrobush shrubs in the dunes, but many of these are dead or dying because of the shifting sands. This vegetation best matches the description of *Dicoria canescens-Abronia villosa* Sparsely Vegetated Alliance (desert dunes) in Sawyer et al. (2009), active desert dunes and stabilized and partially stabilized desert dunes in Holland (1986), and desert scrub in Laudenslayer and Boggs (1988). It matches the areas mapped as stabilized and partially stabilized sand fields and dunes in the 2000 EIR/EIS. The only desert dunes habitat mapped in the Study Area is in Reach 4. Desert dunes is ranked by CDFW as S2 (endangered) and is a sensitive vegetation type (CDFG, 2010).

Non-native vegetation

Non-native vegetation in the Study Area is largely associated with residential and agricultural areas. There are several private residences with ornamental trees and shrubs in or adjacent to the Study Area in Reaches 1 and 3. At the western end of Reach 4, there is a fallow agricultural field that was previously used as a jojoba farm; most of the jojoba shrubs are now dead. Golf courses between Reaches 3 and 4 and adjacent to the eastern end of Reach 4 are covered in ornamental landscaping. Reaches 3 and 4 also contain several old windrows of tamarisk that were likely planted to catch drifting sand. These windrows match the description of *Tamarix* spp. Semi-natural Shrubland Stands (Tamarisk thickets) in Sawyer et al. (2009). Note that one tamarisk species (*Tamarix aphylla*, called saltcedar or athel) is widely planted as windrows and shade trees throughout the region, but it apparently is not invasive; several other species, especially *T. ramissosima*, are invasive in desert washes and riparian areas, including a few scattered occurrences in the Study Area). Most of these areas best match the description of urban by McBride and Reid (1988). The non-native vegetation found in the Study Area is not ranked by CDFW, with the exception of tamarisk thickets (S4 – apparently secure), and is not a sensitive vegetation type (CDFG, 2010).

Ruderal

Several areas are mapped as ruderal vegetation. Most of these areas have been disturbed or cleared in the past and support little vegetation. However, the density of ruderal vegetation in these areas is strongly linked to annual rainfall. The sparse vegetation present is composed of weedy non-native annuals such as Sahara mustard and Mediterranean grass (*Schismus* sp.). The vegetation in these areas partially matches the description of upland mustards as described by Sawyer et al. (2009). Most of these areas best match the description of urban by McBride and Reid (1988). These areas were not distinguished from the surrounding vegetation types in the 2000 EIR/EIS. Ruderal vegetation was mapped in Reaches 1, 3, and 4. Ruderal vegetation is not ranked by CDFW and is not a sensitive vegetation type (CDFG, 2010).

Unvegetated

The remainder of the Study Area consists of roads, graded areas, and residential and commercial developments that generally do not support vegetation. These areas were mapped as developed in the 2000 EIR/EIS.

Vegetation Impacts

Table 3 provides the vegetation and cover types on the Project site and the estimated acreages of temporary and permanent Project impacts. Adverse effects to vegetation and habitat would occur during project construction and operations and maintenance. These effects may be temporary or permanent. Permanent impacts would preclude most natural vegetation and habitat function throughout the life of the Project, or longer. Examples of permanent impacts are removal of vegetation for levees and channels.

Temporary impacts to vegetation and habitat would occur where vegetation is removed for temporary work areas, without long-term land use conversion, so that vegetation may return to a more natural condition, or may be actively revegetated or enhanced. Temporary impacts include vegetation removal for staging areas.

However, characterization of permanent and temporary impacts must reflect slow vegetation recovery rates in the desert. Natural recovery rates vary according to the vegetation type and the nature and severity of the impact. For example, some vegetation may recover naturally within a few years after crushing by heavy vehicles (Gibson et al., 2004), whereas more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery, and complete ecosystem recovery may require much longer (Lovich and Bainbridge, 1999).

Table 3. Vegetation and Cover Types in Disturbance Areas (acres)

Vegetation type	Reach 1		Reach 2		Reach 3		Reach 4		Cumulative Total	
	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.
Allscale scrub	0.00	0.00	0.00	0.00	17.18	2.22	0.00	0.00	17.18	2.22
Cheesebush scrub	1.21	0.23	0.00	0.00	0.00	0.00	0.00	0.00	1.21	0.23
Creosote bush scrub	0.00	0.00	0.00	0.00	0.83	0.28	69.18	0.48	70.01	0.75
Creosote bush-allscale scrub	0.00	0.00	0.00	0.00	14.96	2.43	0.00	0.00	14.96	2.43
Creosote bush-white bursage scrub	12.24	5.99	4.66	0.97	0.00	0.00	0.00	0.00	16.90	6.96
Creosote bush mixed scrub	18.30	5.33	0.00	0.00	0.00	0.00	0.00	0.00	18.30	5.33
Desert dune	0.00	0.00	0.00	0.00	0.00	0.00	22.00	2.08	22.00	2.08
Non-native vegetation	1.49	0.79	0.00	0.00	1.03	0.25	4.95	0.42	7.47	1.46
Ruderal	4.79	2.45	0.00	0.00	5.39	0.72	17.03	1.50	27.21	4.67
Unvegetated	4.99	3.18	0.00	0.00	1.11	0.29	11.28	6.24	17.39	9.71
Total	43.03	17.98	4.66	0.97	40.51	6.20	124.45	10.72	212.65	35.86

5.3.2 Invasive Weeds

The term “noxious weeds” includes all plants formally designated as such by the Secretary of Agriculture or other responsible State official. These species usually possess one or more of the following characteristics: “aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being non-native or new to or not common to the United States or parts thereof” (USDA, 1995). For purposes of this report, “weeds” includes designated noxious weeds, as well as any other weeds or pest plants identified on weed lists of the California Department of Food and Agriculture or the California Invasive Plant Council.

Noxious and invasive weeds compete with native species for space, nutrients, and water. The spread of non-native invasive plants destroys wildlife habitat and forage, threatens native and special-status plants, and increases soil erosion and groundwater loss. Invasion of Sahara mustard in aeolian sand habitat is of particular concern as it causes dune stabilization and reduction in native annuals and associated plant-eating arthropods. This results in reduced habitat suitability for endemic dune plants and animals, such as Coachella Valley milk-vetch and Coachella Valley fringe-toed lizard (Barrows and Murphy, 2010).

Surveys within the Study Area identified 20 non-native plant species. Several of these are invasive weeds. Table 4 lists the invasive plant species that were identified in the Study Area during surveys.

Table 4. Noxious and Invasive Plant Species Identified in the Study Area

Scientific Name	Common Name	Threat Level*
Brassica tournefortii	Sahara mustard	High
Cynodon dactylon	Bermuda grass	Moderate
Erodium cicutarium	Red-stemmed filaree	Limited
Eucalyptus sp.	Eucalyptus, gum	Limited or none, depending on species
Salsola tragus	Russian thistle	Limited
Schismus arabicus	Mediterranean schismus	Limited
Schismus barbatus	Mediterranean schismus	Limited
Sisymbrium irio	London rocket	Moderate
Tamarix aphylla	Athel	Limited
Tamarix ramosissima	Tamarisk	High

* Source: Cal-IPC, 2015. High - severe ecological impacts, moderate to high rates of dispersal and establishment, widely distributed. Moderate – substantial but generally not severe ecological impacts, moderate to high rates of dispersal but establishment dependent on ecological disturbance, distribution ranges from limited to widespread. Limited – minor ecological impacts, low to moderately invasive, distribution limited but may be locally problematic.

5.3.3 Special-status Plants

Table 5 lists the special-status plant species that are known from the region or may occur in the Study Area. Figure 6 illustrates the locations of special-status plants occurring in or near the Study Area as documented in the CNDDB (CDFW, 2016a). Two special-status plants, Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*) and chaparral sand verbena (*Abronia villosa* var. *aurita*), were observed within the Study Area and are described below. Species having a moderate or high potential to occur are described in Attachment D.

Each of these species was assessed for their potential to occur within the Study Area based on the following criteria:

- Present: Observed within the Study Area during surveys or presence there has been acknowledged by CDFW, USFWS, or local experts.
- High: Documented recent record (within 10 years) in the Study Area or vicinity (within 5 miles) *and* environmental conditions (including soil type) associated with the species are present within the Study Area.
- Moderate: Documented recent record (within 10 years) in the Study Area or vicinity (within 5 miles) *and* environmental conditions associated with the species are marginal or limited within the Study Area, *or* the Study Area is within the known current range of the species and environmental conditions associated with the species are present within the Study Area.
- Low: Historical record (over 10 years old) in the Study Area or general vicinity (within 10 miles) *and* environmental conditions associated with species are marginal or limited within the Study Area.
- Not Likely to Occur: Species or sign not observed in the Study Area, *and* Study Area is outside of the known geographical or elevational range, *and* conditions in the Study Area are unsuitable for occurrence.
- Habitat conditions include soil type, elevation range, vegetation, and other factors relevant to each species. The criteria are general guidelines and a species' potential for occurrence may be modified based on biological analysis of habitat quality, isolation, and other factors. In this context, species refers to a taxonomic entity and can include recognized subspecies, varieties, or other genetically or geographically distinct units.

Table 5. Special-status Plants: Potential for Occurrence in the Study Area

Species	Status	Habitat and Distribution, Flowering Period	Potential for Occurrence
Federal or State Endangered or Threatened Species			
Astragalus lentiginosus var. coachellae Coachella Valley milk-vetch	FE, CVMSHCP, CRPR 1B.2	Annual/perennial herb; desert dunes, Sonoran desert scrub; sandy areas; 40-665 m; Feb – May.	Present. Single individual observed within Reach 4 during 2010 surveys; suitable habitat in Reaches 3 and 4.
Astragalus tricarinatus Triple-ribbed milk-vetch	FE, CVMSHCP, CRPR 1B.2	Perennial herb; Joshua tree woodland, Sonoran desert scrub; sandy or gravelly soils; 450-1190 m; Feb – May.	Not Likely to Occur. Minimally suitable habitat in Reaches 1 and 2; no known populations upstream of these reaches; outside known elevational range.
Dodecahema leptoceras Slender-horned spineflower	FE, SE, CRPR 1B.1	Annual; open, sandy alluvial benches in valleys and canyons; San Fernando Valley, Santa Ana River Valley, western Riverside Co.; about 600-2500 ft. elev. Apr-Jun (local NDDB record apparently erroneous)	Not Likely to Occur. Well outside known geographic range.
Erigeron parishii Parish's daisy	FT, CRPR 1B.1	Low perennial herb; mountain slopes, upper bajadas, washes; carbonate soils; San Bern Mts and Joshua Tree Nat Park; 800-2000 m; May – Aug.	Not Likely to Occur. No suitable habitat; outside known geographic and elevational range.
Locally Sensitive and CRPR Species			
Abronia villosa var. aurita Chaparral sand-verbena	CRPR 1B.1	Annual or perennial herb; sand, about 75-1615 m; San Jacinto Mtns, Inland Empire, adj. Colorado Des, Orange & San Diego cos; mostly alluvial fans and benches in w Riverside Co; dunes in deserts. Jan – Sep.	Present. Several individuals observed within Reach 4 during 2010 surveys.
Acmispon haydonii Pygmy lotus	CRPR 1B.3	Perennial herb; rocky, pinyon and juniper woodland, Sonoran Desert scrub; about 500-1200 m; SE Peninsular ranges, SW Sonoran Desert, Baja California. Jan – Sep.	Not Likely to Occur. Outside known geographic and elevational range.
Allium atrorubens var. cristatum Inyo onion	CRPR 4.3	Perennial herb; sandy or rocky soils in Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; 1200–2560 m; Apr–Jun.	Not Likely to Occur. Outside known geographic and elevational range.
Aloysia wrightii Wright's beebrush	CRPR 4.3	Evergreen shrub; rocky, often carbonate soils in Joshua tree woodland, pinyon juniper woodland; 900–1600 m; Apr–Oct.	Not Likely to Occur. Outside known geographic and elevational range.
Ambrosia monogyra Singlewhorl burrobrush	CRPR 2B.2	Shrub or small tree; desert and inland cismontane flats, washes, alluvial fans; San Bernardino Valley; San Diego Co., east to Texas and mainland Mexico; 10-500 m. Aug – Nov.	Not Likely to Occur. Minimally suitable habitat; known from a single historical location in vicinity; not observed.
Astragalus bernardinus San Bernardino milk-vetch	CRPR 1B.2	Perennial herb; Joshua tree woodland, pinyon juniper woodland, often on granitic or carbonate soils; San Bernardino Mts, desert mts; 900-2300 m. Apr – Jun.	Not Likely to Occur. Outside known geographic and elevational range.
Astragalus lentiginosus var. borreganus Borrego milk-vetch	CRPR 4.3	Annual; desert dunes, Sonoran and Mojavean desert scrub; sandy areas; 30-320 m. Feb – May.	Moderate. Suitable habitat present; not observed.
Astragalus preussii var. laxiflorus Lancaster milk-vetch	CRPR 1B.1	Saltbush scrub on alkaline flats; only known California occurrences near Lancaster, extremely rare; also disjunct in Colorado Riv. Valley (AZ, Nev.); 700 m. Mar – May.	Not Likely to Occur. Outside known geographic and elevational range.

Table 5. Special-status Plants: Potential for Occurrence in the Study Area

Species	Status	Habitat and Distribution, Flowering Period	Potential for Occurrence
Astragalus sabulonum Gravel milk-vetch	CRPR 2B.2	Annual/perennial herb; Mojavean desert scrub, Sonoran desert scrub; desert dunes, sandy areas, sometimes gravelly areas; flats, washes, and roadsides; -60-930 m. Feb – Jun.	Low. Suitable habitat in all four reaches; no recent records from the Project vicinity; not observed.
Atriplex parishii Parish's brittlescale	CRPR 1B.1	Annual; alkali sink, saltbush scrub; western Riverside Co. (extant), Palm Springs and Big Bear Valley areas (historic); Baja Calif.; 25-1900 m. Jun – Oct.	Not Likely to Occur. No suitable habitat.
Ayenia compacta California ayenia	CRPR 2B.3	Perennial herb; rocky canyons and slopes with desert shrubland; W low desert margins, Chuckwalla Valley, and E Mojave; also Baja and Sonora (Mexico); 150-1095 m. Mar–Apr.	Not Likely to Occur. No suitable habitat; not known from the Coachella Valley.
Calochortus palmeri var. munzii San Jacinto mariposa-lily	CRPR 1B.2	Meadows and other vernal wetlands, about 3900-7200 ft. elev.; San Jacinto Mtns, may also be in San Bernardinos. May-Jul. Jun (local NDDB record apparently erroneous).	Not Likely to Occur. No suitable habitat, outside geographic and elevational range.
Caulanthus simulans Payson's jewel-flower	CRPR 4.2	Annual; mountains and foothills, esp. desert-facing slopes; pinyon woodland, shrublands, etc; Riverside and San Diego cos; 90-2200 m. Apr – Jun.	Not Likely to Occur. No suitable habitat; outside known geographic range.
Chorizanthe leptotheca Peninsular spineflower	CRPR 4.2	Annual; alluvial fan, granitic soils in chaparral, coastal scrub, lower montane coniferous forest; 300 – 1900 m; May–Aug.	Not Likely to Occur. No suitable habitat; northeast of known geographic range.
Chorizanthe parryi var. parryi Parry's spineflower	CRPR 1B.1	Annual; shrublands; open sandy places on alluvial slopes; Inland Empire and also coastal LA Co., Banning Pass, Cajon Pass; 275-1220 m. Apr – Jun.	Not Likely to Occur. No suitable habitat; outside known geographic range.
Chorizanthe xanti var. leucotheca White-bracted spineflower	CRPR 1B.2	Annual; sandy soil, desert shrubland, pinyon-juniper woodland; mountains and foothills, Cajon Pass and Banning Pass areas; also reported from Liebre Mtns.; 300-1200 m. Apr – Jun.	Not Likely to Occur. Minimal suitable habitat; east of known geographic range.
Cryptantha costata Ribbed cryptantha	CRPR 4.3	Annual; sandy soils; sand dunes; Sonoran and Mojavean scrub; 60- 500 m. Feb – May.	High. Suitable habitat; observed in Project vicinity.
Cryptantha holoptera Winged cryptantha	CRPR 4.3	Annual; Mojavean desert scrub, Sonoran desert scrub; 100-1690 m; Mar–Apr.	Low. Suitable habitat in all four reaches; no records within 5 miles; not observed.
Cuscuta californica var. apiculata Pointed dodder	CRPR 3	Annual parasitic vine; sandy soils; Sonoran and Mojavean scrub; 0–500 m; Feb–Aug.	Not Likely to Occur. Well outside geographic range.
Ditaxis claryana Glandular ditaxis	CRPR 2B.2	Perennial herb; Mojavean desert scrub, Sonoran desert scrub; sandy soils; 0-465 m. Oct – Mar.	Low. Suitable habitat in all four reaches; no recent records from the Project vicinity; not observed.
Ditaxis serrata var. californica California ditaxis	CRPR 3.2	Perennial herb; washes and canyons, low desert and adjacent mountains; La Quinta E to Desert Center, also Anza Borrego; about 30–1000 m. Mar–Dec.	Low. Marginally suitable habitat; nearest known records roughly 5 miles to the south; not observed.
Eremothera boothii ssp. boothii Booth's evening-primrose	CRPR 2B.3	Annual herb; Joshua tree woodland, pinyon juniper woodland; east of Sierra Nevada to Washington, NW Arizona; 815-2400 m. Apr – Sep.	Not Likely to Occur. No suitable habitat; below known elevational range.

