Appendix C

BIOLOGICAL RESOURCES TECHNICAL REPORT

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Biological Resources Technical Report

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Easley Solar Project

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Acronyms

amsl	above mean sea level
ACEC	Area of Critical Environmental Concern
BO	Biological Opinion
BRTR	Biological Resources Technical Report
BBCS	Bird and Bat Conservation Strategy
BLM	Bureau of Land Management
CA-177	California Highway 177
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CDFA	California Department of Food and Agriculture
CESA	California Endangered Species Act
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CDFW	California Department of Fish and Wildlife
CNPS	California Native Plant Society
CNDDB	California Natural Diversity Database
CRPR	California Rare Plant Rank
DFA	Development Focus Area
DRECP	Desert Renewable Energy Conservation Plan
FEIS	Final Environmental Impact Statement
FESA	Federal Endangered Species Act
GIS	Geographic Information Systems

GPS	Global Positioning System
I-10	Interstate 10
LUPA	Land Use Plan Amendment
NEPA	National Environmental Protection Act
NPS	National Park Service
NECO Plan	Northern and Eastern Colorado Desert Coordinated Management Plan
O&M	Operations and Maintenance
PV	Photovoltaic
PWL	Pinto Wash Linkage
ROW	Right of Way
SEZ	Solar Energy Zone
TCAs	Tortoise Conservation Areas
USFWS	US Fish and Wildlife Service

1 Introduction

1.1 Background

Intersect Power (Intersect) is proposing to develop the Easley Solar Project (Project) near Desert Center in unincorporated Riverside County, California (Figure 1). The proposed Project site is located on Bureau of Land Management (BLM)-managed lands and acquired private property parcels. The Project site will connect to the existing Southern California Edison Red Bluff substation through a generation tie line connecting to the Oberon Renewable Energy Project (Oberon) substation and generation-tie (gen-tie) line. Oberon is an adjacent solar and energy storage facility owned by Intersect Power (Ironwood 2021). A portion of the Project site was previously part of Oberon's original project footprint. Aspen Environmental Group (Aspen) is overseeing all environmental permitting for the Project and has contracted Ironwood Consulting Inc. (Ironwood) to assess potential habitat for sensitive and special-status species within the Project site.

1.2 Purpose

This Biological Resources Technical Report (BRTR) provides a description of methods and results of biological resource surveys and investigations conducted from fall of 2019 through spring of 2022 for the Project site. The primary purpose of this report is to provide biological information that will be used as the foundation for impact assessments pursuant to the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). The discussion included herein may also be used to support consultation between Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (FESA) and for any necessary incidental take authorization from the California Department of Fish and Wildlife (CDFW) with respect to the California Endangered Species Act (CESA).

1.3 Site Location

The Project site is in unincorporated Riverside County, California. The Project is located in the Chuckwalla Valley near the community of Desert Center, approximately halfway between the cities of Indio, CA and Blythe, AZ. More specifically, it is located immediately northwest of California Highway 177 (CA 177) and east of Kaiser Road (Figure 1). A small portion of the Project site is east of CA 177. The Project site is located across four U.S. Geological Survey (USGS) 7.5-minute topographic (topo) quadrangles including Desert Center, Victory Pass, East of Victory Pass, and Corn Spring.

The portions of the Project site located on BLM-managed lands are within Desert Renewable Energy Conservation Plan (DRECP) Renewable Energy Development Focus Areas (Figure 1). The Project site is situated between Desert Harvest Solar Facility, Oberon Renewable Energy Project, and the Desert Center community. The Project site includes a multi-species linkage area as defined in the DERCP (Figure 1). The Project site is outside of, but adjacent to, desert tortoise critical habitat and the Desert Wildlife Management Area (DWMA) to the west side of Kaiser Road and approximately 2 miles south of the Project site. Alligator Rock Area of Critical Environmental Concern (ACEC) is approximately 3 miles south of the Project site and the closest Joshua Tree National Park boundary is located approximately 4 miles northeast of the Project site. Nearby land uses include

previously developed or developing solar facilities, transmission lines, fallow and active agriculture, and rural residences.

1.4 Project Summary

Intersect is proposing to construct, operate, maintain, and decommission an up to 400 MW solar photovoltaic (PV) electricity generating station, battery energy storage facility, electrical substation, gen-tie lines, and associated appurtenant facilities and access roads on approximately 2,740 acres of BLM managed land and 995 acres of acquired private land in Riverside County, California (Figure 2). A 6.7-mile 500 kilovolt (kV) gen-tie line would mainly traverse across the approved, adjacent Oberon Renewable Energy Project (Oberon)site and connect to Oberon's approved substation that is currently under construction. From the Oberon on-site substation, the power generated by the Easley Project would be transmitted to the SCE Red Bluff Substation via the Oberon 500 kV gen-tie line, which is expected to be online by the end of 2023. Biological resources for Oberon were previously evaluated in the Oberon Renewable Energy Project Biological Resources Technical Report (BRTR), under separate cover (Ironwood 2021), and is summarized in Section 1.5.

1.5 Summary of Oberon

The Oberon study area was located entirely on BLM-managed public land, with the southeastern parcels partially on desert tortoise critical habitat. Vegetation communities within the Oberon study area consisted of creosote bush scrub, interspersed with desert pavement, and desert dry wash woodland (Ironwood 2021a). Oberon is located within a closed surface hydrology basin and only state jurisdictional streambeds and riparian habitat occur, which include unvegetated ephemeral washes and desert dry wash woodland (Ironwood 2021b).

The gen-tie line locations and the substation areas within the study area of Oberon consisted of some sensitive species observations, which include desert tortoise (*Gopherus agassizii*) tracks, burrows, and carcasses within desert dry wash woodland areas, burrowing owl burrows (*Athene cunicularia*) with whitewash, inactive and active kit fox (*Vulpis macrotis*) complexes, and desert unicorn plants (*Proboscidea althaefolia*). Further detail for these observations and the potential for other special status species to occur are fully described within the Oberon BRTR (Ironwood 2021a).

2 Site Characteristics

2.1 Regional Setting

The Project site is located in the central portion of Chuckwalla Valley, east of Palm Springs in the Colorado Desert. The elevation of Chuckwalla Valley ranges from less than 400 feet (122 meters) above mean sea level (amsl) at Ford Dry Lake to approximately 1,800 feet (549 meters) amsl west of Desert Center and along the upper portions of the alluvial fans that surround the valley perimeter. The surrounding mountains rise to over 3,000 feet (92 meters) amsl. The topography of the Project site generally slopes downward toward the northeast at a gradient of less than 1 percent. Ground surface elevations at the Project site ranges from approximately 800 feet (244 meters) amsl in the southwest and 550 feet (168 meters) amsl in the northeast.

Anthropogenic features and land use near the Project site include agricultural, aquaculture farms, trash dumping, residential, renewable energy, energy transmission, historical military operations, and recreational development. Adjacent and nearby land uses are summarized in Table 1 and shown on Figure 1.

Table 1. Adjacent and Nearby Land Uses.

Direction	Land Uses
North	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, transmission lines, Joshua Tree National Park
South	Chuckwalla ACEC, transmission lines, I-10, Southern California Edison's Red Bluff substation, Alligator Rock ACEC, Corn Spring ACEC, desert tortoise critical habitat, Oberon Renewable Energy Project, rural residences
East	Chuckwalla Valley Raceway, Desert Lily Preserve, active/fallow agriculture, rural residences, existing transmission line, CA 177, historical military, Athos, Oberon, Arica, and Victory Pass solar projects
West	Kaiser Road, Joshua Tree National Park, desert tortoise critical habitat

2.2 Hydrology

The Project site is located within the Colorado River Hydrologic Region (HR). The Colorado River HR covers approximately 13 million acres (20,000 square miles) in southeastern California and is the most arid HR in California, with annual precipitation averaging less than 4 inches (WRCC 2022). The Project site is in the Big Wash and Hayfield Lake-Lake Tamarisk HUC 10 Hydrologic Areas, which flow to closed basins and are not connected with the Colorado River or other traditional navigable waters. Palen Dry Lake and Ford Dry Lake represent the lowest elevations within the basin.

Desert washes within this region are almost always dry but contract and expand dramatically in size due to extreme variations in flows, which can range from high-discharge floods to extended periods when surface flow is absent. The Project site lies between the alluvial fans emanating from the Eagle Mountains to the west, Chuckwalla Mountains to the south, and Coxcomb Mountains to the north.

The Project site is situated in the lower alluvial fan that is characterized by less stabilized soils consisting of finer sand and silt, compared to the upper alluvial fan that supports more stabilized, rocky soils with well-defined channels. The topography of the Project site is relatively flat with gradients of less than two percent. Alluvial processes across the Project site generally flow from southwest to northeast. Agricultural practices and developments, such as the I-10 and CA-177, have greatly modified natural hydrology.

2.3 Soils

Soils within most of the Project site are mapped as Vaiva-Quilotosa-Hyder-Cipriano-Cherioni (Figure 3) and are generally sandy and/or alluvial materials derived from granite, gneiss, metamorphic, rhyolite, and/or volcanic parent material (USDA and NRCS 2022). These soils are generally well-drained to somewhat excessively drained and experience medium to rapid runoff and moderate permeability. Soils within the eastern-most parcel of the Project site are mapped as Rositas-Dune land-Carsitas (Figure 3). These soils are characterized with a high sand percentage (greater than 95 percent) and are highly susceptible to wind for sand transport and migration.

2.4 Sand Transport System

The Project site is located within the Chuckwalla Valley, a region of active aeolian (wind-blown) sand migration and deposition. Aeolian processes play a major role in the creation and establishment of sand dune formations and habitat in the Chuckwalla Valley and those within the Project vicinity. Aeolian sands (dunes, sand fields, and similar habitats) are important habitats for certain plants and animals, including Mojave fringe-toed lizard, a special-status species.

In conjunction with the DRECP process, the Department of Conservation's California Geological Survey prepared a regional Eolian System Mapping Report for Eastern Riverside County in 2014 (Lancaster et al. 2014; note:eolian and aeolian are alternate spellings of the same word).

Lancaster et al. 2014 characterized most of the Project site as Qyf, which is described as modern alluvial fan deposits consisting of 'unconsolidated to slightly consolidated sand and gravel' that is considered an active aeolian source (Figure 4). A smaller portion of the Project site was classified as Qw, which is an active aeolian source. The eastern portion of the Project site was not characterized by Lancaster et al. 2014. No aeolian sand deposits are mapped on the Project site. These areas may be parts of sand transport corridors, where habitat for sensitive wildlife and plant species may be present. The areas of sand transport corridors are not fixed in time or space. Sand corridors can expand, contract, or migrate with changing weather and climate.

2.5 Rainfall

Measurements of precipitation during winter (October through March) and summer (April through September) periods are important in determining the efficacy of both wildlife and special status plant surveys. Data were obtained from the Western Regional Climate Center (WRCC 2022) for the most proximate stations to the Project site: Blythe Airport and Eagle Mountain weather stations (approximately 40 miles and 10 miles from the Project site, respectively).

The subtropical climate of the Colorado Desert is characterized by dry, mild winters averaging 54 degrees Fahrenheit (°F) and dry, hot summers that average 90°F. Summer highs are known to reach 122°F. Data were obtained from the Western Regional Climate Center (WRCC 2022) for the most proximate stations to the Project site: Blythe Airport and Eagle Mountain weather stations (approximately 40 miles and 10 miles from the Project site, respectively). Recent annual rainfall data from 2010 to 2022 were averaged (Table 2). Over the period of analysis, the highest winter rainfall occurred between October 2019 and March 2020 and the highest summer rainfall occurred between April and September 2012. Average historical winter precipitation recorded since the 1940's was about 2.1 inches, and average summer historical summer precipitations was about 1.4 inches.

Table 2. Seasonal Rainfall Summary.

Year	Winter – October to March (inches)*	Summer – April to September (inches)*
2010	4.8	0.1
2011	2.5	1.2
2012	1.0	3.3
2013	1.5	2.6
2014	0.7	1.2
2015	2.1	1.3
2016	1.5	0.7
2017	3.4	1.1
2018	0.1	0.5
2019	2.6	0.2
2020	3.6	0.8
2021	0.4	0.5
2022	0.4	0.4
Seasonal Average	**2.0**	**1.1**

2.6 Vegetation Communities

Vegetation communities in the Project site were mapped and classified by botanists, using Holland 1986 and cross-referencing with *A Manual of California Vegetation, 2nd edition* (Sawyer et al. 2009) and the National Vegetation Classification System (NVCS) referenced in the DRECP (CDFW and AIS 2022). Vegetation was mapped by drawing vegetation polygons on aerial images in the field. These field maps were then digitized into GIS shapefiles using ArcGIS Pro and one-foot pixel aerial imagery on a diagonal flat screen monitor at the office. Most mapped vegetation boundaries are accurate to within approximately 10 feet (3 meters).

The small-scale PDF vegetation map (Figure 5) provided with this report was generated from ArcGIS shapefiles; the shapefiles were used to calculate areas of each vegetation type and may be viewed at larger scale for management or analysis purposes, if needed. Any vegetation map is subject to imprecision for several reasons:

- Vegetation types tend to intergrade on the landscape so that there are no true boundaries in the vegetation itself. In these cases, a mapped boundary represents best professional judgment.
- Vegetation types as they are named and described tend to intergrade; that is, a given stand of real-world vegetation may not fit into any named type in the classification scheme used. Thus, a mapped and labeled polygon is given the best name available in the classification, but this name does not imply that the vegetation unambiguously matches its mapped name.

- Vegetation types tend to be patchy. Small patches of one named type are often included within mapped polygons of another type. The size of these patches varies, depending on the minimum mapping units and scale of available aerial imagery.

Much of the Project site consists of creosote bush scrub on public parcels with other natural communities intermixed (desert pavement or desert dry wash woodland). The private parcels consist of primarily man-made features that include deciduous orchard/fallow agriculture or developed areas (Figure 5). One vegetation community (desert dry wash woodland) is identified by BLM (Evens and Hartman 2007) and (CDFW 2020) as sensitive due to the association with alluvial processes and would likely be considered California State jurisdictional waters. Vegetation communities on the Project site are shown on Figure 5.

2.6.1 Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub has a State Rarity rank of S5 (CDFW 2020), being demonstrably secure, and is not designated as a sensitive plant community by BLM. It is synonymous with *Larrea tridentata -Ambrosia dumosa* alliance (Sawyer et al. 2009) and *Lower Bajada and Fan Mojavean – Sonoran Desert Scrub* (NVCS). Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote bush scrub habitat of the Colorado Desert (Holland 1986). Sonoran creosote bush scrub covers most of the Project site and intergrades with desert dry wash woodland along desert washes. Within the Project site, this community occurs on sandy soils with a shallow clay pan. Dominant plants within this community are creosote bush and white bursage. Other occasional components include indigo bush (*Psorothamnus emoryi*), sweetbush (*Bebbia juncea*), and button brittlebush (*Encelia frutescens*). One area was mapped as recovering creosote bush scrub since it was a previously disturbed area with creosote bush and burro bush that were sparser than the surrounding area due to that prior disturbance.