Table 5. Special-status Plants: Potential for Occurrence in the Study Area

Species	Status	Habitat and Distribution, Flowering Period	Potential for Occurrence
Eriastrum harwoodii Harwood's eriastrum	CRPR 1B.2	Annual; desert dunes; 125–915 m; Mar–Jun.	Not Likely to Occur. Well outside geographic range.
Eschscholzia androuxii Joshua Tree poppy	CRPR 4.3	Annual; desert washes, flats, and slopes; sandy, gravelly, or rocky soils in Joshua tree woodland, Mojavean desert scrub; 585–1685 m; Feb–Jun.	Moderate. Suitable habitat present in all four reaches; Project site is just below elevational range; not observed.
Euphorbia (Chamaesyce) abramsiana Abrams' spurge	CRPR 2B.2	Annual herb; Mojavean desert scrub, Sonoran desert scrub; sandy areas; -5-915 m. Sep – Nov.	Moderate. Suitable habitat; not observed.
Euphorbia (Chamaesyce) arizonica Arizona spurge	CRPR 2B.3	Perennial herb; sandy flats; Borrego & Coachella Vals are only Calif. sites; S and E to Texas, mainl. Mexico, central Baja; 50-300 m. Mar – Apr.	Moderate. Suitable habitat; not observed.
Euphorbia misera Cliff spurge	CRPR 2B.2	Low perennial shrub; coastal bluffs (Orange and San Diego cos) and rocky desert slopes (Whitewater area, Riv. Co.); 10-500 m. Dec – Oct.	Not Likely to Occur. No suitable habitat; outside known geographic and elevational range.
Euphorbia (Chamaesyce) platysperma Flat-seeded spurge	CRPR 1B.2	Annual herb; desert dunes, Sonoran desert scrub; sandy areas; 65-100 m. Feb – Sep.	Moderate. Suitable habitat in Reaches 3 & 4; not observed.
Galium angustifolium ssp. gracillimum Slender bedstraw	CRPR 4.2	Perennial herb; granitic, rocky soils in Joshua tree woodland, Sonoran desert scrub; 130 – 1550 m; Apr–Jun.	Low. Suitable habitat in Reaches 1 & 2; not known within 5 miles; not observed.
Heuchera hirsutissima Shaggy-haired alumroot	CRPR 1B.3	Perennial rhizomatous herb; subalpine and upper montane coniferous forest; Peninsular ranges; rocky, granitic soils; 1520-3500 m. May – Jul.	Not Likely to Occur. No suitable habitat; outside known geographic and well below elevational range.
Imperata brevifolia California satintail	CRPR 2B.1	Perennial grass; meadows, riparian scrub, or mesic sites; desert and cismontane S Calif. to Utah and Mexico; 0-1215 m. Sep – May.	Not Likely to Occur. No suitable habitat; outside known geographic range.
Juncus acutus ssp. leopoldii Southwest spiny rush	CRPR 4.2	Perennial rhizomatous herb; meadows, seeps, marshes; mainly coastal S Calif.; 3- 90 m. Mar–Jun.	Not Likely to Occur. No suitable habitat.
Lilium parryi Lemon lily	CRPR 1B.2	Bulb; meadows and streambanks; mtns of S Calif. and SE Arizona; 1220-2745 m. Jul – Aug.	Not Likely to Occur. No suitable habitat; outside known geographic and well below elevational range.
Linanthus jaegeri San Jacinto linanthus	CRPR 1B.2	Perennial herb; subalpine and upper montane coniferous forest; San Jacinto Mts; rocky, granitic soils; 2195-3050 m. Jul – Sep.	Not Likely to Occur. No suitable habitat; outside known geographic and well below elevational range.
Linanthus maculatus Little San Bernardino Mountains linanthus	CVMSHCP, CRPR 1B.2	Annual herb; desert dunes, Joshua tree woodland, Mojavean desert scrub, Sonoran desert scrub; sandy soils; 195-2075 m. Mar – May.	Low. Suitable habitat in all four reaches; just below elevational range; not observed.
Marina orcuttii var. orcuttii California marina	CRPR 1B.3	Perennial herb; chaparral, pinyon juniper woodland, Sonoran desert scrub; rocky soils; e Peninsular Ranges, Baja; 1050-1160 m. May – Oct.	Not Likely to Occur. Minimally suitable habitat; outside of known geographic and elevational range.

Table 5. Special-status Plants: Potential for Occurrence in the Study Area

Species	Status	Habitat and Distribution, Flowering Period	Potential for Occurrence
Matelea parvifolia Spear-leaf matelea	CRPR: 2B.3	Low twining vine; rocky sites in desert shrublands, central and eastern deserts and Anza-Borrego State Park; S Nevada, Texas, and Baja; 440-1095 m. Mar–May.	Not Likely to Occur. Minimally suitable habitat; below elevational range.
Mentzelia tricuspis Spiny-hair blazing star	CRPR 2B.1	Annual herb; sandy, gravelly slopes and washes; Mojavean desert scrub; s Mojave Desert, sw Sonoran Desert, to Utah, Arizona; 150-1280 m. Mar – May.	Not Likely to Occur. Well outside of known geographic range.
Mentzelia tridentata Creamy blazing star	CRPR 1B.3	Annual; rocky, gravelly, sandy soils in Mojavean desert scrub; 700 – 1175 m; Mar–May.	Not Likely to Occur. Outside of elevational range; not known within 30 miles.
Mimulus diffusus Palomar monkeyflower	CRPR 4.3	Annual; sandy or gravelly soils in chaparral, lower montane coniferous forest; 1220 – 1830 m; Apr–Jun.	Not Likely to Occur. No suitable habitat; outside of geographic and elevational range.
Monardella robisonii Robison's monardella	CRPR 1B.3	Subshrub or perennial herb; desert shrubland and pinyon-juniper woodland; Little San Bernardino Mtns and (possibly) Baja; 610-1500 m. Feb – Oct	Not Likely to Occur. South of known geographic and below elevational range.
Nemacaulis denudata var. gracilis Slender cottonheads	CRPR 2B.2	Annual herb; coastal dunes, desert dunes, Sonoran desert scrub; -50-400 m. Apr – May.	Moderate. Suitable habitat in Reach 4; not observed.
Nemacladus gracilis Slender nemacladus	CRPR 4.3	Annual; sandy or gravelly soils in cismontane woodland, valley and foothill grassland; 120 – 1900 m; Mar–May.	Not Likely to Occur. No suitable habitat; known from more than 20 miles from the Project site.
Penstemon clevelandii var. connatus San Jacinto beardtongue	CRPR 4.3	Perennial herb; rocky soils in chaparral, pinyon juniper woodland, Sonoran desert scrub; 400 – 1500 m; Mar–May.	Not Likely to Occur. Outside of the known geographic and elevational range.
Pseudorontium cyathiferum Deep Canyon snapdragon	CRPR 2B.3	Annual herb; washes & rocky places, desert shrublands; only Calif. records from Deep Cyn area (Santa Rosa Mtns.); ranges to Ariz., Baja, mainl, Mexico; 0-800 m. Feb – Apr.	Not Likely to Occur. Minimally suitable habitat; known from single location 10 miles southeast of Project site.
Saltugilia latimeri Latimer's woodland-gilia	CRPR 1B.2	Annual; chaparral and desert shrublands, arid mountains and foothills; desert margins, Riv. Co to Inyo Co; 400-1900 m. Mar – Jun.	Not Likely to Occur. Minimally suitable habitat; outside known geographic range.
Selaginella eremophila Desert spike-moss	CRPR: 2B.2	Perennial herb; mountainous or hillside rock outcrops and crevices; lower desert-facing slopes of San Jacintos and adjacent desert, to Texas and Baja; 200-900 m.	Not Likely to Occur. No suitable habitat.
Senna covesii Cove's cassia	CRPR: 2B.2	Low, mostly herbaceous perennial; desert washes; Colorado Desert to Nevada, Arizona and Baja;305-1070 m. Apr–Jun.	Not Likely to Occur. Minimally suitable habitat; 12 miles north of nearest known occurrence; just below elevational range.
Stemodia durantifolia Purple stemodia	CRPR 2B.1	Perennial herb; moist canyons; desert slopes of San Jacinto Mtns, San Diego area, Arizona, tropical Mexico; 180-300 m. Jan – Dec.	Not Likely to Occur. No suitable habitat.

Table 5. Special-status Plants: Potential for Occurrence in the Study Area			
Species	Status	Habitat and Distribution, Flowering Period	Potential for Occurrence
Streptanthus campestris Southern jewel-flower	CRPR 1B.3	Perennial herb; chaparral, pinyon juniper woodland, lower montane coniferous forest; rocky soils; Transverse and Peninsular Ranges, N Baja; 900-2300 m. Apr – Jul.	Not Likely to Occur. No suitable habitat; outside known geographic and below elevational range.
Thelypteris puberula var. sonorensis Sonoran maiden fern	CRPR 2B.2	Perennial herb; seeps and streambanks, gen. below about 2000 ft. elev.; coastal foothills of the Santa Monica, San Gabriel, San Bernardino Mtns, desert foothills of San Jacinto Mtns; to Arizona and Baja. Jan-Sep.	Not Likely to Occur. No suitable habitat.
Thysanocarpus rigidus Rigid fringepod	CRPR 1B.2	Annual; dry rocky slopes in pinyon juniper woodland; 600 – 2200 m; Feb–May.	Not Likely to Occur. No suitable habitat; well outside the geographic and elevational range.
Xylorhiza cognata Mecca-aster	CVMSHCP, CRPR 1B.2	Herbaceous perennial; desert shrublands, arid canyons; locally endemic around Indio Hills and Mecca Hills, Riv Co; 20-400 m. Jan – Jun.	Low. Minimal suitable habitat; just west of geographic range. Records from hills 3.5 miles NE. Not likely to occur on the valley floor or bajada, low potential for waifs to wash down from the hills.

Conservation Status

Federal Designations:

FE: Federally listed, endangered.
FT: Federally listed, threatened.

***State Designations*:**

SE: State listed, endangered.
ST: State listed, threatened.

Coachella Valley Multi Species Habitat Conservation Plan (CVMSHCP) Covered Species:

Species for which take authorization is provided through the permits issued in conjunction with the CVMSHCP implementing agreement.

California Rare Plant Rank (CRPR) designations:

1A: Plants presumed extinct in California.
1B: Plants rare and endangered in California and throughout their range.
2A: Plants presumed extirpated in California but occur elsewhere in their range.
2B: Plants rare, threatened, or endangered in California but more common elsewhere in their range.
3: Plants about which we need more information; a review list.
4: Plants of limited distribution; a watch list.

California Rare Plant Rank threat designations:

0.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2 Fairly endangered in California (20-80% occurrences threatened)
0.3 Not very endangered in California (<20% of occurrences threatened or no current threats known)

5.3.4 Special-status Plants – Species Accounts

Federal and State-listed Plant Species

One federally listed endangered plant, Coachella Valley milk-vetch, was observed within the Study Area and is described below. No other listed plant species have the potential to be found in the Study Area. Other listed threatened or endangered plant species of the region (e.g., triple-ribbed milk-vetch, Parish's daisy, and Mojave tarplant) are found either in habitats that are not present on the Study Area, in geographic areas that are north or west of the Study Area, or in higher elevations than are present in the Study Area.

Coachella Valley milk-vetch

Status: Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*) is federally endangered, has a CRPR 1B.2, and is covered under the CVMSHCP.

General Distribution: Colorado Desert within the Coachella Valley.

Distribution in the Study Area: During 2010 surveys, a single individual was observed within Reach 4 of the Study Area, on the north side of Avenue 38. It was not found at this location in 2013 or 2016, but this may have been due to poor rainfall. Reaches 3 and 4 provide suitable habitat for this species, generally in areas mapped as high or moderate suitability for Coachella Valley fringe-toed lizard (see Figures 3.6-10 and 3.6-11).

Portions of the Study Area are within designated critical habitat for Coachella Valley milk-vetch (see Figure 3.6-3), although these areas are not expected to support the plants themselves. Sand in the Thousand Palms area originates in alluvial deposits at the base of the Indio Hills, including lands along Reach 1 of the Project. Large flooding events, if not interrupted by intervening land uses, can carry the sand into fluvial deposition areas where the sand can be moved and sorted by wind. The designated critical habitat area along Reach 1 of the Project site consists of accumulated alluvial sand deposits which may be transported downstream or downwind to occupied Coachella Valley milk-vetch habitat, where it would replenish the windblown sand habitat (USFWS, 2013). Based on CNDDB records (see Figure 6), the Critical Habitat designation (USFWS, 2013), and field surveys conducted for the Project, this portion of the designated critical habitat is not occupied by Coachella Valley milk-vetch.

Habitat and Habitat Associations: This species grows primarily on loose aeolian or fluvial sands, on dunes or flats, and along disturbed margins of sandy washes.

Natural History: The Coachella valley milk-vetch is an annual or short-lived perennial herb. Depending on weather, plants may persist through the summer dry season to the following growing season. It may flower as early as February or as late as May (Wojciechowski and Spellenberg, 2012), depending on rainfall and temperature. During drought years, its seed may not germinate and established perennial plants may not survive. Occupied habitat is re-established from dormant seed during subsequent years of greater rainfall. It reportedly requires at least one winter storm producing an inch or more of rain to sprout (L. LaPre, USDI Bureau of Land Management, personal communication).

Threats: Vehicles and development (CNPS, 2016).

Other Special-status Plant Species

In addition to the FESA and CESA, several public agencies and private entities maintain lists of plants and animals of conservation concern. CDFW and CNPS jointly manage the effort to compile and rank these species and CDFW lists the rankings as CRPR 1A, 1B, 2A, 2B, 3, or 4 in its compendium of "Special Plants" (CDFW, 2015d). CRPR 1A species are presumed extirpated or extinct; CRPR 1B, 2A, 2B, 3, and 4, as well as species covered by the CVMSHCP are treated here as "special-status species." See the footnote to Table 5 for an explanation of the rankings. One of these species, chaparral sand-verbena was recorded within Reach 4 and is described below. Seven of these species have a moderate or high potential for occurrence in the Study Area and are described in Attachment D. Seven of the special-status plants known from the region have a low potential for occurrence in the Study Area, and 36 are not likely to occur. These species are not addressed further in this report; see Table 5.

Chaparral sand-verbena

Status: Chaparral sand-verbena *(Abronia villosa* var. *aurita)* has a CRPR of 1B.1. It is not covered by the CVMSHCP.

General Distribution: Its distribution and identification are unclear in published reference works, including Murdock (2012), CNPS (2016), and CNDDB (CDFW, 2016). The conservation concern is primarily for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert where the variety is rare (Roberts et al. 2004).

Distribution in the Study Area: This species was observed along Reach 4. Several plants were observed growing within the Study Area during surveys done in 2009 and 2010. The plants were not found at this location in 2013 or 2016, but this may be due to poor rainfall.

Habitat and Habitat Associations: Chaparral sand verbena's geographic distribution includes the western Sonoran Desert, the San Jacinto Mountains, and the coastal sides of southern California mountains (Murdock, 2012; CNPS, 2016; Roberts et al., 2004). In the desert, it is found in desert shrublands on dunes, sandfields, and sandy washes. In the San Jacinto Mountains, it is common in the Garner Valley area, in yellow pine forest and sagebrush shrublands on sandy alluvial soils. In western Riverside County, it is limited to a few alluvial river washes, including the San Jacinto River wash near Hemet and sandy flats near Murrieta Creek, usually in chaparral, live oak woodlands, or alluvial shrublands.

Natural History: Chaparral sand-verbena is an annual or perennial herb, closely related to the common desert sand-verbena (*A. villosa* var. *villosa)*. In the mountains and western Riverside County, it is perennial, spreading widely across the ground, and dying back to the rootstock during summer. In the desert it may be a facultative annual, flowering and setting seed during its first year, and, depending on weather, persisting through the summer dry season to the following growing season.

Threats: In western Riverside County, flood control projects and land use conversion to agriculture and development have eliminated much of the former alluvial plain and riverwash habitat, and remaining occurrences may be at risk from further development. In the mountains and deserts, it is more widespread and much of its habitat is on public or preserve land. In some cases, the desert and mountain occurrences may be at risk from local land use changes, but overall desert and mountain populations do not appear to be threatened.

5.4 Wildlife

Wildlife surveys covered all proposed temporary and permanent disturbance areas within the Study Area. Surveys consisted of walking evenly spaced transects throughout all proposed impact areas with particular attention given to areas of suitable habitat for special-status animals (i.e. desert dunes and sandy washes). All wildlife species observed or detected during the surveys are listed in Attachment C.

5.4.1 Common Wildlife Species

The distribution of wildlife in the Study Area varies depending on location, vegetation community, and disturbance level. There is no aquatic habitat in the Study Area and no fish or amphibians were observed or are expected to occur.

Invertebrates

Habitat in the Study Area provides a suite of microhabitat conditions for terrestrial and other invertebrates. Some of the orders identified in the Study Area include Hemiptera (true bugs), Coleoptera (beetles), and Diptera (flies), but common invertebrates were not identified to species. Although not detected during surveys several species of air breathing land snails including shoulderband snails are known from desert regions of San Bernardino and Riverside counties. Southern California shoulderband snail (*Helminthoglypta tudiculata*) is known from the region and the Coachella Valley Jerusalem cricket (*Stenopelmatus cahuilaensis*) may be present on the Project alignment.

Reptiles

Common reptiles observed in the Study Area in both disturbed and natural areas include desert iguana (*Dipsosaurus dorsalis*), zebra-tailed lizard (*Callisaurus draconoides*), western whiptail (*Aspidoscelis tigris tigris*), sidewinder (*Crotalus* cerastes), desert spiny lizard (*Sceloporus magister uniformis*), and side-blotched lizard (*Uta stansburiana*).

Although not observed, several other common reptiles are likely to occur in the Study Area. Most reptile species, even if present in an area, are difficult to detect because they are cryptic and their life history characteristics (i.e., foraging and thermoregulatory behavior) limit biologists' ability to observe them during most surveys. Further, many species are active only within relatively narrow thermal limits, avoiding both cold and hot conditions, and most take refuge in microhabitats that are not directly visible to the casual observer, such as rodent burrows, in crevices, under rocks and boards, and in dense vegetation where they are protected from unsuitable environmental conditions and predators. In some cases they are only observed when flushed from their refugia.

Birds

Common bird species detected within or in the immediate vicinity of the Study Area include verdin (*Auriparus flaviceps*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx californianus*), great horned owl (*Bubo virginianus*), turkey vulture (*Cathartes aura*), Say's phoebe (*Sayornis saya*), northern rough-winged swallow (*Stelgidopteryx serripennis*), house finch (*Haemorhous mexicanus*), Costa's hummingbird (*Calypte costae*), American kestrel (*Falco sparverius*), lesser nighthawk (*Chordeiles acutepennis*), killdeer (*Charadrius vociferous*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), Cassin's kingbirds (*Tyrannus vociferans*), western kingbird (*Tyrannus verticalis*), northern mockingbird (*Mimus polyglottos*), cactus wren (*Campylorhynchus brunneicapillus*), cliff swallow (*Petrochelidon pyrrhonota*), house sparrow (*Passer domesticus*), and Gambel's quail (*Callipepla gambelii*).

Nesting red-tailed hawks (*Buteo jamaicensis*) and verdins were observed during surveys. Many other bird species may use the site either as wintering or seasonal breeding habitat; migrants may use the site as temporary resting or foraging habitat.

Mammals

The distribution of mammals in the Study Area is associated with the presence of such factors as access to perennial water, topographical and structural components (i.e., rock piles, and vegetation) that provide cover and support prey base, and the presence of suitable soils for burrowing mammals. Common mammals or their sign observed during surveys include white-tailed antelope squirrel (*Ammospermophilus leucurus*), black-tailed jackrabbit (*Lepus californicus deserticola*), desert cottontail (*Sylvilagus audubonii*), and coyote (*Canis latrans*).

5.4.2 Special-status Wildlife Species

Figure 7 illustrates the locations of special-status wildlife occurring within or near the Study Area as documented in the CNDDB (CDFW, 2016). Six special-status wildlife species were detected within the Study Area during focused and general surveys, and are described in Section 5.4.3. These species are Coachella Valley fringe-toed lizard (*Uma inornata*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), Bendire's thrasher (*Toxostoma bendirei*), Colorado Valley woodrat (*Neotoma albigula venusta*), and Palm Springs round-tailed ground squirrel (*Xerospermophilus tereticaudus chlorus*).

The specific habitat requirements and the locations of known occurrences of special-status wildlife species were the principal criteria used for inclusion in the list of species potentially occurring within

the Study Area. There are 41 special-status wildlife species documented within the general region of the Study Area; see Table 6.

Two species of particular interest in this area are desert tortoise (*Gopherus agassizii*) and flat-tailed horned lizard (*Phrynosoma mcallii*). Neither species was observed during surveys. However, unoccupied potential desert tortoise burrows were found in the Study Area, and the flat-tailed horned lizard is found in the Thousand Palms Conservation Area adjacent to Reaches 2, 3, and 4 (CVCC, 2013). Desert tortoise is only rarely observed in the Project vicinity. It has a moderate potential for occurrence in the Study Area although only rarely and in very low numbers. The flat-tailed horned lizard has a high potential for occurrence. These species are described in Section 5.4.3. Other special-status wildlife species having a moderate or high potential to occur in the Study Area are described in Attachment D.

Each of these species was assessed for potential to occur within the Study Area based on the following criteria:

- Present: Species (or sign) was observed in the Study Area during recent surveys, or a population has been acknowledged by U.S. Forest Service, CDFW, USFWS, or local experts.
- High: Habitat (including soils) for the species occurs on site and a known occurrence occurs within the Study Area or adjacent areas (within 5 miles of the site) within the past 20 years; however, these species were not detected during recent surveys.
- Moderate: Habitat (including soils) for the species occurs on site and a known regional record occurs within the database search, but not within 5 miles of the site or within the past 20 years; or, a known occurrence occurs within 5 miles of the site and within the past 20 years and marginal or limited amounts of habitat occurs on site; or, the species' range includes the geographic area and suitable habitat exists.
- Low: Limited habitat for the species occurs on site and no known occurrences were found within the database search and the species' range includes the geographic area.
- Not Likely to Occur: Species or sign not observed on the site, outside of the species' known range, and conditions are not suitable for occurrence.
- Habitat conditions include soil type, elevation range, vegetation, and other factors relevant to each species. The criteria are general guidelines and a species' potential for occurrence may be modified based on biological analysis of habitat quality, isolation, and other factors. In this context, species refers to a taxonomic entity and can include recognized subspecies, population segments, or other genetically or geographically distinct units.

Table 6. Special-Status Wildlife: Potential for Occurrence in the Study Area

Species	Status	Habitat and Distribution	Potential for Occurrence
Federal or State Endangered or Threatened or Candidate Species			
Invertebrates			
Dinocoma caseyi Casey's June beetle	FE	Found only in two small populations in southern Palm Springs; sandy soils	Not Likely to Occur. Outside of known geographic range.
Fish			
Cyprinodon macularius Desert pupfish	FE, SE, CVMSHCP	San Felipe Ck and Salt Ck (Imperial Co.); also several refugia populations and in irrigation canals near Salton Sea; a few locns in Arizona and Mexico	Not Likely to Occur. No suitable aquatic habitat.

Table 6. Special-Status Wildlife: Potential for Occurrence in the Study Area

Species	Status	Habitat and Distribution	Potential for Occurrence
		Amphibians	
Rana draytonii California red-legged frog	FT, SSC	Ponds or pools in foothill and valley streams below about 4000 ft. elev.; Coast Ranges and W Sierra Nevada to N Baja; nearly extinct S of Ventura Co (extant at Santa Rosa Plateau).	Not Likely to Occur. No suitable aquatic habitat; outside of known geographic range.
Rana muscosa Southern mountain (Sierra Madre) yellow-legged frog	FE, SE, SSC	Perennial mountain streams above about 3000 ft. elev.; closely associated with streams; diurnal; endemic to mtns of S Calif.; extinct in much of range.	Not Likely to Occur. No suitable aquatic habitat; outside of known geographic range.
		Reptiles	
Gopherus agassizii Desert tortoise	FT, ST, CVMSHCP	Desert scrub, desert wash, Joshua tree habitats; prefers creosote bush scrub habitat; requires friable soils for burrow and nest construction.	Moderate. Suitable habitat for very low-density population present in all reaches; known from just east of the Study Area. Unoccupied potential burrows observed in Study Area.
Phrynosoma mcallii Flat-tailed horned lizard	SCan, SSC, CVMSHCP	Restricted to desert washes and desert flats in central Riverside, eastern San Diego, and Imperial Counties; prefers fine sands for burial; requires adequate vegetative cover.	High. Suitable dune habitat; species known from the Coachella Valley Preserve, immediately adjacent to Reaches 3 and 4.
Uma inornata Coachella Valley fringe-toed lizard	FT, SE, CVMSHCP	Limited to sandy areas in the Coachella Valley; requires fine, loose, windblown sand interspersed with hardpan and widely spaced desert shrubs for burrowing.	Present. Observed in Reaches 3 & 4 during 2010 and in Reach 4 during 2015, also observed in 1997 and 2003; suitable habitat in Reaches 3 and 4.
		Birds	
Empidonax traillii extimus Southwestern willow flycatcher	FE, SE, CVMSHCP	Breeds in dense riparian habitats, esp. in willows; scattered locations in Calif. and Baja; near sea level to about 8000 ft. elev; winters in Cent. Amer.	Not Likely to Occur. No suitable riparian habitat.
Polioptila californica californica Coastal California gnatcatcher	FT, SSC	Coastal sage scrub; SW Calif. (Moorpark area, Palos Verdes Penins., Orange, Riverside, San Bern., & San Diego Cos.) and N Baja Calif.; not migratory. Local NNB report apparently a vagrant.	Not Likely to Occur. No suitable habitat, outside known geographic range.
Vireo bellii pusillus Least Bell's vireo	FE, SE, CVMSHCP	Riparian woodland and shrubland; breeds in S Calif. and N Baja, sea level to 1500-2000 ft. elev (one report at 2800 ft.); winters in Baja; endangered by habitat loss and cowbird parasitism.	Not Likely to Occur. No suitable riparian habitat.
		Mammals	
Corynorhinus townsendii Townsend's big-eared bat	SCan, SSC	Roosts in caves, mines, structures, hollow trees; all but alpine and subalpine habitats; most abundant in mesic habitats.	Low. Low potential to forage on site; not likely to roost on site (no potential roosting habitat).
Ovis canadensis nelsoni DPS Peninsular bighorn sheep	FE, ST, FP, CVMSHCP	Desert shrublands to conifer forest, gen. remote mountains; scattered populations in Peninsular Ranges, Riverside Co. to N Baja Calif.	Not Likely to Occur. The DPS is not known to travel north of the Banning Pass, only protected to the south of the Study Area.

Table 6. Special-Status Wildlife: Potential for Occurrence in the Study Area

Species	Status	Habitat and Distribution	Potential for Occurrence
Non-listed Special-status Species			
Invertebrates			
Bombus crotchii Crotch bumble bee	SA	Colonial insect; open grassland and scrub; underground colonies, often in old rodent burrows. Food plants include *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia, Salvia, Antirrhinum, Clarkia, Dendromecon, Eschscholzia, Eriogonum*. Southern and central CA, parts of N CA, SW Nevada and Baja.	Low. Suitable habitat probably lacking, margin of geographic range; single historic record from the Palm Springs area dates to 1958.
Calileptoneta oasa Andreas Canyon leptonetid spider	SA	Mojavean desert scrub, known only from the type locality, Andreas Canyon, Palm Springs, Riverside County.	Not Likely to Occur. Outside of known geographic range.
Macrobaenetes valgum Coachella Valley giant sand-treader cricket	SA, CVMSHCP	Sand dune ridges in the vicinity of Coachella Valley.	Moderate. Suitable dune habitat in Reaches 3 and 4; historically known from Project vicinity. The Coachella Valley Preserve adjacent to most of the Study Area is mapped as habitat in the CVMSHCP.
Oliarces clara Cheeseweed owlfly (cheeseweed moth lacewing)	SA	Generally associated with creosote bush; steep, shaded canyons in deserts with intermittent streams.	Not Likely to Occur. No suitable habitat.
Stenopelmatus cahuilaensis Coachella Valley Jerusalem cricket	SA, CVMSHCP	Inhabits small segment of the sand and dune areas of the Coachella Valley, in the vicinity of Palm Springs and Cathedral Canyon.	Moderate. Suitable dune habitat in Reaches 3 and 4; historic records from south of the Study Area.
Reptiles			
Crotalus ruber Red-diamond rattlesnake	SSC	Chaparral, woodland, grassland, desert areas; prefers rocky areas with dense vegetation; Coastal CA east to Whitewater Canyon.	Not Likely to Occur. Outside of known geographic range.
Phrynosoma blainvillii Coast horned lizard	SSC	Lowlands along sandy washes with scattered low bushes; Coastal CA east to Whitewater Canyon.	Not Likely to Occur. Outside of known geographic range.
Birds			
Aimophila ruficeps canescens Southern California rufous-crowned sparrow	WL	Coastal sage scrub, open chaparral; S Calif. and NW Baja Calif.; not migratory.	Not Likely to Occur. No suitable sage scrub or chaparral habitats.
Aquila chrysaetos Golden eagle	BGEPA, FP, WL	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds throughout W N America, winters to E coast.	Moderate. Suitable foraging habitat only, no suitable nesting habitat.
Athene cunicularia Burrowing owl	SSC, CVMSHCP	Nests in rodent burrows in open, dry annual or perennial grassland, desert, scrubland; low-growing vegetation.	Present. Observed during 2010 and 2013 surveys; no breeding activities or active burrows detected.
Buteo regalis Ferruginous hawk	WL	Forages over grassland and shrubland; winters in W and SW N Amer, breeds in Great Basin and N plains.	Low. Wintering and migration only, suitable foraging habitat present, does not nest in region.

Table 6. Special-Status Wildlife: Potential for Occurrence in the Study Area			
Species	Status	Habitat and Distribution	Potential for Occurrence
Cypseloides niger Black swift	SSC	Breeds on cliffs, often at waterfalls.	Not Likely to Occur. No suitable cliff habitat.
Falco mexicanus Prairie falcon	WL	Inhabits dry, open terrain; nests on high cliffs; forages in a variety of open habitats.	High. Suitable foraging habitat in all reaches; known from several records in Project vicinity.
Lanius ludovicianus Loggerhead shrike	SSC	Pinyon-juniper, Joshua tree, riparian woodland, desert oases, scrub, and washes; prefers open areas with scattered perch sites and fairly dense shrubs and brush for nesting.	Present. Observed in the Study Area during several surveys; suitable habitat in all reaches.
Polioptila melanura Black-tailed gnatcatcher	SA	Desert shrublands, gen. nests in shrub thickets along washes; occas. in open scrub (esp. in winter).	High. Suitable habitat in all reaches; known from the immediate Project vicinity.
Pyrocephalus rubinus Vermilion flycatcher	SSC	Inhabits desert riparian adjacent to irrigated fields, irrigation ditches, pastures during nesting; nests in cottonwood, willow, mesquite, and other large desert riparian trees.	Moderate. No suitable nesting habitat in Study Area, may utilize the adjacent golf courses.
Toxostoma bendirei Bendire's thrasher	SSC	Local spring and summer resident; breeds in flat areas of desert succulent shrub and Joshua tree habitats in Mojave Desert area.	Present. Detected in the Study Area during 2013.
Toxostoma crissale Crissal thrasher	SSC, CVMSHCP	Desert riparian and desert wash habitats in southeastern deserts; nests in dense vegetation along streams and washes.	Low. Study Area supports marginal habitat; lacks dense thickets required for nesting; known from roughly 5 miles to the southeast.
Toxostoma lecontei Le Conte's thrasher	SSC (San Joaquin population only), CVMSHCP	Desert resident; primarily open desert wash, desert scrub, alkali desert scrub, desert succulent scrub; nests in dense, spiny shrubs or densely branched cacti.	High. Suitable habitat throughout, known from the Project vicinity. Nearest record is 0.8 miles west of Reach 1.
Mammals			
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	SSC	Desert scrub, desert succulent scrub, pinyon and juniper woodland; prefers sandy, herbaceous areas, usually in association with boulders, rocks or coarse gravel.	Low. Marginally suitable habitat in Reaches 1 and 2. Known primarily from desert canyons in surrounding mountains.
Dipodomys merriami collinus Earthquake Merriam's kangaroo rat	SA	Interior mtns and valleys near W desert margin (Aguanga, San Felipe Val, etc.), sage scrub, chaparral, and grassland vegetation in adjacent upland areas, sandy-loam soils.	High. Suitable habitat present; known from immediate vicinity of Reach 4.
Eumops perotis californicus Western mastiff bat	SSC	Lowlands (with rare exceptions); central and S Calif, S Arizona, NM, SW Texas, N Mexico; roost in deep rock crevices, forage over wide area.	High. Likely to forage on site; low potential for roosting (minimal potential roosting habitat).
Lasiurus xanthinus Western yellow bat	SSC	Valley foothill riparian forest, desert riparian, desert wash, palm oasis; roosts in trees, particularly palms; forages over water and among trees.	High. Likely to forage on site; low potential for roosting (minimal potential roosting habitat).
Neotoma albigula venusta Colorado Valley woodrat	SA	Desert shrublands; SE Calif., SW Ariz., adj. Mexico, and southernmost Nevada; closely associated with beavertail or mesquite thickets.	Present. Sign of this species was detected on the Project.

Table 6. Special-Status Wildlife: Potential for Occurrence in the Study Area

Species	Status	Habitat and Distribution	Potential for Occurrence
Nyctinomops femerosaccus Pocketed free-tailed bat	SSC	Pine/juniper woodland, desert scrub, palm oasis, desert wash, desert riparian; roost in rocky areas with high cliffs.	High. Likely to forage on site; no potential for roosting.
Nyctinomops macrotis (Tadarida molossa) Big free-tailed bat	SSC	Roosts in crevices of rocky cliffs, scattered localities in W N America through Central America; ranges widely from roost sites; often forages over water.	High. Likely to forage on site; no potential for roosting.
Ovis canadensis nelsoni Nelson's bighorn sheep	FP	Open shrublands and conifer forest, remote mountains; scattered populations in desert mountains and surrounding ranges, incl. Transverse and Peninsular ranges.	Low. Suitable foraging habitat; known from the Indio Hills to the northeast of the Study Area.
Perognathus longimembris bangsi Palm Springs pocket mouse	SSC, CVMSHCP	Desert riparian, desert scrub, desert wash, sagebrush; most common in creosote-dominated desert scrub.	High. Suitable habitat in all reaches; not observed; recorded in immediate Project vicinity. Areas of the Coachella valley Preserve adjacent to and near the Project are mapped as habitat in the CVMSHCP.
Taxidea taxus American badger	SSC	Most abundant in drier, open stages of shrub, forest, and herbaceous habitats; requires friable soils and open uncultivated ground for burrowing.	High. Suitable habitat in all reaches; no sign observed.
Vulpes macrotis arsipus Desert kit fox	PFM	Arid areas with grasslands, agricultural lands, or scrub areas with scattered shrubby vegetation. Requires open, level areas with loose-textured, sandy loamy soils for digging dens. Arid portions of the southwestern United States and northern and central Mexico.	High. Suitable vegetation in all reaches, but friable soil is limited to Reaches 1 through 3; no sign observed.
Xerospermophilus tereticaudus chlorus Palm Springs (=Coachella Valley) round-tailed ground squirrel	SSC, CVMSHCP	Restricted to Coachella Valley; desert succulent scrub, desert wash, desert scrub, alkali scrub, and levees; prefers open, flat, grassy areas in fine-textured, sandy soils.	Present. Observed during 2010 survey at Edom Hill and during 2013 survey in Reach 1; primarily associated with scattered braided channels throughout area.

Conservation Status

Federal (Fed.) Designations:

FE: Federally listed, endangered.
FT: Federally listed, threatened.
BGEPA: Bald and Golden Eagle Protection Act

***State (Calif.) Designations*:**

SE: State listed, endangered.
ST: State listed, threatened.
SCan: State candidate for listing
SSC: State species of special concern
FP: Fully Protected Species
PFM: Protected fur-bearing mammal.

Coachella Valley Multi Species Habitat Conservation Plan (CVMSHCP) Covered Species.

Species for which take authorization is provided through the permits issued in conjunction with the CVMSHCP implementing agreement.

5.4.3 Special-status Wildlife – Species Accounts

Federal and State-listed Wildlife Species

One federally listed threatened and state-listed endangered wildlife species, Coachella Valley fringe-toed lizard, was observed within the Study Area, and is described below. Desert tortoise and flat-tailed horned lizard were not observed during surveys, but are of particular interest in this area, and are described below. Seven of the listed wildlife species known from the region are not likely to occur in the Study Area, and one has a low potential for occurrence. These species are not addressed further in this report; see Table 6.

Coachella Valley fringe-toed lizard

Status: The Coachella Valley fringe-toed lizard (*Uma inornata*; CVFTL) is a federally listed threatened species and a state-listed endangered species. It is also covered under the CVMSHCP. Unless otherwise indicated, information on CVFTL biology and population status presented below is summarized from USFWS (2010a).