2.6.2 Desert Dry Wash Woodland

Desert dry wash woodland is a sensitive vegetation community recognized with a rarity rank of S4 (CDFW 2020). Desert dry wash woodland is characteristic of desert washes and is likely to be regulated by CDFW as jurisdictional state waters. This community is synonymous with blue palo verde (*Parkinsonia florida*) - ironwood (*Olneya tesota*) (microphyll) woodland alliance (Sawyer et al. 2009) and Sonoran - Coloradan Semi Desert Wash Woodland / Scrub (NVCS). Holland 1986 describes this community as an open to relatively densely covered, drought-deciduous, microphyll (small compound leaves) riparian scrub woodland, often supported by braided wash channels that change following every surface flow event. This vegetation community is dominated by an open tree layer of ironwood, blue palo verde, and smoke tree (*Psorothamnus spinosus*) of at least 2-3% cover. The understory is a modified creosote scrub with big galleta grass (*Hilaria rigida*) and desert lavender (Condea [=*Hyptis emoryi*] *emoryi*). Within the Project site, the desert dry wash woodland occurs on mostly the western portion of the Project site, with several ribbons of desert dry wash woodland interspersed between creosote bush scrub.

2.6.3 Desert Pavement

Desert pavement is not descriptive of vegetation, but rather a geomorphic condition that results in tightly interlocking gravel and pebbles which develop over time on fluvially inactive upland areas within stabilized

alluvial fans (Brady et al. 2013). It develops as gravel and rock deposits weather in place, causing rounding of pebbles, and as wind removes finer sediment. Older, well-established desert pavement typically exhibits varnish, an oxidized surface that occurs with age and fluvial inactivity. Within the Colorado desert, desert pavement is common in the valleys, andis sparsely vegetated with an intermittent layer of cryptogamic crust. The ground surface is sandy and gravelly mixed alluvium with various rocks and gravel. The shrub layer of creosote bush is extremely sparse.. The herb layer, though sparse is slightly larger than the shrub layer, and is often associated with the sensitive, but not rare, vegetation alliance rigid spineflower – hairy desert sunflower (*Chorizanthe rigida – Geraea canescens)* desert pavement sparsely vegetated alliance (Sawyer et al. 2009), with a state rarity rank of S4 (CDFW 2020). Within the Project site, rigid spineflower does not occur, so the vegetation alliance is not fully met, but is best characterized by this vegetation alliance. Desert pavement is often interwoven between areas of creosote bush scrub and desert dry wash woodland where it occurs on the Project site, and primarily occurs on the western portion of the Project site. Other occasional plants in the herb layer include annual buckwheat (*Eriogonum* sp.*)* and brittle spineflower (*Chorizanthe brevicornu*).

2.6.4 Wetland and Riparian Vegetation

Wetlands were mapped during the Spring 2022 surveys in two areas (Figure 5). One wetland, created from drainage from the aquaculture farm, is generally in the center of the Project site, on a private parcel. Most of the wetland is outside the Project area boundary. The second wetland is created from drainage from adjacent agricultural activity that allows water to drain through the wetland area into a pond area with no outlet. Both wetlands are dominated by herbaceous species, including softstem bulrush (*Schoenoplectus tabernaemontani*), cattail (*Typha latifolia*), and bearded sprangletop (*Diplachne fusca*).

Two areas of invasive tamarisk (*Tamarix ramomissima*) were mapped during the Spring 2022 surveys (Figure 5). The drainage from the aquaculture farm and agricultural activity provides supportive soil conditions for the establishment of tamarisk. These wetland areas and riparian vegetation will be discussed in more detail within the jurisdictional waters report for the Project site.

3 Data Collection Methods

3.1 Literature Review

Prior to conducting field surveys, analysis was performed with Geographic Information Systems (GIS) using the following digital datasets, which include the most current information, data sources, and tools:

- 7.5' USGS topographic quadrangles
- National Agriculture Imagery Program (NAIP) aerial imagery
- National Wetlands Inventory Wetlands Mapper (USFWS 2022)
- Desert Renewable Energy Conservation Plan (DRECP) (BLM and USFWS 2014)
- Desert Renewable Energy Plan (DRECP) Data Basin Gateway (CBI 2022)
- CNPS Online Inventory of Rare and Endangered Plants (CNPS 2022a)

- The Consortium of California Herbaria Jepson Interchange (CCH 2022)
- California Natural Diversity Database (CDFW 2022)
- Calflora (CalFlora 2022)
- Manual of California Vegetation and DRECP mapping (Sawyer et al. 2009)
- Natural Resource Conservation Service (NRCS) Web Soil Survey (USDA and NRCS 2022)
- Western Regional Climate Center (WRCC 2022)
- BLM sensitive species lists (BLM 2022)
- Previous biological resources and delineation reports and permit applications (e.g., Palen, Crimson, Oberon, Arica & Victory Pass Solar Projects)

3.2 Special Status Species Definition

Special status species are those that have been afforded special recognition by federal, state, or local resource agencies or organizations, are often of relatively limited distribution, and typically have unique habitat conditions, which also may be in decline. Special status criteria include:

- Officially listed or candidates for listing by California or the federal government as endangered, threatened, of special concern, or rare under CESA or FESA
- Plants or animals which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the CEQA
- BLM Sensitive Species designated by the BLM California State Director
- Plants listed in the CNPS Inventory of Rare and Endangered Plants of California (CNPS 2022)
- Wildlife species identified by CDFW as Species of Special Concern (CNDDB 2022, Figure 6)
- Plants or animals included in the CDFW lists of Special Plants or Special Animals (CNDDB 2022, Figure 6)
- Considered special-status species in local or regional plans, polices, or regulations such as the Northern and Eastern Colorado Desert Coordinated Management Plan/EIS
- Protected under other statutes or regulations (e.g., Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, etc.)

All surveys were conducted per DRECP DFA Biological Conservation Management Action (CMA) requirements for each species within the recommended timing, including full-coverage desert tortoise surveys and burrowing owl surveys. Any modifications are further explained within each individual sensitive species section below.

3.3 Wildlife Surveys

Based upon review of the literature, a list of special-status wildlife species with potential to occur in or near the Project site was compiled (Appendix A). Full coverage wildlife surveys were conducted during the following periods (Figure 7):

- Fall surveys, full-coverage 10-meter transect surveys: October 17-27, 2019
- Spring burrowing owl surveys (#1), 20-m transects in areas previously surveyed, 10-m transects in areas not previously surveyed: March 25-April 14, 2020
- Burrowing owl surveys original footprint: May 8-11, 2020 (#2); June 15-16 (#3), 2020; July 13-14, 2020 (#4)
- Burrowing owl surveys new area: May 26-June 4, 2020 (#1), July 6-8, 2020 (#2), July 29, 2020 (#3), August 19, 2020 (#4)
- Fall 10-meter transect surveys for areas not previously surveyed: September 8-October 29, 2021
- Spring burrowing owl surveys (#1), 10-meter transect surveys for areas not previously surveyed, 20-meter transects in areas previously surveyed March 21-April 7, 2022
- Spring burrowing owl surveys: April 30-May 2, 2022 (#2), May 26-June 2, 2022 (#3), July 14-16, 2022 (#4)

Wildlife surveys employed belt transects approximately 10 meters (32.8 feet) apart in order to provide 100 percent (full) coverage for the proposed solar facility. Wildlife surveys were repeated in spring 2022 at 20-meter belt transects, consistent with 2012 CDFW burrowing owl protocol surveys (CDFW 2012) and in conjunction with plant surveys with a 150-meter buffer. Any new areas were surveyed at 10-meter intervals within the Project footprint and at intervals of 20-meters within the buffer.

Survey crews in the fall seasons consisted of experienced desert wildlife biologists with at least one botanist on the crew. Survey crews in spring consisted of experienced botanists with at least one wildlife biologist per crew. Surveys were conducted by walking linear transects and visually searching for live individuals or sign of any sensitive species. All holes detected that may be inhabited by sensitive species as burrows or burrow complexes were carefully inspected for potential occupancy or sign of recent use. Special emphasis was placed on searching around the bases of shrubs and along the banks of shallow washes. Burrows were carefully examined and assigned to the wildlife species that may have inhabited them based on indicator signs within the burrow or near the mouth of the burrow.

During wildlife surveys, biologists recorded all wildlife species observed, regardless of conservation status. Common species were tallied at the end of each transect and recorded throughout each day by each crew. During the spring surveys, additional avian counts were completed in the mornings during surveys until 10 a.m. All locational information for special status species observations and sign detected were recorded on digital Zerion iForms for any new data collected. During each survey period, data collected from previous survey periods was uploaded to Fieldmaps as field reference to ensure that duplicate data was not taken.

3.3.1 Desert Tortoise

Wildlife surveys conducted in 2019-2022 conformed to full coverage desert tortoise protocol surveys with 10-meter transects on the Project site (USFWS 2019). All observed tortoise sign [e.g., live tortoises (all age classes), shell/bone/scutes, scats, burrows/pallets, tracks, eggshell fragments, and courtship rings] was recorded. Incidental observations of desert tortoise sign were recorded if they were not previously recorded in subsequent

surveys for other resources (i.e., botanical, avian, jurisdictional delineations). The condition of burrows, scat, and carcasses were categorized per the following class designations (USFWS 2009):

- Burrows:
  - currently active, with desert tortoise or recent desert tortoise sign
  - good condition (no evidence of recent use) - definitely desert tortoise
  - deteriorated condition (including collapsed burrows) - definitely desert tortoise
  - good condition - possibly desert tortoise
  - deteriorated condition (including collapsed burrows) - possibly desert tortoise.
- Scat:
  - wet (not from rain or dew) or freshly dried, obvious odor
  - dried, with glaze, some odor, dark brown
  - dried, no glaze or odor, signs of bleaching (light brown), tightly packed material
  - dried, light brown to pale yellow, loose material, scaly appearance
  - bleached, or consisting only of plant fiber
- Carcasses:
  - < 1 year, fresh putrid, scutes mostly adhered, sheen on exposed scutes, unexposed bone waxy and solid
  - 1-2 years, scutes mostly adhered to bone, exposed scutes pale without sheen, unexposed bone silky
  - 2-3 years, scutes peeling off bone, unexposed scutes pale and without sheen, no growth ring peeling
  - 4 years, shell bone falling apart, growth rings on scutes peeling; bone fissured
  - > 4 years, disarticulated and scattered

3.3.2 Couch's Spadefoot Toad

A reconnaissance level survey for potential Couch's spadefoot toad habitat was conducted during the 2021 and 2022 surveys by searching for areas that may provide suitable habitat for reproduction. Areas where water may accumulate and remain for at least 2 weeks following heavy rain were recorded as potential Couch's spadefoot toad reproductive habitat. These areas were to be inspected for any sign of Couch's spadefoot toad following heavy rains in warmer months (during spring and summer) when reproduction typically occurs (Mayhew 1965).

3.3.3 Avian Species

3.3.3.1 Western Burrowing Owl

Survey recommendations in both the 1993 California Burrowing Owl Consortium (CBOC 1993) Guidelines and 2012 CDFW Staff Report (CDFW 2012) include baseline data collection and an assessment of site use by burrowing owl. One full-coverage survey was conducted during spring surveys, during the breeding season, which were consistent with Phase II of the CBOC 1993 Guidelines and partially consistent with the 2012 CDFW

Staff Report. Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (CDFW 2012; CBOC 1993).

The first burrowing owl survey, when surveys were conducted at 10-meter spacing, provided a greater level of coverage than the 30-meter spacing recommended in the 1993 CBOC Guidelines and the 20-meter spacing recommended in the 2012 CDFW Staff Report. All burrows detected during wildlife surveys were assessed for wildlife occupancy, to ensure detection of any special status species, including burrowing owl that may have occupied a burrow. The 20-meter transect spacing also increased the likelihood of flushing live burrowing owls during the survey. All sign of burrowing owl, including individuals, feathers, tracks, whitewash, pellets, and suitable burrows were recorded if present. An additional 50-meters of buffer around the Project site was also surveyed following the 2012 protocol survey.

A modification of the protocol 2012 survey recommendations was completed for the subsequent three surveys during the active burrowing owl season. The subsequent three surveys were modified as burrow inspections for all previously detected burrows, including mammal, potential tortoise, or burrowing owl burrows. All burrows were re-visited to check for any change in burrowing owl sign and were included as new burrowing owl sign if detected. Any new burrows observed during these burrow checks were added to the next check. These burrow checks were spaced at the same time intervals as the 2012 recommendations, with at least 3 weeks of time passing between each session of burrow surveys.

3.3.3.2 Golden Eagle

Targeted surveys for golden eagles were not performed for the Project due to numerous surveys conducted in the Project vicinity and Chuckwalla Valley within the last ten years. A compilation of survey methodology and results from other projects that have conducted these surveys in the last ten years is provided in the results section of this report.

3.3.3.3 Avian Counts

Avian counts were conducted during spring 2022 surveys. Each survey team consisted of at least one avian biologist who was exclusively tasked with tallying all avian observations. The avian biologist walked with each survey team in the morning, from the start of the survey until about 10:00 am, or earlier if weather conditions were unfavorable for avian detection (i.e., high wind). After these avian counts, the avian biologist would continue to note any incidental wildlife species observed, while also continuing to help with any survey that was being performed.

3.3.4 Special Status Bat Species

Targeted surveys for bats were not conducted. Incidental observations of bats or bat roosts were documented during wildlife surveys. Acoustic bat surveys previously conducted for the Palen Solar Energy Project provide supplementary information about bat populations within the project vicinity. This is further discussed in the results section of this report.

3.3.5 Other Special Status Wildlife Species

All sign of desert kit fox and American badger was recorded, including live or dead individuals, scat, tracks, burrows, and burrow complexes. Activity and likely species usage for each burrow or complex was determined by the burrow size (larger burrows are more likely coyote or badger) and types of sign found at the burrow site. If fresh tracks, scratches, or scat were found at a burrow or complex, it was categorized as active. The presence of old scat without tracks, and no presence of freshly dug dirt, or scratches would indicate that a burrow or complex was inactive. All burrows and burrow complexes were mapped and attributed, if possible, to species. If a burrow could not be attributed to species, it was recorded as a “canid” burrow, which may include desert kit fox, coyote, or domestic dog.