General Distribution: CVFTL is found only in the Coachella Valley in blowsand habitat and in sandy inter-dune areas of aeolian sand hummock habitat. It is highly adapted to "swim" through sand, and will burrow into loose sand to escape predators and also to seek relief from high temperatures at the surface. CVFTL prefers fine sands with low compaction and deeper sand deposits with topographic relief. Implementation of the CVMSHCP created four conservation areas in the Coachella Valley that support CVFTL habitat: Thousand Palms, Whitewater Floodplain, Willow Hole, and Edom Hill. The Project site is adjacent to the Thousand Palms Conservation Area.

Distribution in the Study Area: The California Natural Diversity Data Base reports numerous CVFTL occurrences in the vicinity of each Project Reach (see Figure 7). Moderate to high suitability habitat for the CVFTL is found in and around windblown sand located in Reaches 3 and 4 (see Figures 8a, 8b, and 8c). Reaches 1 and 2 are considered low suitability for CVFTL due to lack of windblown sand habitat, and there we no reports of CVFTL in the vicinity of these reaches during monitoring for the adjacent transmission line project (SCE, 2013). Apparently, windblown sand habitat formerly in this area has shifted toward the southeast in the years since the observations reported in the CNDDB were made (see discussion sand movement, above). The highest suitability habitat is in the large dunes located in Reach 4 and portions of Reach 3. Surveys conducted for this Project detected several CVFTL within Reach 4 and the adjacent sand deposition area as recently as 2013.

Portions of the Project site are within designated critical habitat for Coachella Valley fringe-toed lizard (USFWS, 1985; see Figure 3). Portions of the designated critical habitat, including the habitat in Reaches 1 and 2, are not expected to support CVFTL. Instead, these areas were designated as critical habitat due to their role as a sand source, to supply occupied habitat farther downwind (USFWS, 1985; USFWS, 2013).. Based on field surveys and habitat assessments conducted for the Project, this portion of the designated critical habitat is not expected to be occupied by CVFTL.

Habitat and Habitat Associations: This species is strongly associated with blowsand habitats such as active dunes and sand hummocks. It is often found in sandy inter-dune areas consisting of aeolian sand hummock habitat, although these areas likely function as foraging habitat and as connections between dunes or blowsand areas that would otherwise be isolated.

Natural History: CVFTL is generally active from March through mid-November, with most activity from April through October. This lizard eats leaves, flowers, ants, and other insects. Vegetation in high CVFTL use areas includes four-winged saltbush (*Atriplex canescens*), Russian thistle (*Salsola tragus*), and twinbugs (*Dicoria* sp.).

The Thousand Palms Conservation Area contains the largest amount of remaining contiguous habitat for CVFTL and probably the most robust population of the species. Within this conservation area, 901 acres of lands are designated as critical habitat. Total CVFTL habitat in this conservation area is approximately 1,850 acres.

There are several CNDDB records of CVFTL in and near the Thousand Palms Conservation Area. Results of monitoring in the conservation area suggest that populations of CVFTL fluctuate with annual precipitation. During droughts, population numbers fall to near zero, but rebound during years of average rainfall.

Threats: Threats to CVFTL are construction of windbreaks and resulting obstruction of sand transport systems, urban and agricultural growth, non-native invasive plants, and OHV use.

Desert tortoise

Status: The desert tortoise (*Gopherus agassizii*) is federally and state-listed as threatened and is covered by the CVMSHCP.

General Distribution: The desert tortoise is an herbivorous reptile that occurs in the Mojave and Sonoran Deserts in southern California, southern Nevada, Arizona, and the southwestern tip of Utah, as well as Sonora and northern Sinaloa in Mexico. The designated Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California (USFWS, 2011a). Desert tortoises east and south of the Colorado River are now recognized as a distinct species, Morafka's desert tortoise (*G. morafkai*).

Distribution in the Study Area: The Study Area lies within the known range of the desert tortoise, although desert tortoises are very uncommon on the floor of the Coachella Valley, including the Project site and surrounding area. The CVMSHCP habitat models for desert tortoise do not include the Project site. Suitable habitat occurs in all the reaches, although much of this habitat is only marginally suitable due to fine sandy soil that will not support burrows, proximity to development and roads, and OHV use. The nearest documented occurrence of desert tortoise is just east of the Study Area, within the Thousand Palms Conservation Area, where they have been observed infrequently (CDFW, 2016a; see Figure 7). Protocol surveys for desert tortoise were not conducted for the Project (see Methods, Section 4.5). However, all other surveys in the Study Area were conducted by biologists with desert tortoise experience, and any tortoise sign identified were noted. Several burrows which may have been unoccupied desert tortoise burrows but could not be definitively attributed to desert tortoise, were found in the Reach 1 portion of the Study Area during reconnaissance surveys. No live tortoises, carcasses, scat, tracks, eggshell fragments, or other tortoise sign was observed. Desert tortoise has a moderate potential for occurrence in the Study Area, although, if present, it would be found only in low numbers.

Habitat and Habitat Associations: The desert tortoise occupies a variety of habitats from flats and slopes, typically characterized by creosote bush scrub at lower elevations, to rocky slopes in blackbrush scrub and juniper woodland ecotones (transition zones) at higher elevations. Throughout most of the Mojave Desert, tortoises occur most commonly on gently sloping terrain with sandy-gravel soils and where there is are herbaceous (non-woody) plants and sparse cover of low-growing shrubs. However, surveys at the Nevada Test Site revealed that tortoise sign (e.g., scat, burrows, tracks, shells) was more abundant on upper alluvial fans and lower mountain slopes than on the valley bottom. Soils must be friable (easily crumbled) enough for digging burrows, but firm enough so that burrows do not collapse.

Natural History: During the winter, tortoises will opportunistically use burrows of various lengths, deep caves, rock and caliche crevices, or overhangs for cover. Neonate desert tortoises use abandoned rodent burrows for daily and winter shelter; these burrows are often shallowly excavated and run parallel to the surface of the ground (USFWS, 2011a).

Threats: Threats to the desert tortoise include degradation and loss of habitat (including through the spread of nonnative invasive plants), disease, coyote or feral dog predation, raven predation on juvenile tortoises, collection for the pet trade, and direct mortality and crushing of burrows by off-highway vehicles.

Flat-tailed horned lizard

Status: The flat-tailed horned lizard (*Phrynosoma mcallii*) is a candidate for state listing as endangered and a CDFW Species of Special Concern, and is covered by the CVMSHCP. It has been proposed for federal listing but those proposals have been withdrawn because threats to the species are not as significant as earlier believed (USFWS, 2011c).

General Distribution: The flat-tailed horned lizard's historic range extends throughout much of southeastern California, southwestern Arizona, northwestern Sonora and northeastern Baja California, Mexico. Populations are becoming isolated from one another by development.

Distribution in the Study Area: The only remaining populations of flat-tailed horned lizards in the Coachella Valley are on the Coachella Valley Preserve and CVNWR, and much further south at the Dos Palmas Preserve (Barrows et al. 2008). The Study Area provides suitable habitat for flat-tailed horned lizard in Reaches 3 and 4. The closest record is immediately adjacent to Reaches 3 and 4 (CNDDB 2016; see Figure 7). The flat-tailed horned lizard has a high potential for occurrence in the Study Area.

Habitat and Habitat Associations: The flat-tailed horned lizard occurs in low elevation desert, generally with high temperatures as well as low rainfall and humidity (CVAG, 2007). It often is found in windblown sand habitat, but also may be found in washes and on sandy bajadas.

Natural History: The flat-tailed horned lizard is a medium sized, flat-bodied lizard with a wide, oval-shaped body and scattered enlarged pointed scales on the upper body and tail. Flat-tailed horned lizards lay one to two clutches of 3 to 10 eggs per clutch from May through early July (Nafis, 2015). They primarily eat native harvester ants (*Pogonmyrmex* spp.), which are estimated to comprise about 98 percent of their diet (CVAG, 2007). The flat-tailed horned lizard digs burrows to escape the heat and for winter hibernation. Defense tactics used by this species include remaining motionless to utilize its cryptic appearance (CVAG, 2007).

Threats: Threats to this species include increased mortality and loss of habitat. These are generally the result of agricultural development, urban development, expansion of utility corridors, and OHV use. Additional threats are from increased predation by household pets, as well as native avian predators that take advantage of artificial perch sites (e.g., utility poles, fence posts) created by development (CVAG, 2007).

Other Special-status Wildlife Species

Five non-listed special-status wildlife species were observed in the Study Area, and are described below. Sixteen non-listed special-status wildlife species were not observed during surveys, but have a high or moderate potential for occurrence in the Study Area. These species are described in Attachment D. Six of the non-listed special-status wildlife species known from the region are not likely to occur in the Study Area, and three have a low potential for occurrence. These species are not addressed further in this report; see Table 6. Other listed wildlife species that have a medium or high potential to occur within the Survey Area are described in Attachment D.

Burrowing owl

Status: The burrowing owl (*Athene cunicularia*) is a CDFW Species of Special Concern and is covered by the CVMSHCP. It is not federally or State listed as threatened or endangered.

General Distribution: The burrowing owl breeds from western Canada, south through portions of the western, central, and southeastern U.S., and south to central Mexico. The western subspecies, western burrowing owl, occurs throughout North and Central America west of the eastern edge of the Great Plains south to Panama. The winter range of the western burrowing owl is much the same as the breeding range, except that most individuals apparently vacate the northern areas of the Great Plains and the Great Basin.

Distribution in the Study Area: Suitable habitat is present throughout the Study Area. Individual burrowing owls have been detected in the Reach 1 portion of the Study Area (CNDDB 2016; see figure 3.6-8) and during field surveys for the Project. Burrowing owls are generally uncommon in the region during winter, and scarce during breeding season. Occupied burrows could occur in the Study Area at any time of year, especially in the vicinity of Reaches 1 and 2, where stable soil structure would support burrows. They are less likely to be found in the sandy areas of Reaches 3 and 4. Burrowing owls, if present in the area, would be more likely during winter than during the spring or summer breeding season.

Habitat and Habitat Associations: In California, western burrowing owls are yearlong residents of flat, open, dry grassland and desert habitats at lower elevations (Bates, 2006). They primarily inhabit annual and perennial grasslands and scrublands characterized by low-growing vegetation and also may occur in areas that include scattered trees and shrubs if the cover is less than 30 percent (Bates, 2006). Although western burrowing owls prefer large, contiguous areas of treeless grasslands, they have also been observed in fallow agriculture fields, golf courses, cemeteries, road shoulders, airports, vacant lots in residential areas and university campuses, and fairgrounds when nest burrows are present (Bates 2006). The availability of numerous small mammal burrows, such as those of California ground squirrel (*Spermophilus beecheyi*), is a major factor in determining whether an area with apparently suitable habitat supports western burrowing owls (Coulombe, 1971).

Natural History: The majority of western burrowing owls that breed in Canada and the northern United States are believed to migrate south during September and October and north during March and April, and into the first week of May. These individuals winter within the breeding habitat of more southern-located populations. Thus, winter observations may include both the migrant individuals as well as the resident population. Western burrowing owls breeding in southern California are predominantly non-migratory (Thomsen, 1971). Western burrowing owls breeding in northern California are believed to migrate (Coulombe, 1971). In many parts of the United States, the western burrowing owl's breeding range has been reduced and it has been extirpated from certain areas (Bates, 2006).

Western burrowing owls are opportunistic feeders, primarily feeding on arthropods, small mammals, and birds, and often need short grass, mowed pastures, or overgrazed pastures for foraging. Western burrowing owls are primarily crepuscular in their foraging habits but hunting has been observed throughout the day (Thomsen, 1971; Marti, 1974). Insects are often taken during daylight, whereas small mammals are taken more often after dark.

Threats: Factors related to declines in western burrowing owl populations include the loss of natural habitat due to urban development and agriculture; other habitat destruction; predators, including domestic dogs; collisions with vehicles; and toxins such as agricultural pesticides and rodenticides used for poisoning of ground squirrels (Grinnell and Miller, 1944; Zarn, 1974; Remsen, 1978). A ranking of the most important threats to the species included loss of habitat, reduced burrow availability due to rodent control, and pesticides (James and Espie, 1997).

Loggerhead shrike

Status: The loggerhead shrike (*Lanius ludovicianus*) is a CDFW Species of Special Concern. It is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: The loggerhead shrike is found in southern Canada through Mexico, and breeds through most of its range. (Cornell, 2015)

Distribution in the Study Area: Loggerhead shrike was observed within the Study Area. The Study Area is located within the known geographic range for this species and suitable foraging habitat occurs throughout the Study Area; suitable breeding habitat is present throughout the Study Area. Loggerhead shrike is expected to occur occasionally throughout the Project site.

Habitat and Habitat Associations: Loggerhead shrikes are generally found in open habitats with scattered shrubs and trees (Cornell, 2015).

Natural History: Loggerhead shrikes often build nests in thick and thorny vegetation, including piles of tumbleweeds. These shrikes are generally insectivores, but are known to hunt larger prey, and may impale the prey on thorns and fences (Cornell, 2015).

Threats: The primary threat to loggerhead shrike is habitat loss.

Bendire's thrasher

Status: Bendire's thrasher (*Toxostoma bendirei*) is a CDFW Species of Special Concern. It is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: Generally throughout much of Arizona and Sonora (Mexico), with scattered occurrences west through much of southern California. Within California, primarily found in Colorado Desert east of the Project site, but also occurs westward nearer the coast. California and northern Arizona populations are migratory, though Bendire's thrasher is found throughout the year in in southern Arizona and adjacent parts of Mexico.

Distribution in the Study Area: This species was detected within the Study Area in March 2013. Suitable habitat is present on site. The Project site is west of its primary geographic distribution, and Bendire's thrasher is expected to occur in the area only occasionally and in low numbers.

Habitat and Habitat Associations: Its habitat requirements are poorly understood, but it is generally associated with *Yucca* (e.g., Joshua tree) and *Opuntia* or *Cylindropuntia* (e.g., cholla cacti) species on gently sloping terrain. Soil texture is apparently important to habitat suitability. Hard rocky soils (e.g., desert pavement) and loose sands (e.g., dry wash sands) are apparently less suitable than firmly packed, fine-textured soils.

Natural History: Bendire's thrasher eats mainly ground-dwelling insects, but also forages for seeds and berries. It actively forages on the ground by poking and probing through plant litter, and digs in the soil with its bill (Cornell, 2015).

Threats: Threats to this species are not well understood, although populations appear to be undergoing a rapid decline. Threats may include habitat destruction and degradation resulting from expansion of agriculture and development (IUCN, 2015).

Colorado Valley woodrat

Status: The Colorado valley woodrat (*Neotoma albigula venusta*) is a CDFW Special Animal. It is not federally or State listed, and is not covered by the CVMSHCP.

General Distribution: Colorado Valley woodrats are found from the southeastern corners of Nevada and California, southern Utah, Arizona, southwestern Colorado, western Texas, and south to central Mexico. The Colorado valley woodrat is found within the Colorado River valley in western Arizona, south to Sonora and Baja California, Mexico (Ulev, 2008).

Distribution in the Study Area: Evidence of this species (an active burrow) was detected within the Study Area. Suitable habitat is found in scattered locations of all project reaches, where mesquite or other shrubs of the legume family (palo verde or catclaw acacia) provide food and cover. Colorado Valley woodrat could occur in and around these area throughout the Project site.

Habitat and Habitat Associations: In California, Colorado Valley woodrat is found in mesquite-creosote bush shrublands.

Natural History: This woodrat is generally associated with creosote bush, mesquite, cacti, catclaw acacia, and paloverde, which are the primary source of both food and cover. It uses locally available material to build middens (piles of sticks and other debris used as a shelter), with a strong preference for cacti. Primarily herbivorous, it also occasionally eats insects such as beetles and ants (Ulev, 2008)

Threats: Habitat loss resulting from livestock grazing is considered a threat to this species, as well as the use of herbicides, and climate change (Ulev, 2008).

Palm Springs round-tailed ground squirrel

Status: Palm Springs round-tailed ground squirrel (*Xerospermophilus tereticaudus chlorus*; also called Coachella Valley round-tailed ground squirrel) is a CDFW Species of Special Concern, and is covered by the CVMSHCP. It was a candidate for federal listing as threatened or endangered prior to 2010, when it was removed from the list of candidates (USFWS, 2010b). Based on research that indicated a larger range and broader habitat requirements than previously known; the protected habitat in Death Valley National Park; and ongoing conservation efforts in the Coachella Valley, the USFWS concluded that the species no longer warranted candidate status.

General Distribution Until recently, it was believed to be limited in range to the Coachella Valley region. Recent research indicates that its range is substantially larger, extending at least 150 miles northward to Hinkley Valley and Death Valley.

Distribution in the Study Area: This species was detected within the Reaches 1 and 2 of the Study Area in March 2013. Active burrows for this species were also detected within Reach 1 in 2013. Suitable habitat is present within all reaches of the Study Area.

Habitat and Habitat Associations: This species' primary habitat is honey mesquite (*Prosopis glandulosa*) hummocks and associated sand dunes and, to a lesser extent, dunes and hummocks associated with creosote bush or other vegetation.

Threats: The primary threats to its habitat are land use changes and groundwater pumping, both of which have eliminated much of the honey mesquite from the Coachella Valley area. These effects are important within the Coachella Valley, but less so throughout the remainder of the species' range.

5.5 Jurisdictional Delineation

Approximately 31.55 acres of potentially jurisdictional waters were identified within the Study Area. All of the jurisdictional features mapped within the Study Area are characterized as ephemeral desert dry washes. These washes meet criteria as non-wetland waters of the United States and CDFW jurisdictional waters of the State. See the *Preliminary Jurisdictional Waters/Wetlands Delineation Report* for the Project (Attachment E) for a detailed description of delineation methodology and results.

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Figures

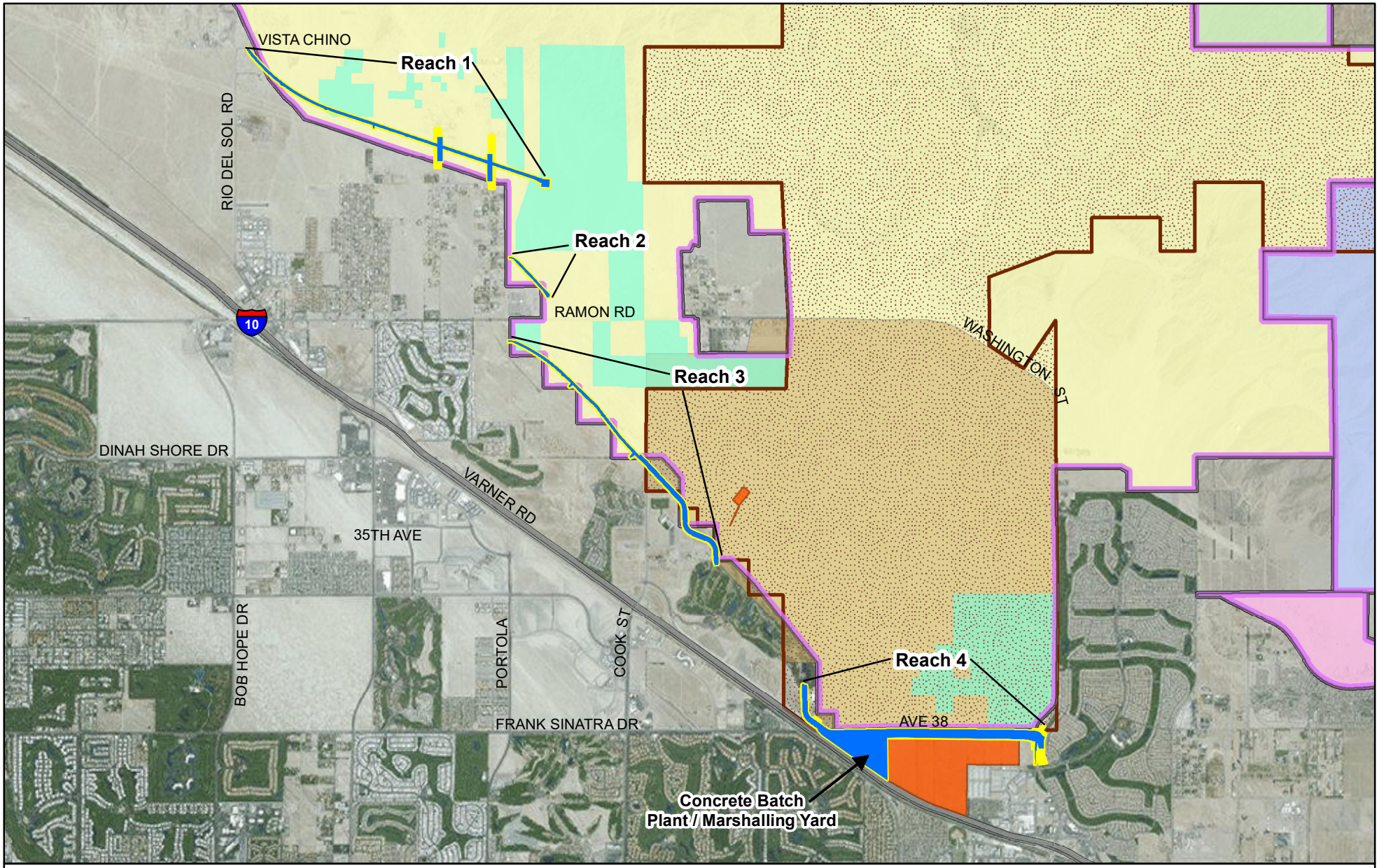


Figure 1

Proposed Project Alignment

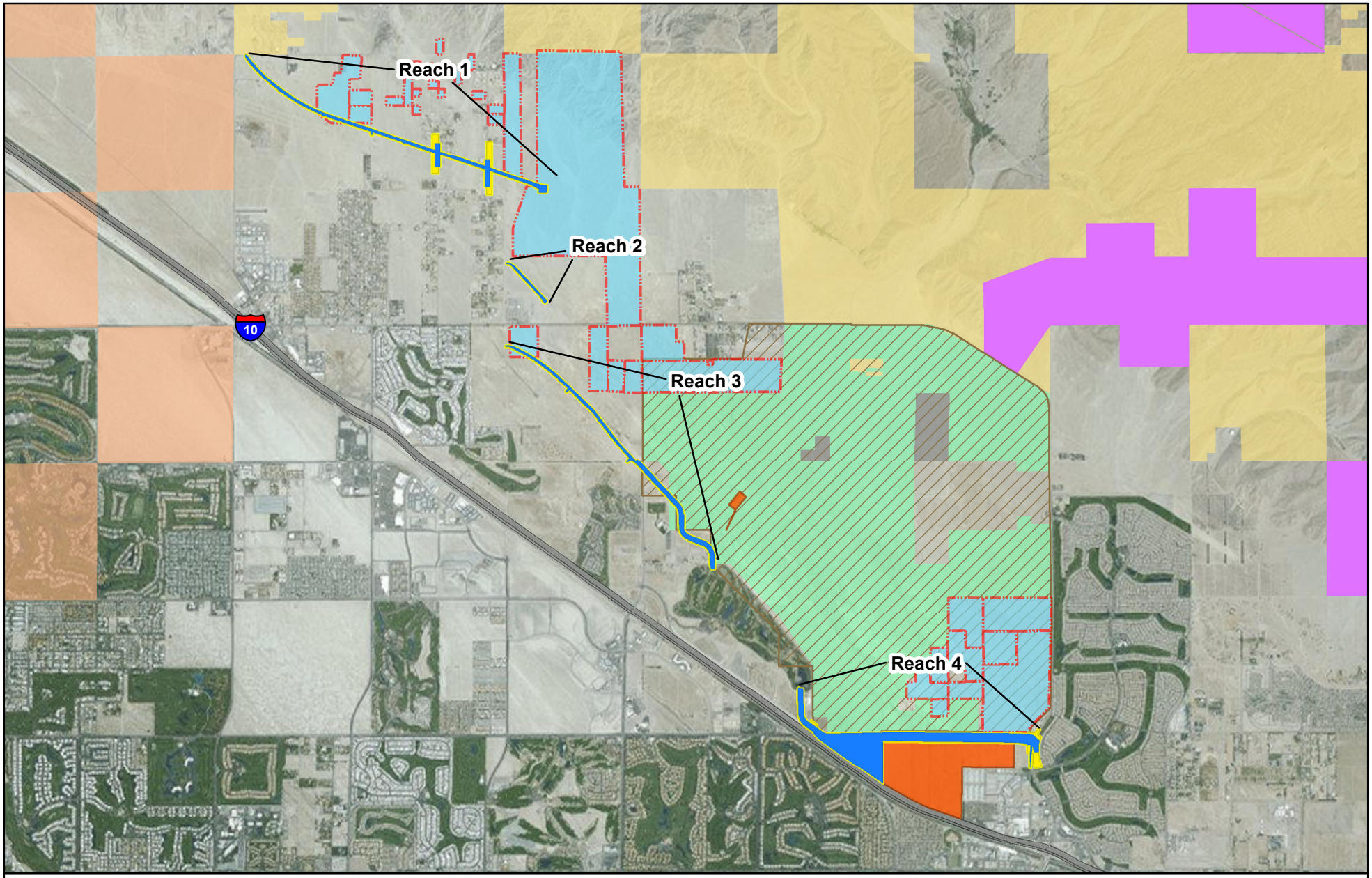


Figure 2

Land Ownership

Proposed Project Alignment

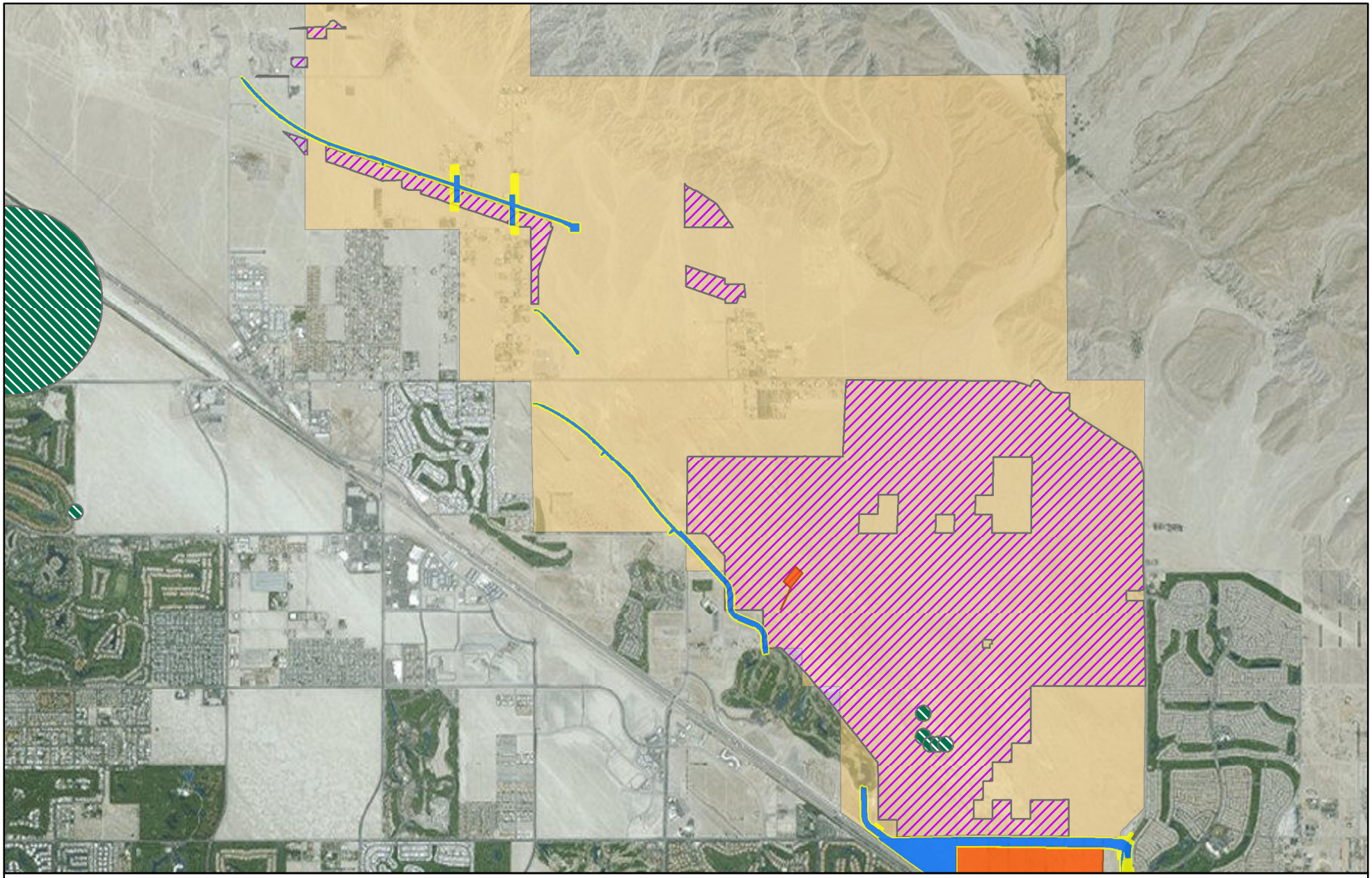


Figure 3

Critical Habitat

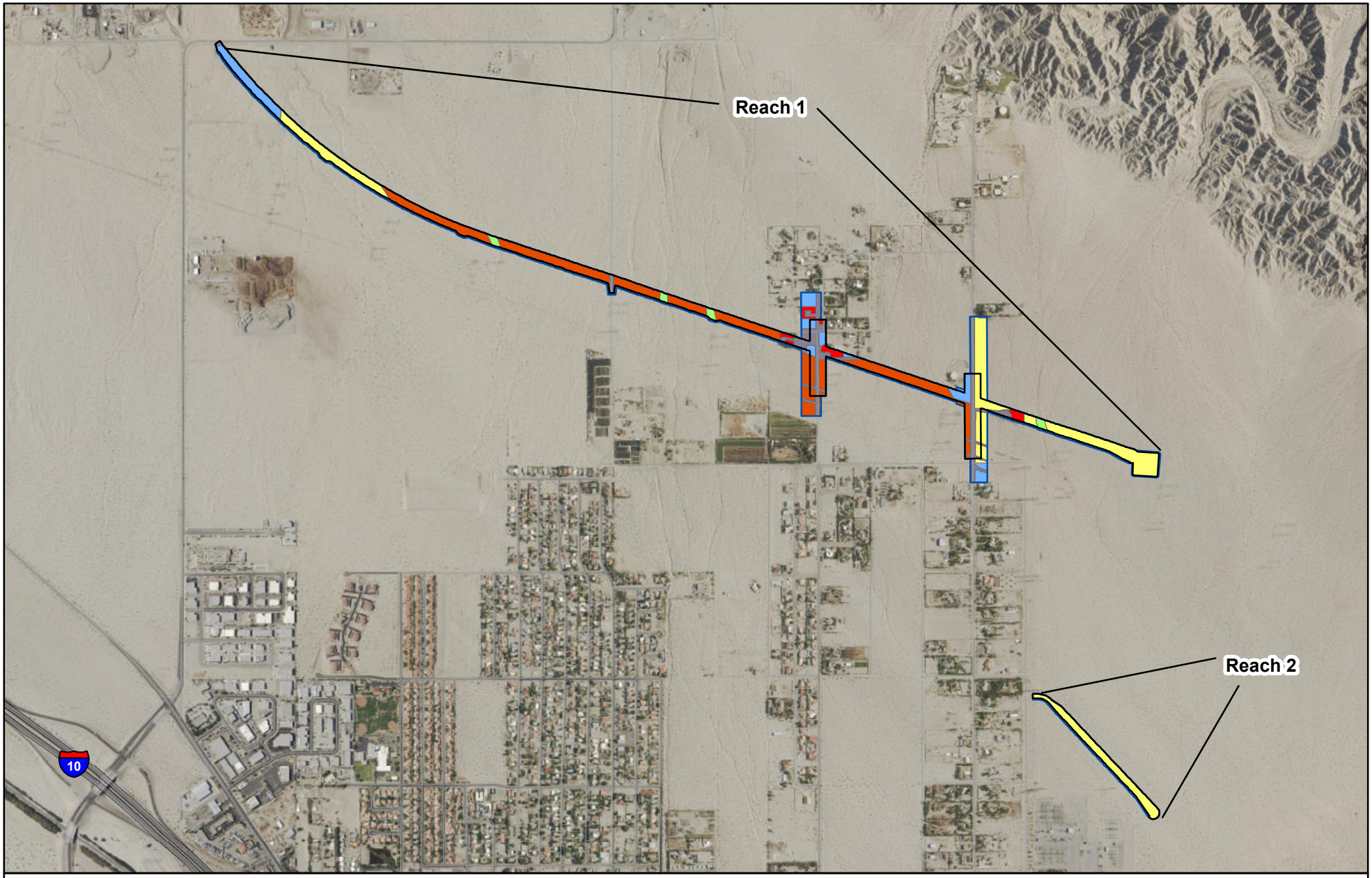


Figure 4a

Vegetation
Reach 1 and 2 Alignments

0 0.2 0.4 Miles

Permanent Disturbance Area
Temporary Disturbance Area
Soil Disposal Area

Vegetation / Cover Type

Allscale Scrub (AS)
Creosote Bush Scrub (CBS)
Creosote bush - Allscale Scrub (CBAS)
Non-Native Vegetation (NNV)
Ruderal (RUD)
Unvegetated (UV)