3.4 Special Status Plants

Based upon review of the literature, a list of special-status plant species with potential to occur in or near the Project site was compiled (Appendix B). Focused special status plant surveys were conducted during the following periods (Figure 7):

- Fall surveys, full-coverage 10-meter transect surveys: October 17-27, 2019
- Spring surveys, 20-m transects in areas previously surveyed, 10-m transects in new areas: March 25-April 14, 2020
- Fall 10-meter transect surveys for areas not previously surveyed: September 8-October 29, 2021
- Spring surveys, 20-meter transects in previously surveyed areas in fall 2021, 10 meter transects in areas not previously surveyed: March 27-31, April 2-7, 2022

Survey methodology was consistent with the following guiding documents:

- Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000)
- Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2000)
- CNPS Botanical Survey Guidelines (CNPS 2001)
- Survey Protocols for Survey and Manage Strategy 2: Vascular Plants (Whiteaker et al. 1998)

Based upon review of the literature, a list of special-status plant species with potential to occur in the vicinity of the Project site was compiled (Appendix B). Plant surveys performed in spring of 2020 and 2022 included visual coverage across the entire Project site. All surveyors were trained on diagnostic features and habitat notes of special status species that may occur, and each crew of surveyors had at least one highly experienced botanist.

Focused plant surveys were performed in spring 2020 and 2022 and included visual coverage across the entire Project site. Surveyors employed belt transects spaced at approximately 20 meters apart. Transects were spaced at 10-meters apart in areas not previously surveyed in the preceding fall season. These surveys were completed in conjunction with avian counts in the mornings. Avian biologists chosen to support these botanical surveys

were also skilled in plant identification and could easily integrate with the plant survey after completing avian counts in the morning.

Prior to beginning plant surveys in both the fall and spring, reference populations of special status plants were visited to ensure that timing for surveys was sufficient and that most special status plant species that have the potential to occur would be identifiable. On October 9, 2019, populations were observed for crucifixion thorn (*Castela emoryi*) and desert unicorn plant (*Proboscidea althaefolia*) in Desert Center. On March 24, 2020 populations for Harwood's eriastrum (*Eriastrum harwoodii*) and Harwood's milkvetch (*Astragalus harwoodii*) and ribbed cryptantha (*Cryptantha costata*) were observed flowering north of the Arica Solar Project.

During plant surveys, botanists recorded all plant species, regardless of conservation status. All locational information for special status species observations were recorded on digital Zerion iForms for any new data collected. Data collected in previous seasons was uploaded to Fieldmaps as field reference to ensure that duplicate data from previous surveys was not collected.

Table 3. Special-status Wildlife and Plant Survey Personnel and Dates.

Date Ranges	Survey Type	Surveyors
10/17/2019-10/27/2019	Fall 2019 10-m surveys – wildlife and plant	M. Adams, T. Alvey, M. Baker, M. Bassett, K. Black, M. Cloud-Hughes, E. Bowen, M. Bratton, S. Clegg, L. Chow, M. Dipane, M. Honer, S. Hoss, T. Hobbs, C. Keaton, D. Kesonie, M. Lavender, M. Lopez, A. Mach, W. McBride, M. Moon, S. Nielsen, S. Nelson, B. Payne, B. Sandstrom, C. Slaughter, E. Thorn, J. St Pierre, M. Sally, R. Woodard, Z. Webb. M. Wegmann, J. Yerger, M. Zhuo
3/25/2020-4/14/2020	Spring 2020 20-m plant surveys/BUOW survey #1, 10-m surveys in areas not previously surveyed	M. Adams, M. Baker, K. Black, L. Chow, M. Honer, M. Cloud-Hughes, D. Kesonie, W. McBride, M. Lavender, M. Lopez, S. Nielson, J. St Pierre, A. Schaub, J. Yerger
5/8/2020-5/11/2020	BUOW survey #2	Z. Webb, L. Chow
5/26/2020-6/4/2020	BUOW survey #1 – new area	L. Chow, A. Schaub, M. Lopez, S. Nielson, M. Lavender, M. Cloud-Hughes, M. Baker
6/15/2020-6/16/2020	BUOW survey #3	A. Shaub, M. Lavender
7/6/2020-7/8/2020	BUOW survey #2 – new area	A. Shaub, M. Lavender
7/13/2020-7/14/2020	BUOW survey #4	Z. Webb, M. Lavender
7/29/2020	BUOW survey #3 – new area	Z. Webb, M. Lavender
8/19/2020	BUOW survey #4 – new area	Z. Webb, M. Lavender
9/8/2021-10/29/2021	Fall 2021 10-m surveys for areas not previously surveyed, wildlife and plant	M. Adams, L. Chow, A. D Epremesnil, M. Honer, S. Jones, S. Kehrmeyer, M. Lavender, J. Leary, M. Lopez, Z. Meeks, M. Moon, C. Moura, B. Role, N. Starzak, A. Walters, J. Weaver, Z. Webb, J. Wood, J. Yerger
3/22/2022-4/7/2022	Spring 20-m surveys for areas previously surveyed in Fall 2021, avian counts, and BUOW #1	Michelle Cloud-Hughes, Marc Baker, W. McBride, L. Neff, B. Sivinski, M. Honer, M. Adams, K. Bender, G. Chio, J. Colling, S. Decurtis, J. Leary, M. Lopez, S. Menjivar, H. Oswald, B. Payne, T. Silvia, A. Shaub, J. Yerger
4/20/2022-4/27/2022	Jurisdictional delineation surveys – potential wetland areas only	M. Lavender, L. Rouse
4/30/2022-5/2/2022	BUOW surveys #2, burrow checks	G. Chio
5/26/2022-6/2/2022	BUOW surveys #3	B. Payne, J. Chikezie
5/23/2022-6/18/2022	Burrow checks, vegetation mapping, jurisdictional delineation	M. Adams, K. Bender, G. Chio, J. Colling, S. Decurtis, J. Leary, M. Lopez, S. Menjivar, H. Oswald, B. Payne, T. Silvia, A. Shaub, J. Yerger
7/14/2022-7/16/2022	BUOW surveys #4	D. Summers, J. Chikezie

4 Results

4.1 Special Status Wildlife

Sixty-one special status wildlife species were reviewed for their potential to occur within the Project site and its vicinity using information gathered from regional plans and database records (Appendix A, B). Several species were determined to have a low probability of occurrence due to the absence of suitable habitat. Special status wildlife species observed within the Project site or with moderate to high potential to occur based on the presence of suitable habitat are discussed further in this section. Summarized results of surveys are in Appendix C. A comprehensive list of wildlife species observed during surveys is included in Appendix D. Conservation status for wildlife species is defined below:

Federal

- FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
- FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
- FCT = Proposed for federal listing as a threatened species
- BCC = Fish and Wildlife Service: Birds of Conservation Concern
- FSS = United States Forest Service Sensitive

State

- SSC = State Species of Special Concern CFP = California Fully Protected
- SE = State listed as endangered
- ST = State listed as threatened
- WL = State watch list
- CPF = California Protected Furbearing Mammal
- CPGS = California Protected Game Species
- CDF-S = California Department of Forestry & Fire Protection Sensitive

Bureau of Land Management

- BLM-S = BLM Sensitive
- FOC = DRECP Focus and Planning Species

Western Bat Working Group (WBWG)

- H = imperiled or at high risk of imperilment
- M = warrant closer evaluation, more research, and conservation actions
- L = most of the existing data support stable populations

4.1.1 **Crotch's Bumble Bee:** SE (candidate)

Crotch's bumble bee (*Bombus crotchii*) inhabits grasslands and shrublands throughout southwestern California. They are generalist foragers and have been associated with plants in the F*abaceae, Apocynaceae, Lamiaceae, Hydophyllaceae, Asclepiadoideae,* and *Asteraceae* families (Thorp et al 1983). They have also been observed using plants *Asclepias, Chaenactis, Lupinus, Meicago, Phacelia, and Salvia*, as food (Williams et al 2014). The Project site is located east of the current range of Crotch's bumblebee and is outside the historic range, except

for a southeastern portion of the gen-tie line that overlaps with the Oberon Solar Project (CDFW, 2023d, Figure 8). Nearest records to the Project site include a record near Corn Springs in 1993 and Palm Springs in 1954 (CNDDB 2023c). There are more recent records western side of Riverside County, west of Palm Springs (CNDDB 2023c, California Bumble Bee Atlas, 2023). Suitable habitat occurs for Crotch's bumble bee on the Project site since some of the plant families and genera associated with them also occur. However, the active agriculture and developments adjacent to the Project site could lower the habitat suitability with their potential use of pesticides. No Crotch's bumble bees were observed during wildlife or plant surveys.

4.1.2 Mojave Desert Tortoise: SE, FT, FOC

Mojave desert tortoises (*Gopherus agassizii*) live north and west of the Colorado River in the Mojave Desert of California, southern Nevada, northwestern Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in southern California (USDI and FWS 1990). Desert tortoises inhabit a variety of habitats from flats and slopes dominated by creosote bush – white bursage communities, where a diversity of perennial plants is relatively high, to a variety of habitats in higher elevations. Tortoises are found most often on gentle slopes with sandy-gravel soils. Soils must be appropriately soft for digging burrows, but firm enough so that burrows do not collapse (Andersen et al. 2000). Tortoises typically prefer habitats with abundant annual forbs, grasses, and cactus, which constitute its primary food sources. Plant species that have high potential for potassium excretion (high-PEP) may be critical to the diet of desert tortoise (Oftedal 2002; Oftedal et al. 2002).

The Project site is located within the Colorado Desert Recovery Unit for Mojave desert tortoise and is outside of but adjacent to USFWS-designated critical habitat for desert tortoises, which is also designated as a Desert Tortoise Conservation Area (TCA) in the DRECP (Figure 9). The 2021 density (/km^2) of tortoises with a midline carapace length of greater than or equal to 180 mm within the Colorado Desert Recovery Unit stratums are as follows:

- Chuckwalla, 1.8 tortoises per km^2 (directly south of the Project site)
- Joshua Tree, 3.1 per km^2 (approximately four miles north of the Project site)
- Pinto Mountains, 1.7 per km^2 (approximately 25 miles northwest from the Project site)
- Chocolate Mountain, 7 per km^2 (approximately 18 miles south of the Project site)
- Fenner, 2.8 per km^2 (approximately 70 miles north of the Project site) (USFWS 2020)

Surveys in the Chemehuevi stratum were not conducted in 2019. In 2018 the density of tortoises within the Chemehuevi stratum was 2.9 tortoises per km^2 (approximately 60 miles from the Project site) (USFWS 2019).

Nussear et al. 2009 includes a model for the statistical probability of desert tortoise occurrence, and since publication it has continued to be a reliable tool in determining the likelihood for tortoise occupancy across the historical range of the species. The model provides a geographic representation of predicted occupancy ranging from very low (0.0) to very high (1.0). Various analyses of desert tortoise have used a model value of ≥ 0.5 as denoting the threshold for suitable habitat for desert tortoise (USFWS 2021). Conversely, lands that score < 0.5 have a low to moderate probability of desert tortoise occupancy.

Desert tortoise habitat has lower predicted occupancy levels in the northernmost portion of the Project site (0 to 0.2) and increases toward the south, with the highest occupancy levels of 0.5-0.6 in the southwest portion of the Project site (Nussear et al. 2009, Figure 10). A majority of the Project site does not meet the threshold for suitable desert tortoise habitat. The areas with higher occupancy levels are also closest to desert tortoise conservation areas. These predicted occupancy values do not account for habitat degradation resulting from existing anthropogenic features (Nussear et al. 2009), which would further reduce the occurrence probability in disturbed areas. Desert tortoise habitat connectivity, as well as the Pinto Wash Linkage that overlaps the northernmost portion of the Project site with low predicted occupancy, is discussed in Section 4.2, Wildlife Movement.

Desert tortoise sign observed during field surveys were consistent with the predicted occupancy model, with all the observed sign occurring in areas with occupancy values of 0.3 or higher. Most of the desert tortoise sign was concentrated within the southwest portion of the Project site. No live desert tortoises or active sign were documented. Nine locations of tortoise carcasses were observed, most of which were characterized by shell bones falling apart and growth rings on scutes peeling (class 4) or disarticulated bones or scutes more than 4 years old (class 5). Figure 10 and Appendix C-1 summarize desert tortoise observations.

4.1.3 Couch's Spadefoot Toad: SSC, BLMS

Couch's spadefoot toad (*Scaphiopus couchii*) is often found in shortgrass plains, mesquite savannah, creosote bush desert, thorn forest, tropical deciduous forest (Mexico), and other areas of low rainfall (Stebbins 2003). It is considered an opportunistic species because it only appears when rainfall forms temporary pools and potholes with water lasting longer than 10-12 days, which are required for breeding, hatching, and metamorphosis. Runoff basins at the base of sand dunes are also sites of reproduction (Mayhew 1965). In California, it is known to occur in the low desert region, especially the Colorado River corridor. In Riverside County, Couch's spadefoot toad is distributed in the northeastern terminus of the Salton Trough, north and east of the Chuckwalla Mountains in the Chuckwalla and Palen Valleys, and west of the Colorado River in the Palo Verde Valley (CDFW 2022b). It burrows underground or occupies rodent burrows when inactive.

The DRECP distribution model for Couch's spadefoot toad is shown on Figure 9. Documented records of this species, nearest to the Project, occur within approximately two miles of the Project site. One occurrence was located northeast of the Project near the Genesis Solar Project. Another occurrence that was documented in 2021 by Ironwood biologists was located southeast of the Project site within a deeply incised desert wash with relatively dense microphyll woodland cover.

Couch's spadefoot toad was not observed, but potential suitable breeding habitat is present within the Project site in areas where water accumulates. Nineteen data points were documented throughout all survey periods as potential breeding habitat where water may accumulate after rainfall or where human activities create perennial water sources (Figure 10, Appendix C-1). Several data points are along a channel with wetlands and areas of open water created from drainage from the aquaculture farm. This habitat was checked in late summer of 2022 following substantial regional rainfall. Within the same period, breeding pools were recorded approximately 20 miles southeast of the Project site. There was no standing water observed within the mapped potentially suitable habitat within the Project. The potential for Couch's spadefoot toad to occur on the Project is expected to be low; future surveys will occur opportunistically during summer months of May through

September when sufficient rainfall in warmer temperatures allow for breeding to determine occupancy (Mayhew 1965).

4.1.4 **Western Burrowing Owl:** SSC, BCC, BLMS, FOC

The Western burrowing owl *(Athene cunicularia hypugaea)* inhabits arid lands throughout much of the western United States and southern interior of western Canada (Haug et al. 1993). Suitable habitat for western burrowing owl includes open habitat with available burrowing opportunities, including agricultural fields (active and fallow), creosote scrub, desert saltbush, ephemeral washes, and ruderal areas.

Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering sites and will often return to previously used burrows, particularly if they had successful reproduction in previous years (Gervais et al. 2008). They generally depend on other species to dig suitable burrows for use but may also use anthropogenic surrogate burrows such as rubble piles or drainage pipes. If formerly occupied burrows are badly damaged or collapsed, burrowing owls cannot repair them and must seek alternate sites. The southern California breeding season (defined as the time from pair bonding of adults to fledging of the offspring) generally occurs from February to August, with peak breeding activity from April through July (Haug et al. 1993).

In the Colorado Desert, burrowing owls generally occur at low densities in scattered locations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant (Gervais et al. 2008). Burrowing owls tend to be opportunistic feeders, and a large portion of their diet consists of beetles, grasshoppers, and other large arthropods. The consumption of insects increases during the breeding season (Haug et al. 1993). Small mammals, especially mice and voles (*Microtus* and *Peromyscus* spp.) are important food items. Other prey animals include herpetofauna, young cottontail rabbits, bats, and birds such as sparrows and horned larks.

Two live individuals, both in flight, were observed during survey periods. Eight burrows with either whitewash, feathers, and/or pellets were documented. Appendix C-2 summarizes all the burrowing owl observations from wildlife surveys and Figure 11 shows all noteworthy avian observations, including burrowing owl observations.

4.1.5 **Golden Eagle:** CFP, WL, CDF-S, BCC, BLMS, FOC

Golden eagles are typically year-round residents throughout most of their western United States range. They breed from late January through August with peak activity March through July (Kochert et al. 2002). Habitat for golden eagles typically includes rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on rabbits and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al. 2002). They generally nest in rugged, open habitats with canyons and escarpments, often with overhanging ledges and cliffs or large trees used as cover.

Recent data analysis and population modeling suggest the status of the golden eagle population in the western United States is gradually declining towards an equilibrium of about 26,000 individuals, down from an estimated 34,000 in 2009 and 2014 (USFWS 2016). The future population estimate relies on the continuation of current

ecological and biological conditions. It was estimated that 3,400 golden eagles die annually from anthropogenic causes in the United States and suggest a level of sustainable take is approximately 2,000 individuals annually (USFWS 2016). Additional unmitigated mortality will steepen the rate of decline that the golden eagle population is presently undergoing (USFWS 2016).

The Project site lacks suitable nesting habitat for golden eagles. The nearest known cliff nest sites that have some potential for golden eagle use are approximately 3.5 miles from the Project site (Figure 12). The Project site supports suitable foraging habitat for golden eagles, but no golden eagles were observed during surveys.

Table 4. Regional Golden Eagle Surveys.

Year	Type of Survey	Associated Project (s)	Surveying Firm	Golden Eagle Observations
2010	Aerial survey	Desert Sunlight Solar Project, Genesis Solar Project, Palen Solar Project	Wildlife Research Institute	1 active nest in Coxcomb Mountains, 1 active territory in Eagle Mountains
2011	Aerial eagle (not nesting) and transect survey	Other research survey	West	No observations in area surveyed
2011	Aerial and ground	Regional Nest Survey	BioResource Consultant	No observations in area surveyed
2011	Aerial survey	Joshua Tree National Park	Wildlife Research Institute	4 territories active - Eagle Mountains-West Central, Eagle Mountains - West Northwest, Hexie Mountains - Central, Little San Bernardino - East); the Eagle Mountain territories were productive - had a total of 3 young observed
2011	Ground survey	Desert Harvest Solar Project	Bloom Biological	No active nests, 1 golden eagle sighting
2012	Aerial (not nesting) and transect survey, tracking eagles	Other research survey	West and Duerr et al	No observations in area surveyed
2012	Ground survey	Desert Sunlight Solar Project	Ironwood Consulting	No active nests - 7 golden eagle sightings (6 in Eagle Mountains, 7 in Coxcomb Mountains
2013	Tracking eagles	Other research survey	West and Duerr et al	No observations in area surveyed
2013	Ground survey	BLM raptor-raven nest survey	Corvus Ecological	No observations in area surveyed
2013	Ground survey	Desert Sunlight Solar Project	Corvus Ecological	No active nests, 4 golden eagle sightings
2013	Air and ground survey, camera traps	Palen Solar Project	Bloom Biological (Bloom 2013)	1 subadult at bait station during all 5 weeks; 3rd year flying along cliffs

Year	Type of Survey	Associated Project (s)	Surveying Firm	Golden Eagle Observations
2014	Air and ground survey	BLM raptor-raven nest survey	Boarman	No observations in area surveyed
2015	Ground survey	BLM raptor-raven nest survey	Corvus Ecological	No observations in area surveyed
2020	Ground survey	BLM raptor-raven nest survey	Corvus Ecological	3 nests in Joshua Tree National Park (general locational information pending)
2020	Variable radius point count	Chuckwalla CHU	Corvus Ecological (Corvus Ecological 2020)	General locational information pending

4.1.6 **Le Conte's Thrasher:** SSC, BLMS, BCC

In California, Le Conte's thrasher (*Toxostoma lecontei*) is a resident in the San Joaquin Valley and the Mojave and Colorado Deserts (Weigand and Fitton 2008). This pale gray bird occurs in desert flats, washes, and alluvial fans with sandy and/or alkaline soil and scattered shrubs. Preferred nest substrate includes thorny shrubs and small desert trees and nesting rarely occurs in monotypic creosote scrub habitat or Sonoran Desert woodlands (Prescott 2005). Breeding activity occurs from January to early June, with a peak from mid- March to mid-April. Le Conte's thrashers forage for food by digging and probing in the soil. They eat arthropods, small lizards and snakes, and seeds and fruit; the bulk of their diet consists of beetles, caterpillars, scorpions, and spiders. Suitable foraging habitat for Le Conte's thrasher occurs throughout the Project site, and suitable nesting habitat occurs in the desert dry wash woodland areas of the Project site. Le Conte's thrasher was not observed during surveys.

4.1.7 **Prairie Falcon:** WL

The prairie falcon (*Falco mexicanus*) is on the CDFW watch list and is a USFWS Bird of Conservation Concern. It inhabits dry environments in the North American west from southern Canada to central Mexico. It is found in open habitat at all elevations up to 3,350 m, but is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Prairie falcons require cliffs or bluffs for nesting though will sometimes nest in trees, on power line structures, on buildings, or inside caves or stone quarries. Ground squirrels and horned larks are the primary food source, but prairie falcons will also prey on lizards, other small birds, and small rodents (CDFW 2022a).

There were four observations of prairie falcon, either flying through the Project site or perched within the Project site (Figure 11). The entire Project site contains suitable foraging habitat for this species but does not have suitable nesting habitat.

4.1.8 **Loggerhead Shrike:** SSC (nesting)

Loggerhead shrikes (*Lanius ludovicianus*) are small predatory birds that are common year-round residents throughout most of the southern portion of their range, including southern California. In southern California, they are generally much more common in interior desert regions than along the coast (Humple 2008). They can be found within lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub,

non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Loss of habitat to agriculture, development, and invasive species is a major threat; this species has shown a significant decline in the Sonoran Desert (Humple 2008). Loggerhead shrikes initiate their breeding season in February and may raise a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood (Yosef 1996). In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef 1996). Suitable foraging and nesting habitat for loggerhead shrike is found throughout the Project site. Twenty observations of live individuals were documented during all surveys and avian counts (Figure 11).

4.1.9 Gila Woodpecker: SE, BLMS, BCC

Gila woodpecker is predominantly a permanent resident across its range in areas of southeast California, southern Nevada, central Arizona, extreme southwest New Mexico, and parts of Mexico. The Gila woodpecker is an uncommon to fairly common resident in Southern California along the Colorado River, and locally near Brawley, Imperial County (Garrett and Dunn 1981). A pair of Gila woodpeckers was incidentally observed near the Corn Springs campground feeding young in 2018 (Ironwood 2017), approximately 7 miles southeast of the Project site. Suitable habitats include riparian woodlands, uplands with concentrations of large columnar cacti, old-growth xeric-riparian wash woodlands, and urban or suburban residential areas (Rosenberg et al. 1987; Edwards and Schnell 2000). Gila woodpeckers prefer large patches of woody riparian vegetation for nesting (greater than 49 acres), but they have also been documented in various habitat types, such as desert washes (McCreedy 2008) and residential areas (Mills et al. 1988).

In California, their primary habitat is cottonwood-willow riparian woodland. Where Gila woodpeckers occur in dry desert wash woodlands, they excavate cavity nests in large blue palo verdes (McCreedy 2008). They also may nest in ornamental trees including palms. Availability of suitable nesting trees is a limiting factor in breeding habitat suitability (Grinnell and Miller 1944). Potentially suitable habitat within the Project site is found in desert washes in palo verde or ironwood trees large enough for cavity nests. The probability of this species nesting on the Project site is low since only a few palo verde trees on the site are large enough for tree cavities, and the site is near the western margin of the Gila woodpecker's range. Only two tree cavities were observed in surveys, but no live Gila woodpeckers were observed (Figure 11). Gila woodpeckers are loud and conspicuous, and readily located by field biologists when present.

4.1.10 California Horned Lark: WL

The California horned lark (*Eremophila alpestris actia*) is found throughout California except the north coast and is less common in mountainous areas. It prefers open areas that are barren or with short vegetation including deserts, brushy flats, and agricultural areas, and includes creosote scrub. Eggs are laid March to early June, and it frequently lays a second clutch (CDFW 2022a). There are numerous records in western Riverside County (CDFW 2022b). Suitable foraging and nesting habitat occur throughout the Project site and California horned larks were observed frequently during surveys. Observation locations were not mapped because of the low conservation status (WL) and widespread occurrence throughout the Project site.

4.1.11 Black-tailed Gnatcatcher: WL

Black-tailed gnatcatchers (*Polioptila melanura)* are permanent residents from southeastern California and Arizona to southern Texas and northern Mexico. They are found in arid scrublands, desert brush, and dry washes amongst creosote bush, ocotillo, mesquite, paloverdes, and cactus. They live in pairs all year-round, defend their territory, and forage for small insects amongst low shrubs and trees. The Project site contains suitable foraging and potential nesting habitat for this species throughout the Project site and there was one observation during surveys and avian counts (Figure 11).

4.1.12 Sonora Yellow Warbler: SSC

The Sonora yellow warbler (*Setophaga petechia sonorana*) occurs principally as a migrant and summer resident from late March through early October, and breeds from April to late July (Dunn and Garrett 1997). The Sonora yellow warbler breeds only along the lower Colorado River in California, and from southern Arizona and southwest New Mexico to north-central Mexico and possibly the Colorado River Delta (Rosenberg et al. 1991). During breeding season, it generally nests and forages in riparian shrubs and trees close to water. Its diet includes ants, bees, wasps, caterpillars, beetles, true bugs, flies, and spiders (Beal 1907, Shuford and Gardali 2008). The Project site supports suitable foraging habitat for Sonora yellow warbler during migration in the desert dry wash woodland areas, but there is no suitable nesting habitat present on the site. No Sonora yellow warblers were observed during field surveys on the Project site.

4.1.13 Short Eared Owl: SSC, BCC

The short-eared owl (*Asio flammeus*) is a widespread winter migrant in central and western California, and generally present from September through April. It is an uncommon winter migrant in southern California. Habitat requirements include grasslands, prairies, dunes, meadows, irrigated lands, and wetlands. Short-eared owls generally require dense vegetation for roosting and nesting (Shuford and Gardali 2008). The Project site does not support suitable nesting habitat for short eared owl due to the sparse vegetation. However, the species may be found incidentally during migration while foraging in or near wetlands, riparian areas, or irrigated areas associated with the adjacent aquaculture farms and residences. No short-eared owls were observed on the Project site during field surveys.

4.1.14 Ferruginous Hawk: WL

The ferruginous hawk (*Buteo regalis*) is an uncommon winter resident and migrant at lower elevations and open grasslands in the Central Valley and Coast Ranges, and a fairly common winter resident of grasslands and agricultural areas in southwestern California (Garrett and Dunn 1981). This species frequents open grasslands, sagebrush flats, and desert scrub. Prey items include lagomorphs, small mammals, reptiles, and amphibians (CDFW 2022a). There is potential foraging habitat throughout the Project site that ferruginous hawks could use during wintering or migration seasons. The site is outside the Ferruginous hawk's breeding range, and Ferruginous hawk are not expected in the area during nesting season. No ferruginous hawks were observed during field surveys on the Project site.

4.1.15 Swainson's Hawk: ST, BLMS, FOC

Swainson's hawk (*Buteo swainsoni*) breeds in open habitats throughout much of the western United States and Canada, and in northern Mexico. In California, breeding populations of Swainson's hawks occur in desert, shrub and grasslands, and agricultural habitats with tree rows; however, most of the state's breeding sites are in the Great Basin and Central Valley (Woodbridge 1998). The only desert breeding occurrences are in the Antelope Valley, over 200 miles northwest of the Project site. These birds favor open habitats for foraging, and are near-exclusive insectivores as adults, but may also forage on small mammals and reptiles. The project site provides potential migration season foraging habitat but is well outside the nesting range. No Swainson's hawks were observed during surveys or avian counts.

4.1.16 American Peregrine Falcon: FP, CDF-S

The American peregrine falcon (*Falco peregrinus anatum*) was formerly listed under CESA and ESA but has been delisted under both Acts. In California, range is primarily central to northern California, with wintering habitat and (more recently) nesting occurrences located in southern California. Migrants occur along the coast and in the western Sierra Nevada in spring and fall. It breeds mostly in woodland, forest, and coastal habitats, and favors open landscapes with cliffs as nest sites. They are found irregularly in the southern desert region, generally during migratory and winter seasons, but also during breeding season in recent years. They nested historically in desert mountain ranges near the Colorado River (Rosenberg et al. 1991; Patten et al. 2003) and may be re-occupying this historical part of their nesting range as their populations recover. Their diet consists primarily of birds and bats (CDFW 2022a). Waterfowl and shorebirds make up a large proportion of their prey, and nest sites are often within foraging range of large water bodies. Suitable migratory or foraging habitat is present throughout the Project site, but no suitable nesting habitat is present. No American peregrine falcons were observed on the Project site during surveys or avian counts.

4.1.17 Vaux's Swift: SSC, BCC

Vaux's swift (*Chaetura vauxi*) is a summer resident of northern California and a fairly common migrant throughout most of the state in spring and fall. It roosts in hollow trees and snags, and often in large flocks. Vaux's swifts feed exclusively on flying insects (Shuford and Gardali 2008). The entire Project site provides suitable habitat during migration for foraging, but there is no suitable nesting habitat on the Project site. No Vaux's swifts were observed during surveys on the Project site.