Figure 4b

Vegetation
Reach 3 Alignment

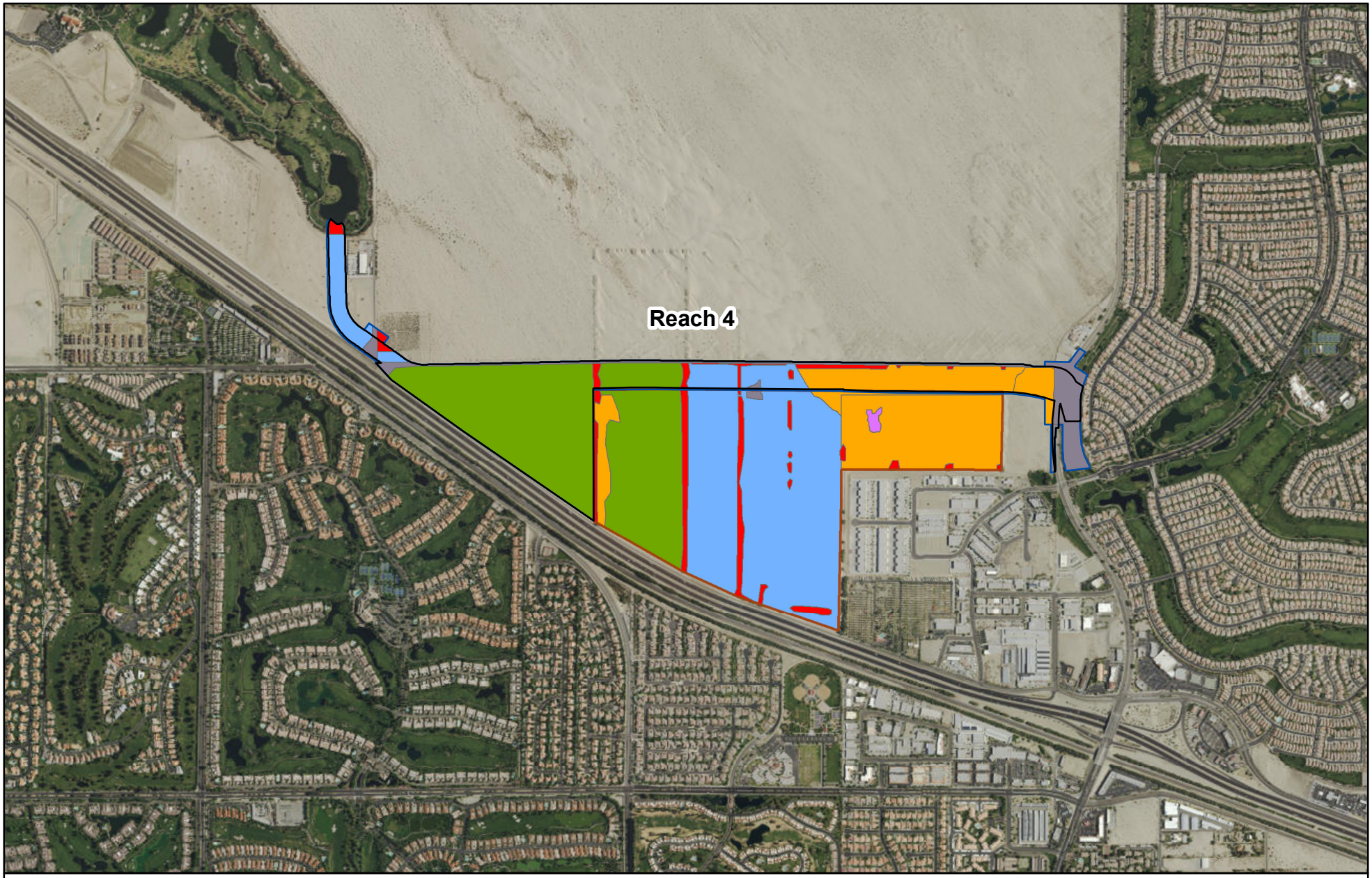


Figure 4c

Vegetation
Reach 4 Alignment

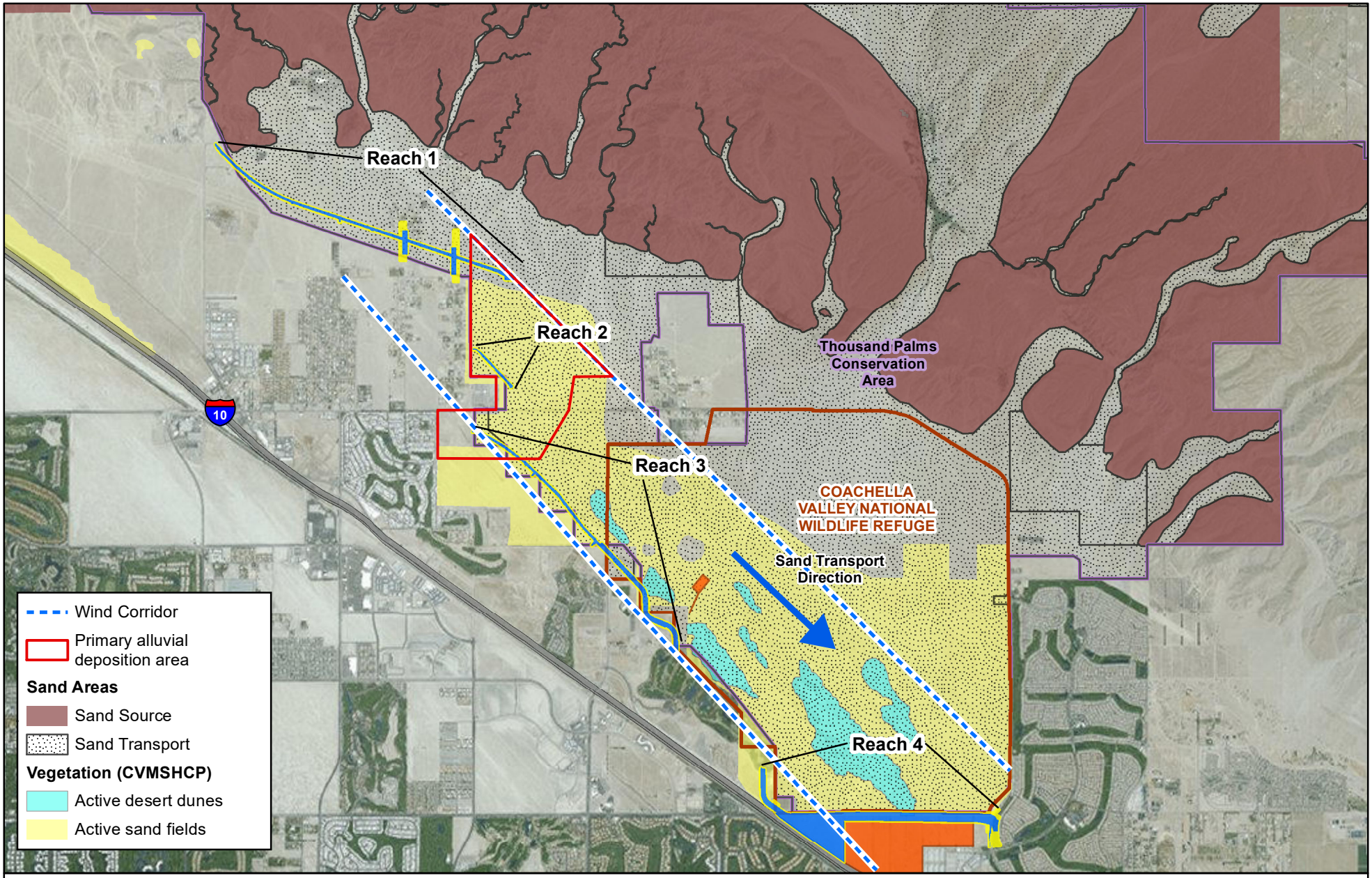
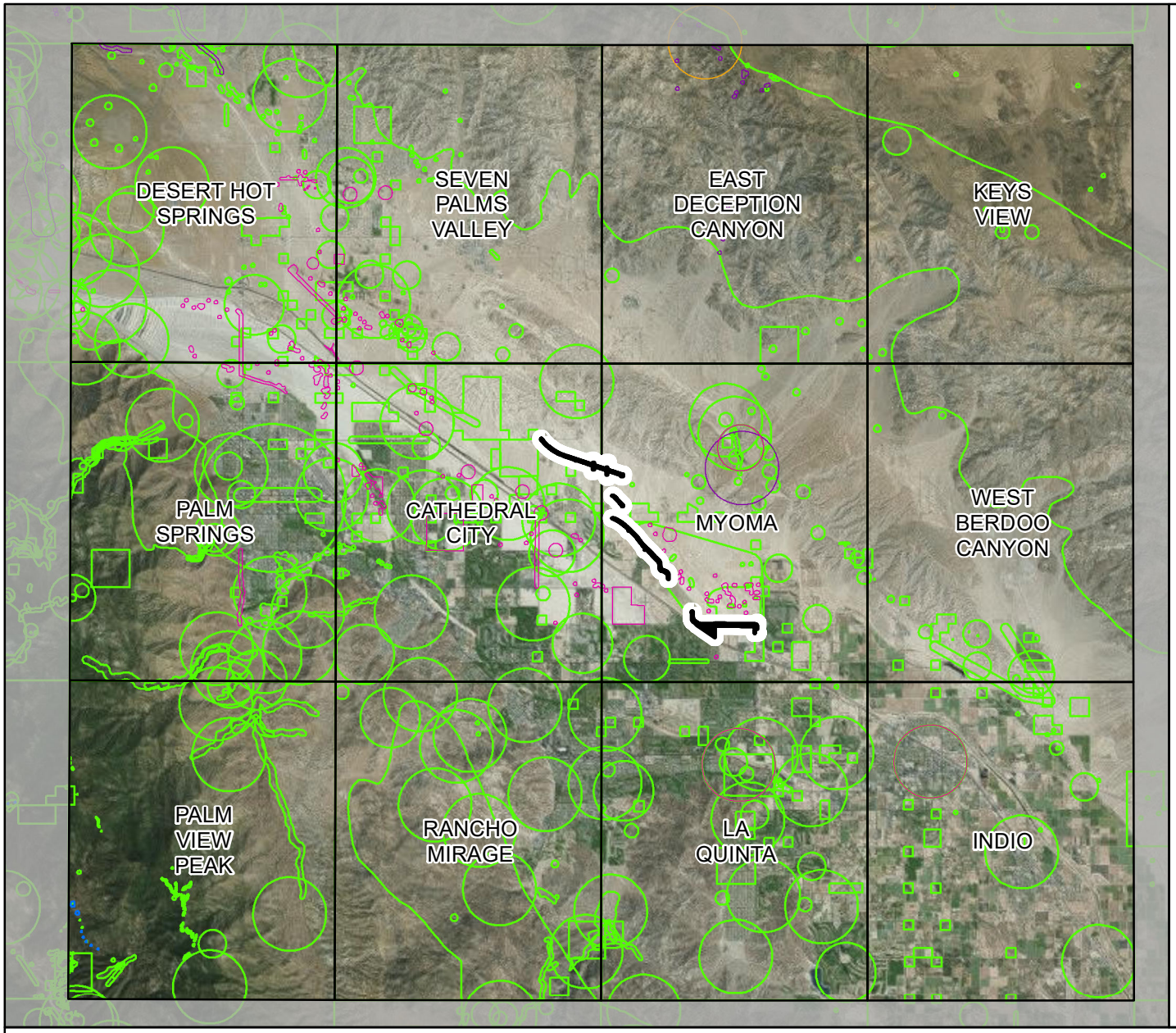


Figure 5

Sand Source and Transport Areas



Special-Status Species Occurrences

CNDDB Sensitive Plant Records

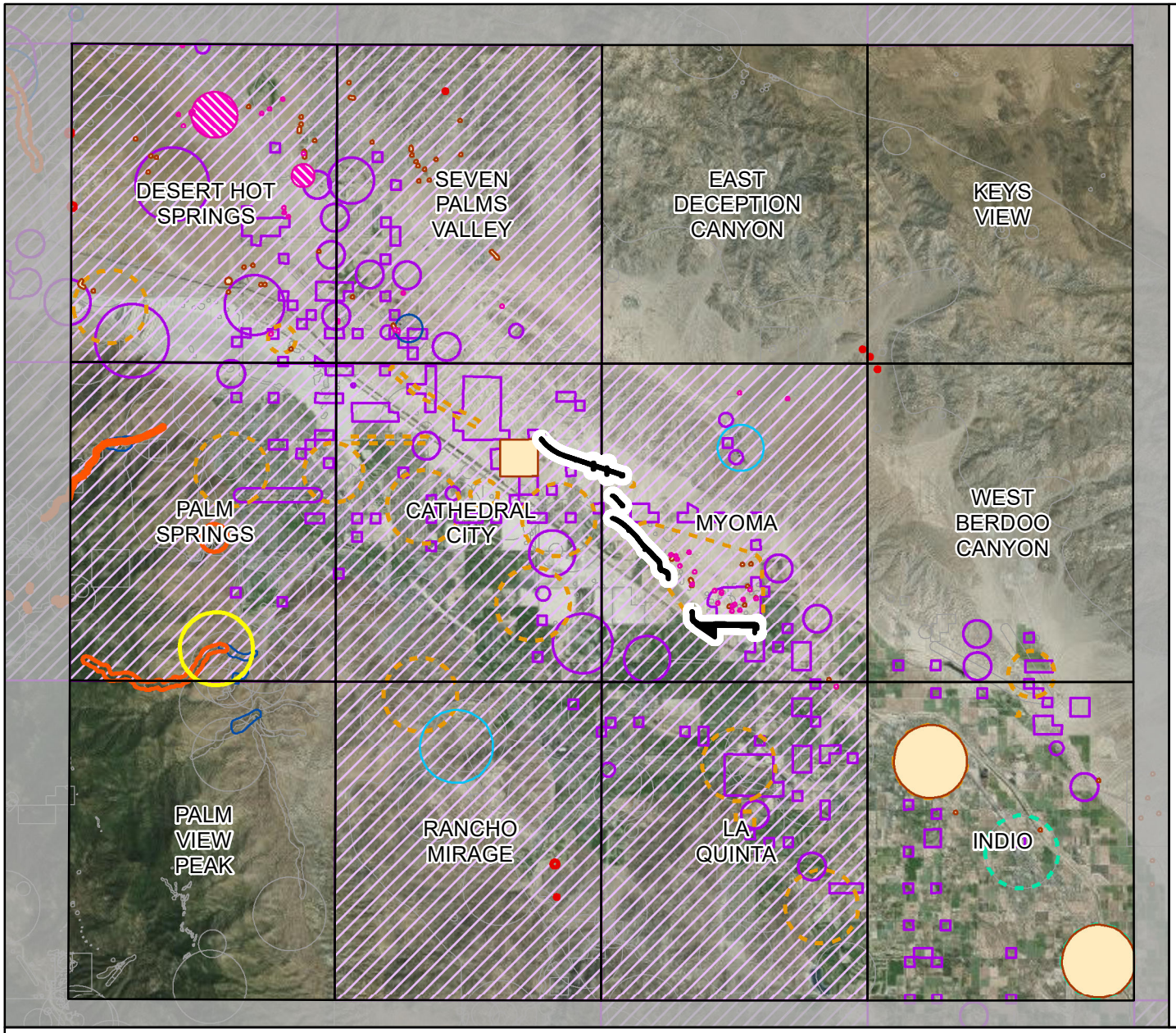
- Other plant species
- Astragalus lentiginosus var. coachellae
- Astragalus tricarinatus
- Deinandra mohavensis
- Erigeron parishii

2 0 2 Miles

- Project Site
- USGS 7.5-minute quadrangle

Figure 6

Special-Status Plant Species



Special-Status Species Occurrences

CNDDB Sensitive Animal Records

- Other animal species
- Athene cunicularia
- Empidonax traillii extimus
- Falco mexicanus
- Gopherus agassizii
- Ovis canadensis nelsoni DPS
- Phrynosoma mcallii
- Rana draytonii
- Rana muscosa
- Toxostoma crissale
- Uma inornata
- Vireo bellii pusillus

USFWS Carlsbad Office Species Occurrence

- Burrowing owl

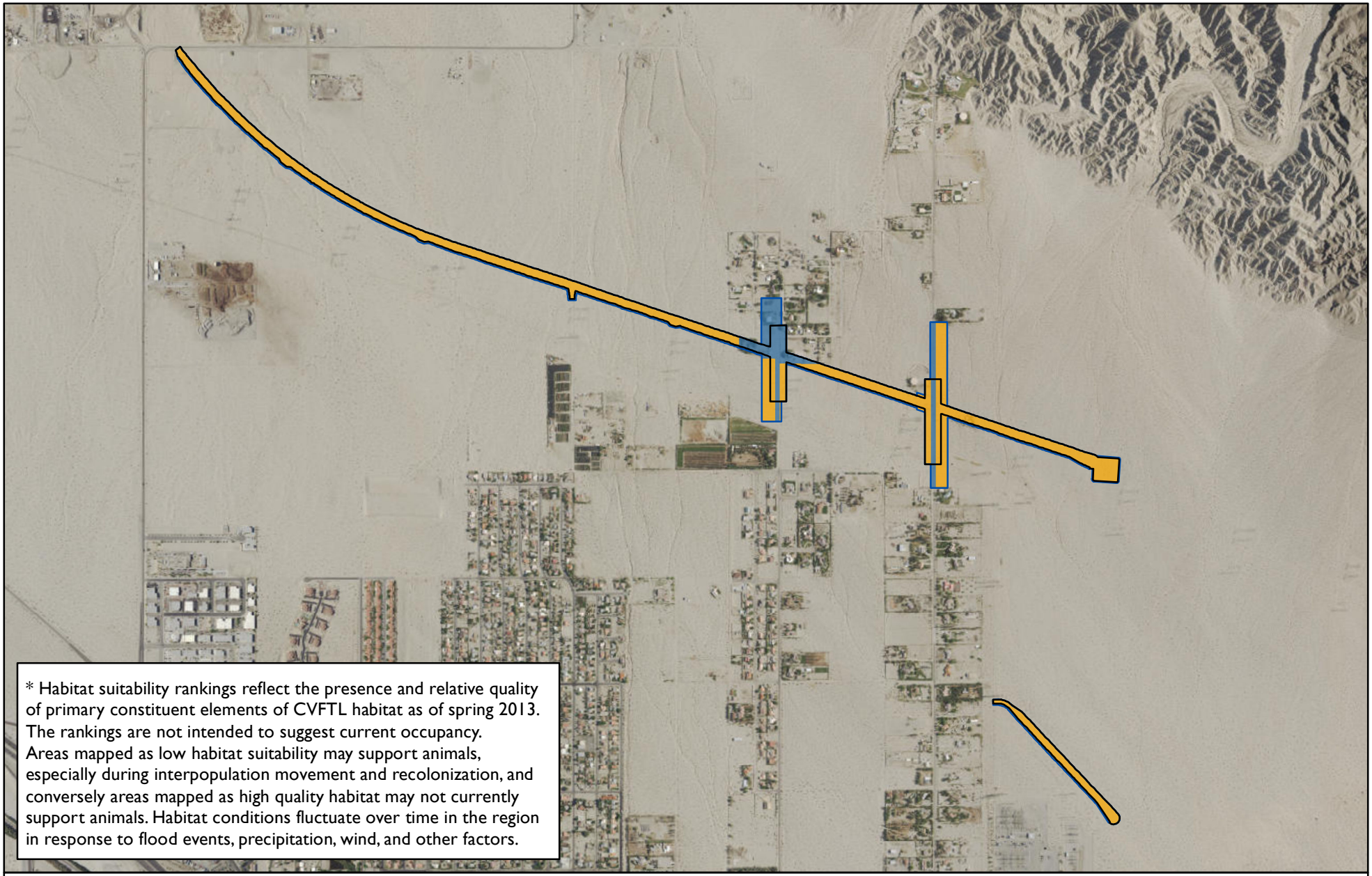
Project Site

USGS 7.5-minute quadrangle

2 0 2 Miles

Figure 7

Special-Status Wildlife Species



* Habitat suitability rankings reflect the presence and relative quality of primary constituent elements of CVFTL habitat as of spring 2013. The rankings are not intended to suggest current occupancy. Areas mapped as low habitat suitability may support animals, especially during interpopulation movement and recolonization, and conversely areas mapped as high quality habitat may not currently support animals. Habitat conditions fluctuate over time in the region in response to flood events, precipitation, wind, and other factors.