4.1.18 Mountain Plover: SSC, BCC, BLMS, FOC

Mountain plover (*Charadrius montanus)* is found in semi-arid plains, grasslands, and plateaus. It uses open grasslands, plowed fields with little vegetation, and open sagebrush areas. Winter habitats include desert flats, and plowed fields. Mountain plovers are insectivores, feeding primarily on large ground-dwelling insects, including grasshoppers, beetles, and crickets (Shuford and Gardali 2008). Its distribution was modeled as occurring in the Chuckwalla Valley (BLM and USFWS 2014). The entire Project site provides suitable habitat during migration but is unlikely to support suitable nesting habitat, since the Project site is outside its breeding range. No mountain plovers were observed during surveys on the Project site.

4.1.19 Northern Harrier: SSC, BCC

Northern harrier (*Circus cyaneus)* inhabits most of California at various times of the year and is found up to 3000 m elevation. Northern harriers frequent meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands. It is a widespread winter resident and migrant in suitable habitat. They primarily feed on small mammals, birds, frogs, small reptiles, crustaceans, and insects (CDFW 2022a). There is suitable foraging throughout the Project site, but no suitable nesting habitat. No northern harriers were observed during surveys or avian counts on the Project site.

4.1.20 Yellow-breasted Chat: SSC

The yellow-breasted chat (*Icteria virens*) is an uncommon summer resident and migrant in coastal California, in foothills of the Sierra Nevada, and within the Colorado Desert. Breeding occurrences closest to the Project are known from the Salton Sea and Colorado River. In southern California, yellow-breasted chats breed locally on the coast, and very locally inland (Garrett and Dunn 1981). During migration, they may be found in lower elevations of mountains in riparian habitat (McCaskie et al. 1979). The yellow-breasted chat may be found on the Project site during migration likely within desert dry wash woodland areas, but suitable nesting habitat is not present. No yellow breasted chats were observed during surveys on the Project site.

4.1.21 Crissal Thrasher: SSC, BLMS

Crissal thrasher (*Toxostoma crissale*) is a year-round resident of southeastern deserts, occupying dense shrubs in desert riparian and desert wash habitats, including mesquite, ironwood, and acacia. It primarily forages on the ground, feeding on invertebrates, berries, and seeds (Bent 1948; Shuford and Gardali 2008). The Project site provides limited but suitable nesting and foraging habitat primarily associated with dry wash woodlands. No crissal thrashers were observed within the Project site during surveys.

4.1.22 Elf Owl: SE, BLMS

Elf owl (*Micrathene whitneyi*) is found in lowland habitats that provide cover and good nesting cavities. It is most common farther east and north, in deserts with many tall saguaro cactus or large mesquites, and in canyons in the foothills, especially around sycamores or large oaks. The project site is near the western margin of its geographic range (Garrett and Dunn 1981); the nearest occurrences are near the Corn Springs campground and Cottonwood Springs vicinities (CDFW 2022b). Elf owls are more common and widely distributed outside of California and probably have never been common in California due to limited geographic range and generally marginal habitat. The elf owl is migratory, spending winters in Mexico and southward. It arrives in California by March, and its breeding period extends from April to mid-July (Gould 1987).

The elf owl is a secondary cavity nester (it nests in cavities of trees and cacti, generally in disused woodpecker nests). Its nesting habitat is closely correlated with nesting habitat of woodpeckers, including Gila woodpecker (Hardy et al. 1999; Johnsgard 2002). Gila woodpeckers sometimes nest in blue palo verde and palms, and elf owls have been documented nesting in blue palo verde near Wiley's Well, southeast of the Project site, by Robert McKernan (former Director, San Bernardino County Museum; SBCM 2012a). Trees within the desert dry wash woodland habitat could provide suitable marginal habitat for nesting. Two tree cavities were observed during surveys and could be potential nesting cavities. No elf owls were observed during the survey.

4.1.23 Other listed Avian Species

No suitable breeding or wintering habitat for the avian species below occur within or near the Project site. These state or federal listed bird species have been recorded at other utility-scale solar energy facilities. There is a moderate potential for them to be in the Project vicinity during migration periods, but there is no suitable nesting or foraging habitat on the site for these species. None of these species were observed during field surveys.

4.1.23.1 Yuma Ridgway's Rail: ST, CFP, FE

Yuma Ridgway's rail *(Rallus obsoletus yumanensis),* formerly known as Yuma clapper rail *(Rallus longirostris yumanensis),* nests in freshwater marshes. It is found along the lower Colorado River southward to its terminus at the Sea of Cortez, along the Gila River drainage in Arizona, at Lake Mead (and the Overton Arm) and its local tributaries, along the Virgin River in Nevada and Utah, and at the Salton Sea/Imperial Valley areas of California (BLM and USFWS 2014). Harrity and Conway 2019 captured 444 rails from 2016-2019 and attached transmitters to 103 rails to document annual migration and dispersal behaviors. As of December 16, 2019, they documented 24 migratory or dispersal movements (Harrity and Conway 2019). Yuma Ridgway's rail were thought to be mostly sedentary (Eddleman 1989), but recent rail mortalities at solar energy facilities and preliminary results of Harrity and Conway's (2019) telemetry study suggest that these rails fly over desert regions during dispersal and migration (Kagan et al. 2014, Harrity and Conway 2018). The transmitter data from this study confirms that rails migrate primarily at night (Harrity and Conway 2019). Most rails do not appear to follow the Colorado River corridor during migration, rather they cross vast expanses of desert upland and even open water to reach wintering grounds (Harrity and Conway 2019). These results help explain how Yuma Ridgway's rails perished at solar facilities far removed from any major sources of water or rail habitat (Kagan et al. 2014.) Outlier observations have been documented at Harper Dry Lake, East Cronese Dry Lake, and Desert Center, all at a great distance from known breeding areas (CDFW 2022b).

4.1.23.2 Southwestern Willow Flycatcher: SE, FE, FSS

All subspecies of willow flycatcher *(Empidonax traillii)* are state endangered, while one subspecies (*E. T. extimus*) is federally endangered. Willow flycatcher breeds in dense riparian habitats in the southwestern United States, and winters in southern Mexico, Central America, and northern South America (USFWS 2002). The willow flycatcher species is comprised of several recognized subspecies, including the southwestern willow flycatcher, which is the only subspecies that nests in the region. The closest known breeding habitat to the Project site is approximately 25 miles away along the Colorado River and adjacent to the Salton Sea (CDFW 2022b). Recent studies indicate that southwestern willow flycatchers do not migrate over the area of the desert where the Project site is located (Hatten 2016). However, other willow flycatcher subspecies (not listed as threatened or endangered) may pass through the area during migration. No suitable breeding habitat occurs on the Project site and it is outside the southwestern willow flycatcher's migratory routes.

4.1.23.3 Yellow billed cuckoo: SE, FT, BLMS, FSS, FOC

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) breeds in expansive riparian areas in portions of California, Nevada, Arizona, and New Mexico. The closest known breeding habitat is located approximately 35 miles away along the Colorado River (CDFW 2022b). During migration, western yellow-billed cuckoos migrate across the desert and use shrubland habitats, but there have been no documented sightings of western yellow-

billed cuckoo within the Development Focus Areas (DFAs) identified in the DRECP LUPA (USFWS 2016). No suitable nesting habitat is present on the Project site, although it is possible that western yellow-billed cuckoo could occur on the Project site briefly during migration season.

4.1.23.4 Least Bell's Vireo: SE, FE

Least Bell's vireo (*Vireo bellii pusillis*) breeds in riparian habitats in southern California and portions of northern Baja California, Mexico and winters in southern Baja California, Mexico (USFWS 1998). Its numbers and distribution have probably increased since its listing, although it remains absent from large parts of its former range (USFWS 2016). The closest known breeding habitat to the Project site is to the northwest in the Big Morongo Canyon (USFWS 2016). Least Bell's vireos are also uncommon breeders at the Anza-Borrego Desert State Park, located approximately 70 miles southwest (USFWS 2016). The subspecies Arizona Bell's vireo (*V. b. arizonae*) is not ESA-listed, but is State-listed in California as endangered, and occurs along the lower Colorado River, approximately 35 miles east of the Project site.

Although there is little information on its migration behavior (USFWS 2016), least Bell's vireo likely migrates through the Colorado Desert. It is presumed that it may use riparian habitat and possibly upland scrub habitat during migration (USFWS 2016). No suitable nesting habitat is present on the Project site, although least Bell's vireo could occur on the site briefly, during migration season.

4.1.23.5 Avian carcasses

Carcasses of four avian species were observed in the northern parcel near the existing fish farm as summarized in Appendix C-2 and shown on Figure 11. Cause of death for these species is unknown. It was unusual to have so many carcasses in one area, so avian biologists took note of the species that were identifiable during the surveys. Several other partial old avian carcasses were also observed but could not be identified to species.

4.1.23.6 Avian Counts

A total of seventy-six avian species were observed when avian counts were conducted during spring surveys in the mornings. Appendix C-6 summarizes all species observed during avian counts.

4.1.24 American Badger: SSC

The American badger is associated with dry open forest, shrub, and grassland communities with an adequate burrowing rodent population and friable soils. Badgers generally are associated with treeless regions, prairies, parklands, and cold desert areas (CDFW 2022a). Badgers inhabit burrows and often prey on small mammals that inhabit burrows, as evidenced by claw marks along the edges of burrows. Suitable habitat exists for American badgers throughout the Project site. Two active badger burrows with dig marks and recent tracks were identified during the fall 2021 survey, and four burrows with dig marks were identified as inactive badger burrows (Figure 13). A badger skull or skull fragments (identified as carcass in the data) were observed at two locations. There are several canid burrows and complexes observed that could be used by the species, but no live individuals were observed.

4.1.25 Desert Kit Fox: FOC

Desert kit fox (*Vulpes macrotis arsipus*) is protected by the California Code of Regulations (Title 14, CCR: §460) and Fish and Game Commission Section 4000 as a fur-bearing mammal. Title 14 of the California Code of Regulations, Section 460, stipulates that desert kit fox may not be taken at any time. Desert kit fox is a fossorial mammal that occurs in arid open areas, shrub grassland, and desert ecosystems within the Mojave and Sonoran Deserts. Desert kit fox typically occurs in association with its prey base, which includes small rodents, primarily kangaroo rats, rabbits, lizards, insects, and in some cases, immature desert tortoises (CDFW 2022a). Burrow complexes that have multiple entrances provide shelter, escape, cover, and reproduction, but desert kit fox may utilize single burrows for temporary shelter. Litters of one to seven young are typically born in February through April (McGrew 1979).

Many of desert kit fox burrows observed within the Project site are part of a complex with multiple entrances. During surveys, twenty-one active desert kit fox burrows or complexes with dig marks, tracks, and/or scat were observed within the Project site (Figure 13). Seventy-seven burrows or complexes, some with older scat, were identified as inactive desert kit fox burrows. Two carcasses (likely a skull or bone fragments) were observed at two separate locations. The number of burrows will likely change over time since kit fox distribution is dynamic and change under natural conditions due to prey availability and other environmental factors such as the presence of coyotes that prey on kit fox pups.

4.1.26 Desert Bighorn Sheep: CFP, BLMS, FSS

The desert bighorn sheep (*Ovis canadensis nelsoni,* also called Nelson's bighorn sheep*)* is found from the Peninsular and Transverse Ranges through most of the desert mountain ranges of California, Nevada, and northern Arizona to Utah. The Project site is well outside the range of the listed threatened Peninsular bighorn sheep, which was formerly recognized as a subspecies and now considered a distinct vertebrate population segment of the desert bighorn sheep. Essential habitat for desert bighorn sheep includes steep, rocky slopes of desert mountains, and areas where surface water is available during dry seasons. In the spring, when annual plants are available, desert bighorn sheep tend to disperse downhill to bajadas and alluvial fans to forage.

Habitat in the desert mountain ranges surrounding the upper Chuckwalla Valley is occupied by desert bighorn sheep, and they occasionally use the valley floor habitat either for foraging (near the lower mountain slopes) or as movement routes among mountain ranges. Due to the project's location on the valley floor near sites with comparable land uses and human activity patterns, the project is not likely to affect bighorn sheep behavior or habitat use to any large extent. No sign or evidence of desert bighorn sheep was found during field surveys, but scat is often difficult to distinguish from burro deer. Potential for occurrence is low.

4.1.27 Burro Deer: CPGS, FOC

Burro deer (*Odocoileus hemionus eremicus*) is a subspecies of mule deer (*Odocoileus hemionus*) that inhabits desert dry wash woodland communities in the Colorado region of the Sonoran Desert near the Colorado River. Some burro deer are year-round residents along the Colorado River, while others are transient and move between mesic and arid desert areas in response to seasonal water and forage availability. During hot summers burro deer concentrate along the Colorado River or the Coachella Canal where water developments have been installed and where microphyll woodland is dense and provides good forage and cover. With late summer

thundershowers and cooler temperatures, burro deer move away from the Colorado River and Coachella Canal into larger washes or wash complexes in the foothills and nearby mountains (BLM and CDFG 2002). Burro deer likely move through the Project site and its vicinity to access artificial water sources from nearby agriculture and aquaculture farms. Burro deer scat and tracks were observed throughout the Project (Figure 13, Appendix C-3).

4.1.28 Special Status Bats

Bat roosts that occur in the vicinity of the Project site include McCoy Mountains, Eagles Nest Mine approximately 20 miles east of the Project site, within the Little Maria Mountains approximately 20 miles northeast of the Project site, and Paymaster Mine within the Pinto Mountains approximately 30 miles northwest of the Project site (CEC 2010). No active bat roosts were documented on the Project site during any of the surveys to date. It is not expected that any special status bat species would have a substantial roost on the Project site since habitat features most associated with these species (e.g., rock ledges, cliffs, large tree hollows, mine shafts) do not occur on the Project site. However, roosting opportunities for more common bat species, such as the canyon bat and California myotis, are available in tree cavities, soil crevices and rock outcroppings within dry desert wash woodland habitat. Additionally, suitable foraging habitat for common and special status bats is found on the Project site within desert dry wash woodland and near the adjacent aquaculture farms where water is available year-round. Seven special status bat species may forage on or near the Project site; they are discussed further below.

4.1.28.1 Townsend's Big-Eared Bat: SSC, BLMS, FSS, FOC, H

Townsend's big-eared bat (*Corynorhinus townsendii*) roosts in caves, mines, abandoned dwellings, and large basal hollows of large trees (e.g., redwoods). Townsend's big-eared bat occurs from sea level to approximately 9,000 feet (2743 meters) elevation within a range of habitats. It typically forages along streams and within woodlands. The Project site does not provide roosting areas for Townsend's big eared bat. Foraging habitat occurs along the desert dry wash woodlands and within riparian habitat along artificial water sources near the aquaculture farm adjacent to the Project.

4.1.28.2 California Leaf-Nosed Bat: SSC, BLMS, FOC, H

California leaf-nosed bat (*Macrotus californicus*) occurs in the deserts of California, southern Nevada, Arizona and south to northwestern Mexico. In California, it is known from eastern San Bernardino, Riverside, and San Diego counties and all of Imperial County (WBWG 2020; CDFW 2022a). California leaf-nosed bat relies on caves and mines for roosting habitat. Foraging habitat typically consists of riparian and desert wash habitats, which occur on the Project site. California leaf-nosed bat may forage within the Project site, but it is not expected to roost due to absence of suitable caves and mines.

4.1.28.3 Pallid Bat: SSC, BLMS, FSS, FOC, L

The pallid bat (*Antrozous pallidus*) is a locally common species throughout California, and a year-round resident in most of the range. It occupies a wide variety of habitats at elevations less than 6,000 feet (1829 meters) including grasslands, shrublands, woodlands, and forests, and is most common in open, dry habitats with rocky areas for roosting; pallid bat roosts in cliffs, caves, crevices, mines, hollow trees, and various human-made structures (CDFW 2022a). The Project site may provide suitable foraging habitat for pallid bats within the dry

wash woodland but does not provide suitable roosting habitat. Acoustic bat surveys for Palen Solar Power Project (about 4 miles east of the Project site) detected pallid bat within the Project vicinity (WEST 2017).

4.1.28.4 Western Mastiff Bat: SSC, BLMS, M

The western mastiff bat (*Eumops perotis californicus*) is widespread throughout the southwestern U.S. and into Mexico. Its distribution in California is widespread, with year-round occurrence data primarily in central and southern California (CDFW 2022a). The western mastiff bat is found in a range of habitats, including coastal, forests, woodland, and desert scrub areas where roosting sites are available (Pierson and Rainey 1998). Roosting habitat typically consists of rocky crevices in canyons and cliffs with vertical or nearly vertical walls. The majority of roost sites are at least two meters above the ground (e.g., on cliff faces) and without obstructions. Suitable habitat for foraging occurs throughout the Project site, but roosting habitat is lacking. Western mastiff bat was detected within the vicinity on acoustic bat surveys for Palen Solar Power Project (WEST 2017).

4.1.28.5 Western Yellow Bat: SSC, H

The western yellow bat (*Lasiurus xanthinus*) is a CDFW Species of Special Concern. It is found in Arizona, New Mexico, Mexico, and year-round in California. It is found in arid regions, in riparian, desert riparian, desert wash and palm oasis habitat. The western yellow bat is insectivorous, and roosts and feeds in palm oases and riparian habitats (CDFW 2022a). Potential roosting habitat exists within the Project site in desert dry wash woodlands and riparian habitat. Suitable habitat for foraging also occurs in those same areas. Western yellow bat was detected within the vicinity during acoustic bat surveys for the Palen Solar Power Project (WEST 2017).

4.1.28.6 Big Free-Tailed Bat: SSC, M

The big free-tailed bat (*Nyctinomops macrotis*) is distributed in the southwest U.S., and northern South America, generally from sea level to 8,000 feet (2438 meters) in elevation. It is rare in California, prefers rocky terrain, and roosts in tree cavities and man-made structures. It wanders in autumn, out of its normal range (CDFW 2022a). Foraging and potential roosting habitat for the big free-tailed bats occurs within the Project in desert dry wash woodland. Big free-tailed bat was detected within the Project vicinity through acoustic surveys conducted for the Palen Solar Energy Project (WEST 2017).

4.1.28.7 Pocketed Free-Tailed Bat: SSC, M

The pocketed free-tailed bat (*Nyctinomops femorosaccus*) is common in Mexico but less common in western North America, from southern California, central Arizona, southern New Mexico, and western Texas (WBWG 2020). The pocketed free-tailed bat has been documented in Riverside, San Diego, and Imperial counties. Typical habitats include pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis. Roosting habitat typically includes rock crevices associated with granite boulders, cliffs, or rocky canyons at a height suitable for approach and takeoff (CDFW 2022b). Pocketed free-tailed bats occur in the desert from March through August, when they then migrate out of the area (BLM 2011). Suitable habitat for foraging exists on the Project site, but roosting habitat is lacking. Call sequences that may have been pocketed free-tailed bat were detected within the Project vicinity during acoustic surveys for Palen Solar Energy Project, but lacked features for definitive confirmation (WEST 2016).

4.1.29 Wildlife Movement

Movement between habitat areas is a typical part of wildlife activities and may be needed for long-term population sustainability. Land use changes can impact wildlife movement across the landscape, leading to habitat fragmentation and population isolation. When habitat is converted to other uses, it reduces habitat availability for wildlife and separates or isolates the remaining habitat areas. Habitat areas may be isolated from one another by distance across unfavorable habitat, or by linear barriers such as roadways or aqueducts. Barriers may be impassable for some species, such as a wide busy road, for a slow-moving animal, or may be only minor interruptions to movement, such as a narrow, lightly travelled road. Fragmentation and subsequent population isolation can affect wildlife populations by limiting dispersal and genetic exchange, limiting movement within the home-ranges for wide-ranging species, and limiting the opportunity for populations to occupy new habitat in response to the effects of climate change. Fragmentation also increases habitat "edge" (i.e., habitat adjacent to other land uses), leading to increased exposure to invasive species, human disturbance (vehicles, trash dumping, etc.), and an overall reduction of biodiversity and alteration or degradation of ecological processes. Existing and developing solar farms, residential/commercial developments, roads, and agriculture near the Project site contribute to the fragmentation of habitat (Figure 13).

Accessibility between habitat areas (i.e., "connectivity") is important to long-term genetic diversity and demography of wildlife populations. In the short term, connectivity may also be important to individual animals' ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations apply to greater or lesser extent to all plants and animals. Plant populations "move" over the course of generations via pollen and seed dispersal; most birds and insects travel and disperse via flight; terrestrial species, including small mammals, reptiles, arid land amphibians, and non-flying invertebrates, disperse across land. Therefore, landscape barriers and impediments are more important considerations for movement of terrestrial species. These considerations are especially important for rare species and wide-ranging mammals, which both tend to exist in lower population densities.

In the Chuckwalla Valley, animal movement among mountain ranges and other large habitat areas is biologically important for large mammal demography and genetics. Animals such as desert bighorn sheep may travel across the valley infrequently, to reach other subpopulations in surrounding mountains. In contrast to large animal movement, desert tortoises and other less-mobile animals may live out their entire lives within a linkage area between larger habitat blocks; for these species, movement among surrounding habitat areas may take place over the course of several generations.

In developed landscapes where remnant habitat exists as partially isolated patches surrounded by other land uses, planning for wildlife movement generally focuses on "wildlife corridors" to provide animals with access routes between habitat patches. In largely undeveloped areas, including the Chuckwalla Valley, wildlife habitat is available in extensive open space areas throughout much of the region, but specific barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on specific sites where animals can cross linear barriers (e.g., wash crossings beneath Interstate 10), and on broader linkage areas that may support stable, long-term populations of target species and allow demographic movement and genetic exchange among populations in distant habitats (e.g., surrounding mountains).

Movement opportunity varies for each species, depending on motility and behavioral constraints, as well as landscape impediments. The California Desert Connectivity Project provides a comprehensive and detailed habitat connectivity analysis for the California deserts (Penrod et al. 2012). The Connectivity Project identified a Desert Linkage Network to maintain habitat for movement between landscape blocks. Broad habitat linkages connect these landscape blocks (i.e. Wilderness Areas). The landscape blocks identified in the Project vicinity are the Eagle Mountains to the west, Coxcomb Mountains to the north, and the Palen-McCoy Mountains to the east. Broad habitat linkages were identified in the Desert Linkage Network, and the most prominent linkage in the Project vicinity extends from the southern base of the Coxcomb Mountains south along the foothills of the Eagle Mountains and across the I-10 into the Chuckwalla and Orocopia Mountains. This linkage measures approximately 16 miles (25.7 km) wide at its interface with I-10, with narrower extensions to the north around the base of the Eagle Mountains and to the west through the Orocopia Mountains.

The DRECP identifies the Pinto Wash Linkage, described further below, that partially overlaps with the northern portion of the Project site within the DFA (Figures 1 and 14).

4.1.30 Pinto Wash Linkage

Desert tortoise connectivity became a research focus in 2010 and has continued to evolve as new modelling and research informs species recovery and land management decisions, including goals and objectives of the DRECP. The primary purpose of desert tortoise linkages is to maintain a network of occupied habitat that interconnects Tortoise Conservation Areas (TCAs). The Pinto Wash Linkage (PWL) was identified as an interconnection between the Joshua Tree TCA and Chuckwalla TCA (Figure 9) by the DRECP. In the following sections, context will be provided by historical descriptions of the PWL boundary prior to the DRECP, descriptions of the PWL as codified in the DRECP in its current condition, and summaries of other habitat and connectivity models that clarify the substantial variability in the potential for desert tortoise connectivity within the PWL. Analysis discussed further below indicates that the functional portion for connectivity of the PWL is within its northwestern most extent and the development of the Project site within the southeastern most portion of the PWL, which overlaps with the DFA, will not impact the PWL's function as a linkage.

4.1.30.1 Background Prior to DRECP

<u>Desert Sunlight Solar Farm (Desert Sunlight) Biological Opinion</u>

Prior to the DRECP, the linkage function of the general PWL area was first described by USFWS in the Desert Sunlight Biological Opinion (BO), which stated (USFWS 2011, page 59):

> *The proposed project [Desert Sunlight] site lies within the Upper Chuckwalla Valley and Upper Pinto Wash, which supports an important linkage characterized by diffuse gene flow between the Mojave and Colorado portions of the species' [desert tortoise] range (Hagerty and Tracy 2010). The western portion of the proposed project [Desert Sunlight] site, particularly Phase III, is within an area that has a higher level of predicted occupancy/habitat suitability (Nussear et al. 2009) and is known to support resident desert tortoises (see "Environmental Baseline" section below for more detail on the action area).*

The Desert Sunlight BO discussed a "*Tortoise Habitat Connectivity*" boundary (depicted in Figure 1 of the Desert Sunlight BO Appendix), which encompassed areas that would later be designated as TCAs as well as areas that would be designated by the DRECP as linkages to connect TCAs. The Desert Sunlight BO's "*Tortoise Habitat*

Connectivity" boundary was coarsely drawn based on elevational and topographical lines at a landscape level, without full regard to the on-the-ground habitat quality and existing barriers to movement at the regional and local level. The USFWS further described the habitat potential within the "*Tortoise Habitat Connectivity"* boundary as variable and pointed to a specific potential connectivity corridor linking the area northwest of Desert Sunlight to Joshua Tree National Park, between the Eagle and Coxcomb Mountains.

The *Tortoise Habitat Connectivity* boundary did not take into consideration the variable habitat quality or existing natural and anthropomorphic barriers on the ground (such as fallow and active agriculture and existing developments) that inhibited connectivity at the time of the BO and continue to do so in current conditions. While the full *Tortoise Habitat Connectivity* boundary included the entire area between the Eagle and Coxcomb Mountains down to Interstate 10 east of Kaiser Road, the BO description emphasizes that the relevant tortoise linkage in this area is located north and west of Desert Sunlight. The location of live desert tortoise data from Desert Sunlight, depicted in Figure 2 of the Desert Sunlight BO Appendix, supports the location of the linkage occurring to the north and west of the Desert Sunlight. This area north and west of Desert Sunlight was later designated as ACEC by the DRECP.

The USFWS stated that Desert Sunlight Phase III, which represented the northernmost extent of the project footprint, was located within an area with higher potential habitat (page 97):

> *If constructed, Phase III would have the greatest impacts on habitat connectivity due to its location at an upper elevation contour of the bajada system, which coincides with the highest densities of desert tortoises within the proposed project ROW (Ironwood Consulting 2010a, b) and high predicted desert tortoise habitat (Nussear et al. 2009).*

Phase III was eventually removed from the development plan for Desert Sunlight and therefore, the impacts that were described above were not realized in the final project design and construction.

The BO also described where mitigation land acquisition should be prioritized to promote connectivity between the Chuckwalla Critical Habitat Unit (CHU) and Joshua Tree National Park. The priority acquisition area to promote connectivity is located west of Kaiser Road (later designated as ACEC by the DRECP) and does not include the low potential habitat east of Kaiser Road (later designated as DFA by the DRECP).

Desert Harvest Solar Project (Desert Harvest) Biological Opinion:

The USFWS issued the BO for Desert Harvest, located immediately south of Desert Sunlight and northwest of the Project site, in 2013. Desert tortoise connectivity and the area of the PWL were discussed in the BO (USFWS 2013):

> *The action area is **south of the linkage** between the Upper Chuckwalla Valley and Pinto Basin…[which]… connects the [desert tortoise] populations in the Chuckwalla CHU and DWMA with populations in Joshua Tree National Park, Pinto Mountain CHU, Chemehuevi CHU and DWMA, and thence the Mojave Desert portion of the species' range (page 31).*
>
> *Acquisition* [and conservation of private lands for mitigation] *would occur along this corridor in the Chuckwalla CHU and DWMA between Cactus City and Desert Center, where existing crossings connect contiguous desert tortoise habitats to the north and south of the freeway, and ultimately with Pinto Wash linkage northwest of the Project. (page 40)*

> *…The **Project ROW lies directly south of a naturally constricted linkage** in the Upper Chuckwalla Valley and Upper Pinto Wash that connects the desert tortoise population in the Chuckwalla CHU and DWMA with populations in Joshua Tree National Park, Pinto Mountain CHU, Chemehuevi CHU and DWMA, and thence the Mojave Desert portion of the species' range. This linkage is defined by topography, elevation, and geomorphology, with steep, rocky mountains limiting desert tortoise distribution to the west, and low elevations and sand dunes and playas limiting the distribution to the east. The linkage boundaries are based on the BLM's NECO Plan landform data (i.e., dunes, playas, mountains, and hills), the 500-foot elevation contour, our knowledge of habitat conditions in the action area, and desert tortoise survey data from other lowland areas in the Colorado/Sonoran Desert with comparable habitat conditions (Service 2011a). This linkage **corresponds well with the USGS desert tortoise habitat model** (Nussear et al. 2009, page 53)*

In both the Desert Sunlight and Desert Harvest BOs, the USFWS consistently described the location of the linkage as being north and west of both projects. The linkage described is consistent with the higher quality habitat designations in the DRECP and falls within both the much larger *Tortoise Habitat Connectivity* boundary depicted in the Desert Sunlight BO and the DRECP'S PWL boundary. In the Desert Harvest BO, the USFWS states that the "linkage corresponds well with the USGS desert tortoise habitat model (Nussear et al 2009; p. 53 of the Desert Harvest BO)." It should be noted that the portion of the *Tortoise Habitat Connectivity* boundary depicted in the DRECP that aligns well with the USGS desert tortoise habitat model is located west of Kaiser Road and north of Desert Sunlight and Desert Harvest, consistent with areas of the PWL designated as ACECs and high-quality habitat in the DRECP. Additional information regarding the location of least cost paths and higher valued modelled habitat is discussed further below.