Permanent Disturbance Area
Temporary Disturbance Area
Soil Disposal Area

CVFTL Habitat Suitability*
Low
Unlikely

0 0.2 0.4 Miles

Figure 8a
Coachella Valley
Fringe-Toed Lizard Habitat
Reach 1 and 2 Alignments

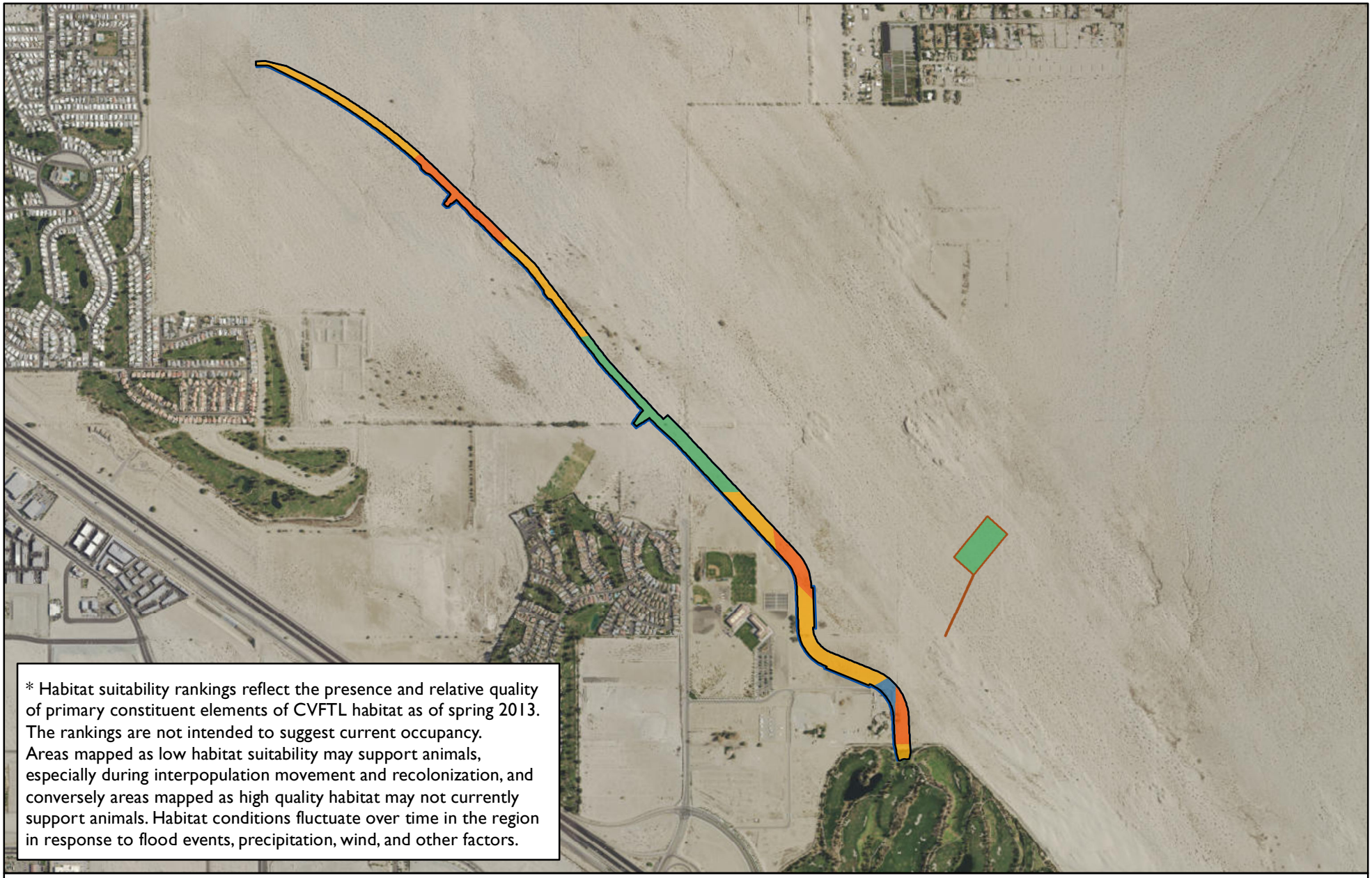


Figure 8b
Coachella Valley
Fringe-Toed Lizard Habitat
Reach 3 Alignment

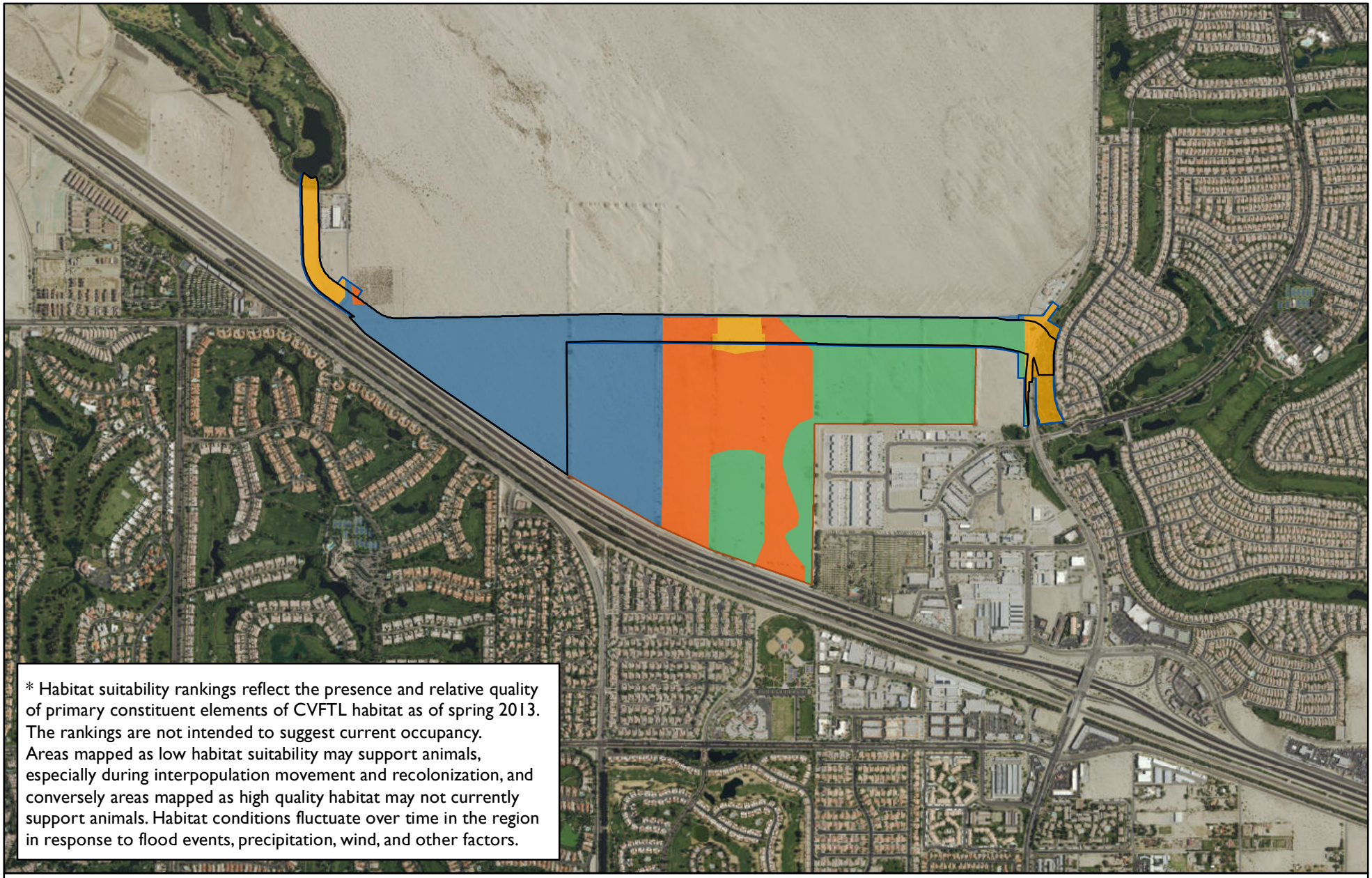


Figure 8c
Coachella Valley Fringe-Toed Lizard Habitat
Reach 4 Alignment

Attachment A: Representative Site Photographs

Allscale scrub, Reach 3

Creosote bush - white bursage scrub, Reach 1

Creosote bush mixed scrub, Reach 1

Desert dunes, Reach 4

Ruderal, Reach 3

Sahara mustard stands, 2010

Attachment B:
Plant Species
Observed in the Study Area

Plant Species Observed Within the Study Area	
FAMILY ***Latin Name***	**FAMILY** **Common Name**
AMARANTHACEAE	AMARANTH FAMILY
Amaranthus sp.	Unid. pigweed
APOCYNACEAE	DOGBANE FAMILY
Asclepias subulata	Rush milkweed
ASTERACEAE	ASTER FAMILY
Ambrosia dumosa	White bursage, burrobush
Ambrosia salsola (Hymenoclea salsola)	Cheesebush
Baileya pauciradiata	Desert-marigold
Chaenactis carphoclinia	Pebble pincushion
Chaenactis fremontii	Fremont pincushion
Chaenactis sp.	Pincushion
Dicoria canescens	Desert twinbugs
Encelia farinosa	Brittlebush
Geraea canescens	Desert sunflower
Malacothrix glabrata	Desert dandelion
Palafoxia arida	Spanish needles
Perityle emoryi	Emory's rock daisy
Pluchea sericea	Arrow weed
Pseudognaphalium beneolens	Cudweed
Rafinesquia neomexicana	Desert chicory
* *Sonchus asper ssp. asper*	Prickly sow thistle
Stephanomeria exigua	Small wreath-plant
Stephanomeria virgata	Tall stephanomeria
* *Taraxacum officinale*	Common dandelion
BORAGINACEAE	BORAGE FAMILY
Cryptantha angustifolia	Narrowleaf cryptantha
Cryptantha barbigera	Bearded cryptantha
Cryptantha maritima	White hair cryptantha
Phacelia crenulata	Heliotrope phacelia
Tiquilia palmeri (Coldenia palmeri)	Palmer tiquilia
BRASSICACEAE	MUSTARD FAMILY
* *Brassica tournefortii*	Sahara mustard
* *Lepidium didymum*	Lesser swine cress
* *Sisymbrium irio*	London rocket
* *Sisymbrium sp.*	Tumble mustard
CACTACEAE	CACTUS FAMILY
Cylindropuntia echinocarpa	Silver cholla
Opuntia basilaris var. basilaris	Beavertail
CHENOPODIACEAE	GOOSEFOOT FAMILY
Atriplex canescens	Four-wing saltbush
Atriplex hymenelytra	Desert holly
Atriplex polycarpa	Cattle saltbush, allscale
* *Chenopodium murale*	Nettleleaf goosefoot

Plant Species Observed Within the Study Area	
FAMILY ***Latin Name***	**FAMILY** **Common Name**
Chenopodium sp.	Chenopodium
* *Salsola tragus*	Russian thistle
EUPHORBIACEAE	SPURGE FAMILY
Croton californicus	California croton
Euphorbia (Chamaesyce) polycarpa ssp. hirtella	Sand mat
Stillingia spinulosa	Annual stillingia
FABACEAE	PEA FAMILY
Acmispon strigosus (L.s. var. tomentellus)	Desert lotus
Astragalus aridus	Milk-vetch
Astragalus didymocarpus	Two-seeded milk-vetch
** *Astragalus lentiginosus var. coachellae*	Coachella Valley milk-vetch
* *Caesalpinia gilliesii*	Bird-of-paradise
Lupinus arizonicus	Arizona lupine
* *Melilotus indicus*	Annual yellow sweetclover
* *Prosopis sp.*	Screwbean (non-native)
Psorothamnus emoryi (Dalea emoryi)	Emory indigo-bush, dye-weed
Psorothamnus schottii (Dalea schottii)	Indigo-bush
Psorothamnus spinosus (Dalea spinosa)	Smoke tree
GERANIACEAE	GERANIUM FAMILY
* *Erodium cicutarium*	Red-stemmed filaree
LAMIACEAE	MINT FAMILY
Salvia columbariae	Chia
LOASACEAE	STICK-LEAF FAMILY
Mentzelia involucrata	Sand blazing star
Petalonyx thurberi	Sandpaper plant
MALVACEAE	MALLOW FAMILY
Eremalche exilis	Trailing mallow
* *Malva parviflora*	Cheeseweed
MYRTACEAE	MYRTLE FAMILY
* *Eucalyptus sp.*	Eucalyptus
NYCTAGINACEAE	FOUR O'CLOCK FAMILY
** *Abronia villosa var. aurita*	Chaparral sand-verbena
Abronia villosa var. villosa	Sand-verbena
ONAGRACEAE	EVENING PRIMROSE FAMILY
Chylismia brevipes (Camissonia brevipes)	Desert primrose
Chylismia claviformis (Camissonia claviformis)	Clavate evening primrose
Chylismia claviformis ssp. aurantiaca (Camissonia claviformis ssp. aurantiaca)	Clavate evening primrose

Plant Species Observed Within the Study Area	
FAMILY ***Latin Name***	**FAMILY** **Common Name**
Eulobus californicus *(Camissonia californica)*	California false mustard
Oenothera deltoides ssp. deltoides	Dune evening-primrose
PAPAVERACEAE	POPPY FAMILY
Eschscholzia minutiflora	Small-flowered poppy
PLANTAGINACEAE	PLANTAIN FAMILY
Plantago ovata	Desert plantain
POLEMONIACEAE	PHLOX FAMILY
Loeseliastrum schottii *(Langloisia schottii)*	Schott's langloisia
POLYGONACEAE	BUCKWHEAT FAMILY
Chorizanthe brevicornu	Brittle spine-flower
Eriogonum inflatum	Desert trumpet
TAMARICACEAE	TAMARISK FAMILY
* *Tamarix aphylla*	Athel
* *Tamarix ramosissima*	Tamarisk
ZYGOPHYLLACEAE	CALTROP FAMILY
Larrea tridentata	Creosote bush
* *Tribulus terrestris*	Puncture vine
POACEAE	GRASS FAMILY
* *Cynodon dactylon*	Bermuda grass
* *Schismus arabicus*	Mediterranean schismus
* *Schismus barbatus*	Mediterranean schismus

*** non-native species**
**** special-status species**

Attachment C: Wildlife Species Observed in the Study Area

Wildlife Observed in the Study Area	
Common Name	Latin Name
INVERTEBRATES	
True bugs	Order Hemiptera
Beetles	Order Coleoptera
Flies	Order Diptera
REPTILES	
Coachella fringe-toed lizard	*Uma inornata*
Desert horned lizard	*Phrynosoma platyrhinos*
Desert iguana	*Dipsosaurus dorsalis*
Desert spiny lizard	*Sceloporus magister uniformis*
Gopher snake	*Pituophis catenifer*
Night snake (tracks)	*Hypsiglena torquata*
Side-blotched lizard	*Uta stansburiana*
Sidewinder	*Crotalus cerastes*
Western whiptail	*Aspidoscelis tigris*
Zebra-tailed lizard	*Callisaurus draconoides*
BIRDS	
American kestrel	*Falco sparverius*
Bendire's thrasher	*Toxostoma bendirei*
Burrowing owl	*Athene cunicularia*
Cactus wren	*Campylorhynchus brunneicapillus*
Cassin's kingbird	*Tyrannus vociferans*
Cliff swallow	*Petrochelidon pyrrhonota*
Common raven	*Corvus corax*
Costa's hummingbird	*Calypte costae*
Gambel's quail	*Callipepla gambelii*
Great horned owl	*Bubo virginianus*
Greater roadrunner	*Geococcyx californianus*
House finch	*Haemorhous mexicanus*
House sparrow	*Passer domesticus*
Killdeer	*Charadrius vociferous*
Lesser nighthawk	*Chordeiles acutipennis*
Loggerhead shrike	*Lanius ludovicianus*
Mourning dove	*Zenaida macroura*
Northern mockingbird	*Mimus polyglottos*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Red-tailed hawk	*Buteo jamaicensis*
Rock dove	*Columba livia*
Say's phoebe	*Sayornis saya*
Turkey vulture	*Cathartes aura*
Verdin	*Auriparus flaviceps*
Western kingbird	*Tyrannus verticalis*
MAMMALS	

Wildlife Observed in the Study Area	
Common Name	Latin Name
Black-tailed jackrabbit	*Lepus californicus*
Colorado Valley woodrat	*Neotoma albigula venusta*
Deer mouse sp. (active burrows)	*Peromyscus* sp.
Desert cottontail	*Sylvilagus audubonii*
Coyote	*Canis latrans*
Domestic dog	*Canis familiaris*
Domestic goat	*Capra hircus*
Domestic horse	*Equus caballus*
Kangaroo rat	*Dipodomys* sp.
Palm Springs round-tailed ground squirrel	*Spermophilus tereticaudus chlorus*
Round-tailed ground squirrel sp. (burrows)	*Xerospermophilus* sp.
White-throated woodrat	*Neotoma albigula (venusta)*
White-tailed antelope squirrel	*Ammnospermophilus leucurus*

Attachment D:
Species Accounts

Species Accounts

PLANTS

Abrams' spurge

Status: Abrams' spurge (*Euphorbia* [*Chamaesyce*] *abramsiana*) is a CRPR 2B.2. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This flower is found in southeastern California into Baja California (Mexico) and western Arizona.

Distribution in the Study Area: This species was not documented within the Study Area, but suitable habitat was observed.

Habitat and Habitat Associations: This species is associated with creosote bush scrub.

Natural History: Abrams' spurge is a hot season annual that grows in low mats that spread along the ground. It is found in a variety of sandy soils in the Sonoran Desert.

Threats: There are no identified threats to this species.

Arizona spurge

Status: Arizona spurge (*Euphorbia* [*Chamaesyce*] *arizonica*) is a CRPR 2B.3. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This flower is found in southeastern California and is known from the Coachella Valley and Anza Borrego areas. Outside California, this species ranges south into Baja California (Mexico), east to Texas, and southeast into Sonora (Mexico).

Distribution in the Study Area: This species was not documented within the Study Area, but suitable habitat was observed.

Habitat and Habitat Associations: This species is associated with creosote bush scrub.

Natural History: Arizona spurge is an annual herb that is typically found on gravelly or sandy substrates usually in arroyos or on slopes (CDFW, 2015a). This species flowers from March through April.

Threats: There are no identified threats to this species.

Borrego milk-vetch

Status: Borrego milk-vetch (*Astragalus lentiginosus var. borreganus*) is a CRPR 4.3. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This plant is found in the deserts of southeastern California to northwestern Mexico.

Distribution in the Study Area: This species was not documented within the Study Area, but suitable habitat was observed.

Habitat and Habitat Associations: This species is associated with creosote bush scrub.

Natural History: Borrego milk-vetch is an annual or short-lived perennial herb that blooms between March and May.

Threats: There are no identified threats to this species.