4.1.30.2 DRECP and DFA

The PWL is described in the DRECP as an important linkage for desert tortoise connectivity. However, its boundaries have varied since it was first described by USFWS in project-specific BOs prior to the development of the DRECP as described above. The PWL, as mapped in the DRECP, appears to be a digital interpretation of the *Tortoise Habitat Connectivity* boundary introduced in the Desert Sunlight BO but with more precise boundaries based on land ownership. Under the DRECP, the PWL occupies a vast area, occupying over 32,500 acres in total. Portions of the PWL overlap BLM-designated ACEC, while others overlap BLM-designated DFA, and other BLM managed lands that are not designated as ACEC or DFA (Figures 1, 9, 14).

The boundaries of the area serving a linkage function in this region have changed over time and the PWL, as codified in the DRECP, includes approximately 10,0000 acres that lack potential for desert tortoise connectivity due to low quality habitat and existing obstacles to movement (as demonstrated by the GIS attributes that denote habitat quality in the DRECP (Figure 14). The DRECP PWL includes polygons of high and low habitat value ratings as well as non-habitat. In addition, the DRECP PWL includes polygons of high value habitat with habitat category notes of "lost or severely disturbed habitat" in its descriptions. The low and non-habitat areas within the PWL generally overlap with the DFA, while high value habitat overlaps with ACEC designated lands.

The southern portion of the PWL falls within a DFA designated by the DRECP as an area targeted for renewable energy development. Desert Sunlight and Desert Harvest are located within that same southern portion of the PWL characterized by low quality or non-habitat (though both projects pre-date the DRECP). Table 5 below summarizes the acreages.

Table 5. Pinto Wash Linkage Acreages Summary.

Pinto Wash Linkage	Acreages
High Quality Habitat	23,362
Low Quality Habitat	5,756
Non-Habitat	3,437
Total PWL Acreage	**32,554**
Subsets within Pinto Wash Linkage	**Acreages**
DFA	2,420
Desert Sunlight (portion of site)	1,937
Desert Harvest (entire site)	1,052

The DRECP LUPA includes goals and objectives for maintaining functional desert linkages (Section 11.4 Goal #4), which states that the goal is to:

> *Maintain functional linkages between Tortoise Conservation Areas to provide for long-term genetic exchange, demographic stability, and population viability within Tortoise Conservation Areas.* ***Emphasize inclusion of high value contiguous habitats pursuant to Nussear et al. (2009)*** *and minimization and avoidance of disturbance in habitat with high desert tortoise habitat potential.*

The predicted occupancy model (Nussear et al. 2009) identifies where tortoises are likely to occur and which portions of the PWL are important to tortoise connectivity. Notably, the portion of the PWL that overlaps with the DFA does not have high predicted occupancy and is not important to tortoise connectivity. The habitat north and west of Desert Sunlight, Desert Harvest, Kaiser Road, and the DRECP DFA is characterized by higher predicted occupancy, a conclusion that is consistent with the findings of the Desert Sunlight and Desert Harvest BOs, and consistent with the DRECP designation of this area as ACEC. This northwest extent of the PWL, which supports relatively "high value contiguous habitats" pursuant to Nussear et al 2009, corresponds well with the ACEC designated lands and connects the Chuckwalla Critical Habitat Unit and Joshua Tree National Park to maintain a functional corridor between TCAs (Figures 8, 13, 14). The portions of the PWL that overlap with the DFA do not serve this function.

Other linkages further support that the functional portion of the PWL is within its northwestern extents as further discussed in the section below.

4.1.30.3 Other Connectivity and Linkage Models

Haggerty and Tracy

Hagerty and Tracy (2010) describes tortoise gene flow occurring within the Upper Chuckwalla Valley, however, the primary least cost path does not correlate with the PWL (Figure 16). The primary connection articulated in this model is between the Chuckwalla CHU and Joshua Tree National Park is located north and west of the PWL

(Figure 16). The least cost path circumvents Pinto Wash altogether, suggesting the PWL may be viewed as a secondary linkage between Chuckwalla CHU and Joshua Tree National Park.

California Desert Linkage

Penrod et al 2012 describes a model for a California Desert Linkage that is also north and west of the PWL. The California Desert Linkage describes least cost corridors that account for landscape blocks and habitat to model the best linkage network that considers vegetation, elevation, topography, and road density to determine cost to movement. The areas available for connectivity north of the PWL include Joshua Tree National Park-Palen to McCoy Mountains, associated with the Pinto Mountains CHU and target areas through the northern Palen Valley. West of the PWL, connectivity is available through Joshua Tree National Park to Chocolate Mountain, which is mostly within the Chuckwalla CHU. This corridor is west of Kaiser Road and the PWL (Figure 16). The California Desert Linkage is in line with the best connectivity areas and high-quality habitat in the northwestern extents of the PWL which also overlap with ACEC designated areas.

Averill-Murray et al (2021)

Further evidence that the high value habitat and important linkage function of the PWL is located in the northwest portion of the PWL is provided by Averill-Murra et al (2021). This study identified the location of critical areas of linkage using more current data and modelling. Averill-Murray et al (2021) depicted the position of linkages based on least cost path, habitat suitability, highest predicted occupancy, and omni-directional connectivity. Comparing predicted occupancy from Nussear et al (2009) confirms that the functional corridor is northwest of the existing solar projects (Desert Sunlight and Desert Harvest) and the DFA (Figures 9, 15).

4.1.30.4 Pinto Wash Linkage within Project Site

All BLM lands included in the Project footprint are designated by the DRECP as DFA lands (Figure 14). The northwesternmost portion of the Project site is located within the area where the DRECP-designated DFA overlaps with the southeasternmost portion of the PWL that is categorized as non-habitat or low-quality habitat (Figure 14). Acreages are summarized below in Table 6 below.

Table 6. Easley Acreages within PWL.

Easley Acreage Categories	Project Boundary	Current Proposed Impact Area
Non-habitat of PWL	771.454	391.16
Low quality habitat of PWL	268.536	202.52
High quality habitat of PWL	0	0
Total Acreages in PWL (within DFA)	**1039.99**	**593.68**

The Project site does not occur within the high-quality habitat portion of the PWL nor within the areas that have been modelled as a functional linkage area. The best modelled habitat for connectivity of the PWL is the northern and western portions, outside of the DFA and well outside of the Project footprint. Analysis of the

long-term viability of desert tortoise populations and the function of the linkage from the development of the Project site is further discussed below.

Habitat Suitability

The portion of the Project site that overlaps with the PWL is classified as low quality and non-habitat by the DRECP (Figure 15). These areas correspond well with the predicted occupancy model for desert tortoise (Nussear et al 2009), where the non-habitat areas are classified as 0 or 0-0.1 for predicted occupancy and the low-quality habitat area corresponded with 01.-0.3 in predicted occupancy (Figure 10). Various studies have used ≥ 0.5 to denote the threshold for suitable habitat for desert tortoise (USFWS 2011, 2012). Conversely, lands that score < 0.5 have a low to moderate probability of desert tortoise occupancy. The entirety of the Project site is below the 0.5 threshold for suitable habitat and the area that overlaps with the PWL has the lowest score for suitable habitat (majority of the area had a habitat value of 0-0.1, with small areas of 0.2 values, which are far below the threshold for suitable habitat). These areas of low habitat suitability also align with the DFA.

Empirical data from protocol surveys on the Project site did not yield any active desert tortoise data (burrow, tracks, scat, live individuals) within the footprint (Figure 10). Only desert tortoise carcasses were observed, located **outside of the PWL where it overlaps with the DFA and the Project site** in areas that had low to moderate levels of occupancy from 0.3-0.5) (Section 4.1.2). These carcasses were all older classifications (class 4: 4 years, shell bone falling apart, growth rings on scutes peeling, bone fissured or class 5: >4 years, disarticulated and scattered). Empirical data thus indicate low desert tortoise habitat suitability within the Project site overall, consistent with the expectations of habitat models, and even lower quality habitat in the portion of the Project site and DFA that overlap with the PWL. Empirical data from adjacent renewable projects also did not indicate any active desert tortoise sign nearby (Ironwood 2019, 2021).

Current desert tortoise population density within and adjacent to the Project site is extremely low and correlates with low habitat suitability and predicted occupancy. Development of the Project site will have very little impact, if any, on the local desert tortoise population and will not compromise the function of the PWL, given the poor quality of the existing habitat (in the area where the PWL overlaps with the Project site and the DFA) and the fact that the functional portion of the PWL is located far northwest of the Project site,.

Anthropogenic Disturbances

Stressors of multiple human uses have been identified as reducing habitat suitability (Averill-Murray et al 2012). There are several existing anthropogenic disturbances near and adjacent to the Project site that negatively impact habitat suitability and already inhibit or constrict connectivity between the portion of the PWL that overlaps with the Project site and the DFA, and the functional portion of the PWL to the northwest.

Directly north of the Project site is the existing Desert Sunlight Solar Farm and the Desert Harvest Solar Farm. Directly northwest of and southwest of Easley is the Athos Renewable Energy Project. Adjacent to and within Easley's footprint are active and fallow agricultural lands. Directly south of the Project site is the Lake Tamarisk community and the under-construction Oberon Renewable Energy Project. Kaiser Road borders the westernmost edge of the Project site and Highway 177 borders the eastern edge. An existing transmission line also crosses part of the Project footprint within the PWL. Anthropogenic disturbances, particularly roads and highways also have some potential to contribute to desert tortoise mortalities.

Overall, desert tortoises do not coexist well with development and are absent when more than 10% of land in an area is developed, which includes urban development, cultivated agriculture, energy development, surface mines, pipelines, and transmission lines (Carter et al 2020). The portion of the PWL that overlaps with the DFA

already has low connectivity value due to existing conditions, and the development of Project site will not further compromise its function.

Climate Refugia

Climate refugia are lands that will remain suitable and persist for populations despite changes in climate and the surrounding landscape. For reptiles like desert tortoises, with lower mobility and dispersal rates, areas that have high suitable habitat value become important for climate refugia. Areas of relatively large, connected polygons of suitable habitat have heightened conservation importance for climate refugia. High stressor areas, depending on the extent and characteristics, can reduce the ability of refugia to sustain tortoise populations even if climatic conditions remained stable (Barrows et al 2016).

The area of the PWL that overlaps with the Project site and the DFA is expected to have low refugia value because it is already modelled to have low habitat quality and has been verified to have low desert tortoise occupancy. The high levels of other anthropogenic disturbances around the Project site already fragment the low suitable habitat that occurs in the area and within the PWL, further decreasing its climate refugia value. The higher value area of the PWL for climate refugia is within its northwesternmost extents, where higher habitat values occur and are less fragmented across the landscape.

Project Impact

The Project site development within the portion of the PWL that overlaps with the DFA will not impact the PWL's functionality as a linkage, since the important portions of the linkage are well north and west of the development footprint. This has been demonstrated by both past and recent tortoise modelling and verified by current occupancy. Similarly, there are several existing anthropomorphic barriers (including the Desert Sunlight, Desert Harvest, and Athos I/II solar projects, agriculture, transmission lines, roads and nearby rural residences) that already create obstacles to linkage function in the southeastern portion of the PWL, where the DFA and Project site are located. In addition, desert tortoise data for the Project site did not indicate any active desert tortoise sign or live individuals within the entirety of the Project footprint or on adjacent projects, further indicating that the Project will not have an impact on the local tortoise population since it is currently not occupied.

The final design of the Project site will follow all DRECP CMA requirements and will have a reduced footprint within the PWL boundary. The current proposed impact area is included as reference in Figure 16. The Project site will be avoiding all microphyll woodland/desert dry wash woodland with the required 200-ft setback in its design. Development of the Project site will not impact the connectivity of the PWL since the functional, high quality habitat area of the PWL is in its northwestern extents (far north and west of the Project site); and existing barriers within low-quality habitat in the area where the DFA and the Project site are located result in the southeastern portion of the PWL to serve no connectivity function.

4.2 Special Status Plant Species

Forty-two special status plant species were reviewed for their potential to occur within the Project site and its vicinity based on regional plans and database records (Appendix B). The probability of occurrence is defined as follows:

- Present: Species was observed at the time of the survey

- High: Both a historical record exists of the species within the Project site or its immediate vicinity (approximately 5 miles) and the habitat requirements associated with the species occur within the Project site.
- Moderate: Either a historical record exists of the species within the immediate vicinity of the Project site (approximately 5 miles) or the habitat requirements associated with the species occur within the Project site.
- Low: No records exist of the species occurring within the Project site or its immediate vicinity and/or habitats needed to support the species are of poor quality.
- Minimal: Species were not observed during focused surveys conducted at an appropriate time for identification of the species, or species is restricted to habitats that do not occur within the Project site.

Special status species detected within the Project site or having moderate to high potential to occur based on the presence of suitable habitat are discussed further in this section. Special status species observed are summarized in Appendix C-4 and mapped on Figure 18.

4.2.1 **Crucifixion Thorn:** CRPR 2B.2

Crucifixion thorn (*Castela emoryi*) has 177 records occurring within California. In Riverside County, several records are near or within Desert Center, including Desert Sunlight Solar Farm north of the Project site, Athos Solar Project, Oberon Renewable Energy Project, and Arica Solar Project (CCH 2022). There is suitable habitat for crucifixion thorn within wash areas of the Project site. One individual was observed within the Project site. It is a large conspicuous shrub and can be located and identified at any time of year, even in a year of poor rainfall.

4.2.2 **Glandular Ditaxis:** CRPR 2B.2

Glandular ditaxis (*Ditaxis claryana*) is an annual or short-lived perennial that occurs in Sonoran Desert scrub and blooms in the fall following the start of the rainy season. There are 49 occurrences in the Consortium of California Herbaria (CCH 2022) and there is one record within Desert Center and another near Corn Spring, south of I-10 (CDFW 2022b). Suitable habitat occurs within the Project site, but it was not observed during plant surveys.