Flat-seeded spurge

Status: Flat-seeded spurge (*Euphorbia* [*Chamaesyce*] *platysperma*) is a CRPR 1B.2. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This plant is known from four or possibly five locations in California; one at Superstition Mountain in Imperial County; two in the Coachella Valley in Riverside County; one in Little Blair Valley in Anza Borrego State Park; and one unverified report near Old Woman Springs in San Bernardino County (Kearney and Peebles, 1951; Shreve and Wiggins, 1964; CCH, 2015; CNPS, 2015; CDFW, 2015a). It is much more common to the east in Arizona (CDFW, 2015a).

Distribution in the Study Area: This species was not documented within the Study Area, but suitable habitat was observed in Reaches 3 and 4.

Habitat and Habitat Associations: This species is associated with creosote bush scrub and dunes.

Natural History: Flat-seeded spurge is an annual herb that blooms from February through September.

Threats: There are no identified threats to this species.

Ribbed cryptantha

Status: Ribbed cryptantha (*Cryptantha costata*) is a CRPR 4.3. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This plant is found in southeastern California into southern Nevada, Arizona, and Baja California.

Distribution in the Study Area: This species was not documented within the Study Area, but suitable habitat was observed in Reaches 3 and 4. There are known occurrences in the immediate vicinity of the Study Area (CCH, 2015).

Habitat and Habitat Associations: This species is associated with creosote bush scrub.

Natural History: Ribbed cryptantha is an annual herb that grows in sandy soils in scattered locations throughout the deserts of California.

Threats: There are no identified threats to this species.

Slender cottonheads

Status: Slender cottonheads (*Nemacaulis denudata var. gracilis*) is a CRPR 2B.2. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This plant is found in southwestern California, the Sonoran Desert, Arizona, and northwestern Mexico.

Distribution in the Study Area: This species was not documented within the Study Area, but suitable habitat was observed in Reaches 3 and 4. There are numerous historic collections throughout the Coachella Valley (CCH, 2015; CDFW, 2015a).

Habitat and Habitat Associations: This species is associated with coastal strand, creosote bush scrub, and dunes.

Natural History: This species is known in California from sand dunes throughout much of the desert and along the coast. It blooms from April through May.

Threats: There are no identified threats to this species.

WILDLIFE
Invertebrates

Coachella Valley giant sand-treader cricket

Status: The Coachella Valley giant sand-treader cricket (*Macrobaenetes valgum*) is a CDFW Special Animal and is covered by the CVMSHCP. This species is not federally or State listed as threatened or endangered.

General Distribution: This species occurs exclusively in active sand hummocks and dunes of the Coachella Valley (CVAG, 2007).

Distribution in the Study Area: Suitable habitat occurs within Reaches 3 and 4 of the Study Area.

Habitat and Habitat Associations: Active sand hummocks and dunes of the Coachella Valley.

Threats: Habitat loss.

Coachella Valley Jerusalem cricket

Status: The Coachella Valley Jerusalem cricket (*Stenopelmatus cahuilaensis)* is a CDFW Special Animal and is covered by the CVMSHCP. This species is not federally or State listed as threatened or endangered.

General Distribution: This species is limited to the Coachella Valley (CVAG, 2007).

Distribution in the Study Area: Suitable habitat occurs within Reaches 3 and 4 of the Study Area.

Habitat and Habitat Associations: This species occurs in sandy to somewhat gravelly soils, and prefers microhabitats that are cool and moist, relative to ambient conditions (CVAG, 2007).

Threats: Habitat fragmentation and disturbance from OHVs.

Birds

Golden eagle

Status: The golden eagle (*Aquila chrysaetos*) is on the CDFW Watch List and is a California Fully Protected species. It is also protected by the federal Bald and Golden Eagle Protection Act. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: In North America, this species breeds locally from northern Alaska eastward to Labrador and southward to northern Baja California and northern Mexico. The species winters from

southern Alaska and southern Canada southward through the breeding range. The golden eagle ranges from sea level up to 11,500 feet elevation (Grinnell and Miller, 1944).

Distribution in the Study Area: This species is known to occur in the Coachella Valley, and suitable foraging habitat is present within the Study Area. Suitable nesting habitat is located outside the Study Area in the mountains to the north.

Natural History: Golden eagle habitat includes rolling foothills, mountainous terrain, wide arid plateaus deeply cut by streams and canyons, and open mountain slopes and cliffs (Zeiner et al., 1990a). Nest construction in southern California occurs in fall and continues through winter (Dixon, 1937). This species nests on cliffs with canyons and escarpments and in large trees (generally occurring in open habitats) and is primarily restricted to rugged, mountainous country (Garrett and Dunn, 1981; Johnsgard, 1990). Nests are large platforms composed of sticks, twigs, and greenery that are often 10 feet across and three feet high. It is common for the golden eagle to reuse old nests (Zeiner et al., 1990a).

Threats: A major threat to this species is habitat loss as well as human development adjacent to golden eagle habitat. Accidental deaths attributed to increased development include collisions with vehicles, power lines, and other structures; electrocution; hunting; and poisoning (Cornell, 2015). Golden eagles avoid developed areas, and the golden eagle population in California has undergone a decline within the past century due to a decrease in open habitats (Grinnell and Miller, 1944). Human disturbance of nests, from nest building through early incubation, will typically result in nest abandonment (Thelander, 1974), thereby threatening reproductive success.

Prairie falcon

Status: The prairie falcon (*Falco mexicanus*) is a CDFW Watch List species. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: Prairie falcons range from southern Canada through the western United States into Mexico, and breed throughout most of their range (Cornell, 2015).

Distribution in the Study Area: Suitable habitat occurs throughout the entire Study Area, and there are several known occurrences of this species within the vicinity of the Project.

Habitat and Habitat Associations: This species is known to inhabit grasslands, shrub-steppe, deserts, and other open habitats of the West up to approximately 10,000 feet elevation.

Natural History: Prairie falcons are aerial hunters, and commonly hunt ground squirrels and small birds (Cornell, 2015). This species is a cliff nester (Cornell, 2015), but is also known to nest on power and utility poles. This species will have one clutch per year of up to eight eggs.

Threats: The primary threat is habitat loss.

Vermilion flycatcher

Status: The vermilion flycatcher (*Pyrocephalus rubinus*) is a CDFW Species of Special Concern. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: The vermilion flycatcher is found in the southwestern U.S. through Mexico and into South America (Cornell, 2015).

Distribution in the Study Area: The Study Area does not provide suitable nesting habitat for this species, however this species may occur on the adjacent golf courses, and may forage within the Study Area.

Habitat and Habitat Associations: The vermillion flycatcher is found in open desert scrubland, agricultural areas, and desert riparian. Inhabits desert riparian adjacent to irrigated fields, irrigation ditches, and pastures during nesting. This species nests in cottonwood, willow, mesquite, and other large desert riparian trees.

Natural History: This species eats insects and other arthropods. The male is known to perform a spectacular display for females during the nesting season (Cornell, 2015).

Threats: A major threat to this species throughout its range is habitat destruction. Human water use and land development have caused drastic declines in populations, particularly in the lower Colorado River Valley (Cornell, 2015).

Black-tailed gnatcatcher

Status: The black-tailed gnatcatcher (*Polioptila melanura*) is a CDFW Special Animal. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: The black-tailed gnatcatcher is found in the southwestern United States in California, southern Nevada, Arizona, New Mexico, western Texas, and into Mexico and Baja California.

Distribution in the Study Area: Suitable habitat is present throughout the Study Area. This species is known to occur in the immediate vicinity of the Project.

Habitat and Habitat Associations: This species is found in desert shrublands and open scrub, and generally nests in shrub thickets along washes.

Natural History: The black-tailed gnatcatcher is non-migratory, and forages for insects by moving through shrubs and low trees. This species has an average clutch of four eggs, and both parents care for the young. Pairs may remain together throughout the year (Audubon, 2015).

Threats: Habitat loss.

Le Conte's thrasher

Status: The Le Conte's thrasher (*Toxostoma lecontei*; San Joaquin population) is a California Species of Special Concern and the entire species (all populations) is covered by the CVMSHCP. This species is not federally or State listed as threatened or endangered.

General Distribution: The Le Conte's thrasher is found throughout the southwestern United States and northwestern Mexico.

Distribution in the Study Area: Suitable habitat is present throughout the Study Area, with the closest record occurring within one mile of Reach 1.

Habitat and Habitat Associations: Sparse desert scrub such as creosote bush, Joshua tree, saltbush scrub, and cholla. Nests in dense, spiny shrubs or densely branched cactus in desert wash habitat.

Natural History: The Le Conte's thrasher forages on the ground for insects and spiders, as well as some seeds and berries.

Threats: In some parts of its range, the Le Conte's thrasher has lost extensive habitat to development. Irrigated lawns, groves, and fields are not compatible with its need for desert vegetation.

Mammals

Earthquake Merriam's kangaroo rat

Status: The Earthquake Merriam's kangaroo rat (*Dipodomys merriami collinus)* is a CDFW Special Animal. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This species is found in the arid regions of the southwestern United States, south into Mexico.

Distribution in the Study Area: This species was not observed during surveys within the Study Area, however suitable habitat is present and there are records within the immediate vicinity of Reach 4.

Habitat and Habitat Associations: This species is found in sandy upland valleys in the Peninsular ranges in San Diego County and southernmost Riverside County. Associated with sage scrub and chaparral, and grassland vegetation in adjacent upland areas.

Natural History: This species eats mostly seeds, usually of mesquite, creosote bush, ocotillo, purslane, and grama grass. The diet is known to vary seasonally, and it may eat insects on occasion.

Threats: Habitat loss from agriculture, urbanization, and infrastructure.

Western mastiff bat

Status: The western mastiff bat (*Eumops perotis californicus)* is a California Species of Special Concern. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: Lowlands of central and southern California, southern Arizona, New Mexico, southwestern Texas into northern Mexico.

Distribution in the Study Area: This species was not observed during surveys within the Study Area, but suitable foraging habitat is present. Few suitable potential roosting locations were observed.

Habitat and Habitat Associations: In California, this species is found in broad open areas, and forages in dry desert washes, flood plains, chaparral, oak woodlands, open ponderosa pine forest, grassland, and agricultural areas (WBWG, 2015).

Natural History: This species roosts in deep rock crevices, and forages over wide open areas. Mastiff bats primarily eat moths, but may also take beetles, crickets, and katydids. Young are generally born in early July, but this can vary within populations. This species is not known to have an extensive migration, and appears to move relatively short distances seasonally (WBWG, 2015).

Threats: Habitat loss and pesticides. This species roosts in rock crevices and rock climbing may cause disturbance to roost sites (WBWG, 2015).

Western yellow bat

Status: The western yellow bat (*Lasiurus xanthinus)* is a California Species of Special Concern. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: Occurs in northern Mexico, western Arizona, southern California, southern Nevada, and southwestern New Mexico (WBWG, 2015).

Distribution in the Study Area: This species was not observed during surveys within the Study Area, but suitable foraging habitat is present. The Study Area provides limited potential roost sites.

Habitat and Habitat Associations: This species is associated with valley foothill riparian forest, desert riparian, desert wash, and palm oasis habitats.

Natural History: This species is known to roost in trees, particularly in palms. It forages among trees and over water. The yellow bat is insectivorous. It does not hibernate. Young are generally born from June through July (WBWG, 2015).

Threats: Cosmetic trimming of palm fronds, and the use of pesticides in date palm and other orchards causing a loss of roosting and foraging habitats (WBWG, 2015).

San Diego desert woodrat

Status: The San Diego desert woodrat (*Neotoma lepida intermedia)* is a California Species of Special Concern. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: The San Diego desert woodrat is found in coastal and desert scrub habitats throughout much of southern California (CDFW, 2015a).

Distribution in the Study Area: This species was not observed during surveys within the Study Area, but suitable habitat is present.

Habitat and Habitat Associations: This species is found in shrublands and chaparral.

Natural History: This species frequently builds large middens (piles of sticks arranged to form a shelter) in rock outcrops or around the bases of shrubs.

Threats: No threats have been identified for this species.

Pocketed free-tailed bat

Status: The pocketed free-tailed bat (*Nyctinomops femerosaccus)* is a California Species of Special Concern. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This species is found in southern California, central Arizona, southern New Mexico, and western Texas, south into Mexico and Baja California (WBWG, 2015).

Distribution in the Study Area: This species was not observed during surveys within the Study Area, but suitable foraging habitat is present.

Habitat and Habitat Associations: This species is associated with pinyon juniper woodland, desert scrub, palm oasis, desert wash, and desert riparian habitats.

Natural History: This species roosts in rocky areas in high cliffs, usually in large colonies. It is also known to roost in buildings, caves, and under roof tiles. This species will form maternity colonies and female will each bear a single offspring between late June and July. The pocketed free-tailed bat forages primarily on moths, but will consume a variety of insects (WBWG, 2015).

Threats: Loss of roosting habitat and disturbance of roost sites (WBWG, 2015).

Big free-tailed bat

Status: The big free-tailed bat (*Nyctinomops macrotis)* is a California Species of Special Concern. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: This species is found in the southwestern U.S., including southern California, south into Mexico and South America (WBWG, 2015).

Distribution in the Study Area: This species was not observed during surveys within the Study Area, but suitable foraging habitat is present.

Habitat and Habitat Associations: This species is associated with desert scrub, woodlands, and evergreen forests.

Natural History: This species is a seasonal migrant. It roosts mainly in rock crevices in cliffs, but may also roost in buildings, caves, and tree cavities. This species will form maternity colonies and female will each bear a single offspring in late spring or early summer. The big free-tailed bat forages primarily on moths, but will also consume a variety of other insects (WBWG, 2015).

Threats: No known threats have been identified, but could include impacts to foraging habitat from grazing or pesticides and disturbance of roost sites (WBWG, 2015).

Palm Springs pocket mouse

Status: The Palm Springs pocket mouse (*Perognathus longimembris bangsi)* is a California Species of Special Concern and is covered by the CVMSHCP. This species is not federally or State listed as threatened or endangered.

General Distribution: This species occurs in the lower Sonoran Desert from the San Gorgonio Pass area east to the Little San Bernardino Mountains and south along the eastern edge of the Peninsular Range to Borrego Valley and the east side of San Felipe Narrows.

Distribution in the Study Area: This species was not observed during surveys within the Study Area, but suitable habitat is present in all reaches. This species has been documented in the immediate vicinity of the Project.

Habitat and Habitat Associations: This species is associated with desert riparian, desert scrub, desert wash, and sagebrush habitats. It is most commonly found in creosote-dominated desert scrub.

Natural History: Its habitat is level to gently sloping topography, with moderate vegetation cover and loosely packed or sandy soils. The Palm Springs pocket mouse is nocturnal and remains in its burrow during the day. Other subspecies of *Perognathus longimembris* are known to hibernate in winter, and although it has not been demonstrated, it is likely that *P.l. bangsi* does as well.

Threats: The primary threat to this species is habitat loss and degradation from development and OHV use.

American badger

Status: The American badger (*Taxidea taxus*) is a California Species of Special Concern. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: The vast geographic range of the American badger extends as far north as Alberta, Canada and as far south as central Mexico (Hall, 1981). This species occurs in suitable habitat throughout

California with the exception of humid coastal forests of the northwest (Williams, 1986). The elevation range for this species is from sea level to high mountains (Long, 1973).

Distribution in the Study Area: There are no known records for this species in the Study Area, but it is within the known geographic range for this species. There is suitable habitat in portions of the Study Area.

Habitat and Habitat Associations: American badgers exploit a wide variety of open, arid habitats, but are most commonly found in grasslands, savannas, mountain meadows, and open areas of desert scrub (Stephenson and Calcarone, 1999). Basic requirements are available food, friable soils, and relatively open, uncultivated ground (Williams, 1986).

Natural History: The American badger is generally solitary. It is primarily nocturnal, but may occasionally forage and disperse during the day (Lindzey, 1978; Messick and Hornocker, 1981). This species is active year-round except at higher elevations and latitudes, where winter torpidity is common. During winter, individuals at lower elevations will exhibit reduced surface activity and may remain in a single burrow for days or even weeks (Long, 1973; Messick and Hornocker, 1981). This species is an opportunistic predator feeding on rodents, rabbits, reptiles, insects, birds, eggs, and carrion (Williams, 1986; Zeiner et al., 1990b). American badgers mate in the summer and early autumn with young born in March and early April (Long, 1973).

Threats: This species has experienced large population declines in many areas of southern California, and has been steadily decreasing throughout the state over the last century (Williams, 1986). The major cause of mortality to adult badgers is vehicular accidents. Other common threats include habitat conversion to urban and agricultural uses, farming operations, shooting and trapping, poisoning, and reduction of prey base as a result of rodent control activities (Williams, 1986).

Desert kit fox

Status: The desert kit fox (*Vulpes macrotis arsipus*) is a California Protected Furbearing Mammal. This species is not federally or State listed as threatened or endangered, and is not covered by the CVMSHCP.

General Distribution: The desert kit fox is found in the southwestern deserts of California, southern Nevada, the lower elevations of western and southern Arizona, and northern Mexico.

Distribution in the Study Area: The Study Area is within the known geographic range for this species. There is suitable habitat in all reaches, but friable soil (for digging dens) is limited to Reaches 1 through 3 of the Study Area.

Habitat and Habitat Associations: Desert kit fox habitat includes open, arid scrublands, grasslands, and agricultural lands. Creosote bush scrub is the most common habitat association for desert kit fox in California (McGrew, 1979). Desert kit fox require friable soils for digging dens. Dens are used for cover, protection from predators and heat, and pup rearing. Suitable soil for dens may be a limited resource for kit fox distribution (Arjo et al., 2003).

Natural History: The desert kit fox is active mainly at night. Primary food sources are rodents and rabbits. (Tannerfeldt et al., 2003). Kit foxes are typically monogamous. The reproductive period is generally December to late May, but may vary (O'Farrell and Gilbertson, 1986).

Threats: Threats include habitat degradation, loss and fragmentation from development, roads, recreation, and grazing. Coyotes are both predators of kit foxes and direct competitors for food (White et al., 1994, 1995). Habitat and land use changes that attract coyotes therefore would likely have an adverse effect on

desert kit foxes. Canine distemper outbreaks have been a recent concern. Other threats are vehicle strikes, shooting, rodenticide poisoning, and den collapse from OHV activity.