4.2.3 **California Ditaxis:** CRPR 3.2

California ditaxis (*Ditaxis serrata* var. *californica*) has a CRPR of 3.2 and a NatureServe rank of G3G4/S2 S, which indicates more information is needed about the status of this species. California ditaxis may be a glabrous variety of the common *Ditaxis neomexicana* (CEC 2010). It occupies Sonoran Desert scrub vegetation and prefers sandy washes and alluvial fans of the foothills and lower desert slopes, from 100 feet (31 meters) to 3,000 feet (915 meters) amsl. It is known to occur in San Bernardino, Riverside, Imperial, and San Diego counties of California and in Sonora, Mexico (CNPS 2022b). The California ditaxis occurs in the Project site and was recorded at 43 locations during spring 2022 surveys (Figure 18).

4.2.4 **Utah Milkvine:** CRPR 4.2

Utah milkvine (*Cynanchum utahense* [=*Funastrum utahense*]) has 149 records from the Consortium of California Herbaria database primarily from San Bernardino and San Diego counties, but there are also several records in Riverside County. There is one record of this species north of Desert Center and another record southwest of Palen Lake. This twining perennial occurs in sandy, gravelly Mojavean desert scrub. Suitable habitat exists throughout the Project – one individual was observed on the Project site.

4.2.5 **Desert Unicorn Plant:** CRPR 4.3

Desert unicorn plant (*Proboscidea althaeifolia*) has limited distribution but is not very threatened in California. It is a low-growing, perennial species that occurs in sandy washes within Sonoran desert scrub vegetation in San Bernardino, Imperial, Riverside, and San Diego counties of California. It is a late-season bloomer (May to August) but has large and distinctive seed pods that can be detected during the spring season and fleshy root structure that can remain dormant in dry years (BLM 2011). Suitable habitat occurs within the Project site; it was observed in 224 locations throughout the Project site during fall 2019, fall 2021, and spring 2022 surveys (Figure 18)

4.2.6 **Spiny Abrojo:** CRPR 4.3

Spiny abrojo (*Condalia globose var. pubescens*) has limited distribution but is not very threatened in California and can also be found in Arizona and Mexico. It is a perennial shrub that occurs in desert scrub primarily in the Sonoran desert. It occurs only in Imperial and Riverside counties, with the closest record within the undeveloped Oberon Renewable Energy Project (Ironwood 2020). Suitable habitat occurs within the Project site, but spiny abrojo was not observed in the Project site.

4.2.7 **Creosote Bush Rings:** BLMS

Creosote bush rings are BLM sensitive if they are 5-meters or more in diameter. No creosote bush rings were identified during surveys.

4.2.8 **Cacti, Yucca, and Native Trees**

Native cacti, succulents, and trees are generally not ranked as special status plant species, but the harvesting of these native plants is regulated under the California Native Plant Protection Act (Fish and Game Code §§ 1900-1913) and the California Desert Native Plant Act of 1981 (Food and Agricultural Code § 80001 et. seq.; Fish & Game Code §§ 1925-1926). Any vegetation to be salvaged and removed from the site (such as cactus or yucca) would be subject to sale at appraised value, according to CFR 43:5420.0-6. If the cacti or yucca is salvaged and/or transplanted offsite, as approved by BLM, then this resource is not subject to sale but remains in BLM ownership. A total of five cactus species were observed within the Project site, summarized in Appendix C-4, and mapped on Figure 18. These species are:

- barrel cactus (*Ferocactus cylindraceus*)
- beavertail cactus (*Opuntia basilaris* and *Opuntia basilaris* var *basilaris*)
- cottontop cactus (*Echinocactus polycephalus*)

- Engelmann's hedgehog cactus (*Echinocereus engelmannii*)
- fishhook cactus (*Mammillaria tetrancistra*)

Additionally, ocotillo (*Fouquieria splendens* ssp. *splendens)* and four species of native trees were found within the Project site:

- desert ironwood (*Olneya tesota*)
- blue palo verde (*Parkisonia florida*)
- honey mesquite (*Prosopis glandulosa*)
- smoke tree (*Psorothamnus spinosus*)

4.3 Invasive Weeds

Invasive weeds are non-native (exotic) plants included on the weed lists of the California Invasive Plant Council (Cal-IPC), or those weeds of special concern identified by the BLM. There are also some weeds designated as "noxious" by California Department of Food and Agriculture (CDFA) or the U.S. Department of Agriculture. Invasive weeds are of concern in wildlands because of their potential to degrade habitat and disrupt the ecological functions (Cal-IPC 2022). The following invasive weeds were identified on the Project site during 2019-2022 field surveys and summarized in 19.

4.3.1 Sahara Mustard *(Brassica tournefortii)*

Sahara mustard has a highly invasive rating on Cal-IPC (Cal-IPC 2022). It has severe ecological impacts on physical processes, plant and animal communities, and vegetation structure, as well as having reproductive biology and other attributes that are conducive to moderate to high rates of dispersal and establishment (Cal-IPC 2022). Sahara mustard is native to the deserts of North Africa, the Middle East, and the Mediterranean regions of southern Europe (Bossard et al. 2000). Initial establishment of this species in California occurred through the importation of date palms from the Middle East to the Coachella Valley during the early 1900s (Bossard et al. 2000). Sahara mustard currently occurs across Riverside County, as well as all neighboring counties (Cal-IPC 2022). During the field surveys, Sahara mustard was found throughout the Project site.

4.3.2 Russian Thistle *(Salsola tragus)*

Russian thistle has a Limited-to-Moderate rating by the Cal-IPC, indicating a species that is invasive but has an ecological impact that is minor on a statewide level, or there was not enough information to justify a higher score. Its reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but it may be locally persistent and problematic. Russian thistle is listed on the CDFA Noxious Weed List, making it subject to state laws and regulations regarding its spread and pollution of an area (CDFA 2021). Russian thistle is an annual herb that is found in open and disturbed areas in the Mojave Desert and throughout western North America (MacKay 2003). Otherwise known as tumbleweed, it becomes large and round with age, the dried plant breaking off and rolling with the wind to aid in seed dispersal. Native to Eurasia, this plant was likely introduced around the turn of the century. It typically occurs on sandy soils on disturbed sites, cultivated and abandoned fields, and disturbed natural and semi-natural plant

communities (CDFA 2021). Russian thistle was observed in disturbed areas near the aquaculture farm (Figure 20).

4.3.3 Saltcedar *(Tamarix ramosissima)*

Saltcedar, also known as tamarisk, is a BLM weed species of concern. It is also rated as highly invasive by Cal-IPC and rated B by CDFA, meaning it is a pest of known economic or environmental detriment of limited distribution. Tamarisk was observed along channels and around ponds artificially created from drainage from the adjacent aquaculture farms or other agricultural activities (Figure 20).

4.3.4 Mediterranean grass *(Schismus barbatus)*

Mediterranean grass has a limited invasive potential (Cal-IPC 2022) and is not listed by CDFA. It is an annual grass found in both central and southern California, particularly in disturbed areas and deserts, probably introduced at the turn of the century (CDFA 2020). It contributes to increased fire ignition and spread due to accumulation of dry thatch during dry seasons. Wildfire, in turn, contributes to the type-conversion of desert shrubland into annual grassland. These species' reproductive biology and other attributes result in low to moderate rates of invasiveness. Spread may occur from seed dispersal associated with soil disturbance, vegetation cutting, and from vehicle tires and footwear. Increase of these species is most likely to occur in areas where it already exists. BLM and other agencies recognize that because of its widespread distribution, Mediterranean grass is not feasible to eradicate. Mediterranean grass is prevalent throughout creosote bush scrub of the Project site.

4.3.5 London rocket *(Sisymbrium irio)*

London rocket has a moderate rating by the Cal-IPC, indicating that the species has substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Ecological amplitude and distribution may range from limited to widespread. It is a winter annual forb/herb (family Brassicaceae), which can be found in abandoned fields, waste places, roadsides, and orchards. It matures earlier in the year than native species, allowing it to out-compete them. The species distribution is generally spreading in California desert regions, (Cal-IPC 2022). It is not listed on the CDFA noxious weed list. This species was generally limited to areas directly underneath desert ironwood (*Olneya tesota)* trees in small patches throughout the Project site (Figure 20).

4.3.6 Red brome *(Bromus rubens)*

Red brome has an invasive rating of high according to Cal-IPC and is not listed on the CDFA noxious weed list. It has severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Its reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. It is widely distributed ecologically. Red brome is a cool-season annual grass (family Poaceae) found throughout California, especially in the southern part of the state. Red brome invades disturbed areas, roadsides, agricultural fields, rangelands, and forestry sites, in addition to native communities. Red brome is spreading rapidly in desert shrublands, pinyon pine – juniper communities, three-needle pine woodlands, and coastal scrub, where it outcompetes native annuals, increases fire frequency and converts habitat to annual grassland. Red brome was observed throughout the Project site.

4.3.7 Foxtail barley *(Hordeum murinum)*

Foxtail barley has a moderate rating on Cal-IPC, indicating that the species has substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Ecological amplitude and distribution may range from limited to widespread. Foxtail barley may have arrived in California with Spanish settlers and is more common than Mediterranean barley in disturbed, dry upland areas. It is much more widespread in coastal California than it is in the desert regions (Cal-IPC 2022). Foxtail barley was observed in small patches near old agriculture in the northern parcel.

4.3.8 Annual beard grass *(Polypogon monospeliensis)*

Annual beard grass has an invasiveness rating of limited on Cal-IPC and is not listed on the CDFA noxious weed list. This species is invasive, but its ecological impact is minor on a statewide level or there was not enough information to justify a higher score. Ecological amplitude and distribution are generally limited, but it may be locally persistent and problematic. Annual beard grass is a winter or summer annual grass (family Poaceae) that can form dense stands in some areas of California. It was observed in small patches in wetland areas near the aquaculture farm.

4.3.9 Athel tamarisk *(Tamarix aphylla)*

Athel tamarisk has a rating of limited on Cal-IPC. It is invasive but its ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Ecological amplitude and distribution are generally limited, but it may be locally persistent and problematic. Athel tamarisk is a shrub or a tree (family Tamaricaceae) found along streams and lakeshores throughout California. This and other tamarisk species were introduced as landscape ornamentals. Athel tamarisk is still widely planted as an ornamental species in southern California but is less invasive than other tamarisk species. It has escaped cultivation in the San Joaquin Valley, eastern South Coast, and desert regions of California. Athel tamarisk was observed in areas of the Project site near old agriculture but was not mapped.

4.3.10 Non-native, naturalized species

Other non-native plant species observed on the Project that are not considered invasive but have become naturalized include:

- Date palm (*Phoenix dactylifera*)
- Prickly lettuce (*Lactuca serriola*)
- Spiny sowthistle (*Sonchus asper*)
- Sowthistle (*Sonchus oleraceus*)
- Field sowthistle (*Sonchus arvensis*)
- Shepard’s purse (*Capsella bursa-pastoris*)
- Hedge mustard (*Sisymbrium orientale*)
- Cheeseweed (*Malva parviflora*)

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Figure 1. General Vicinity.

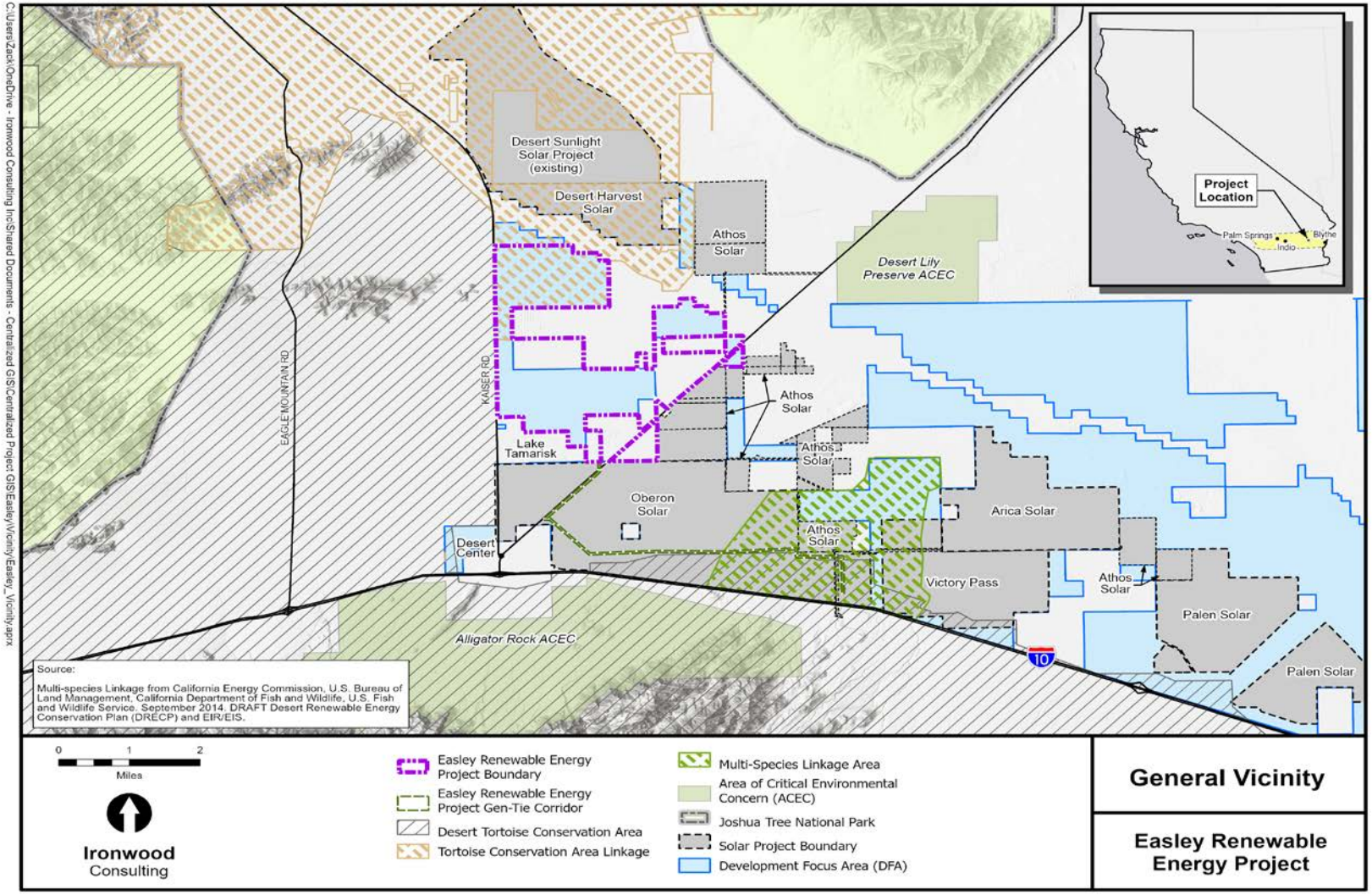

Figure 2. Land Ownership.

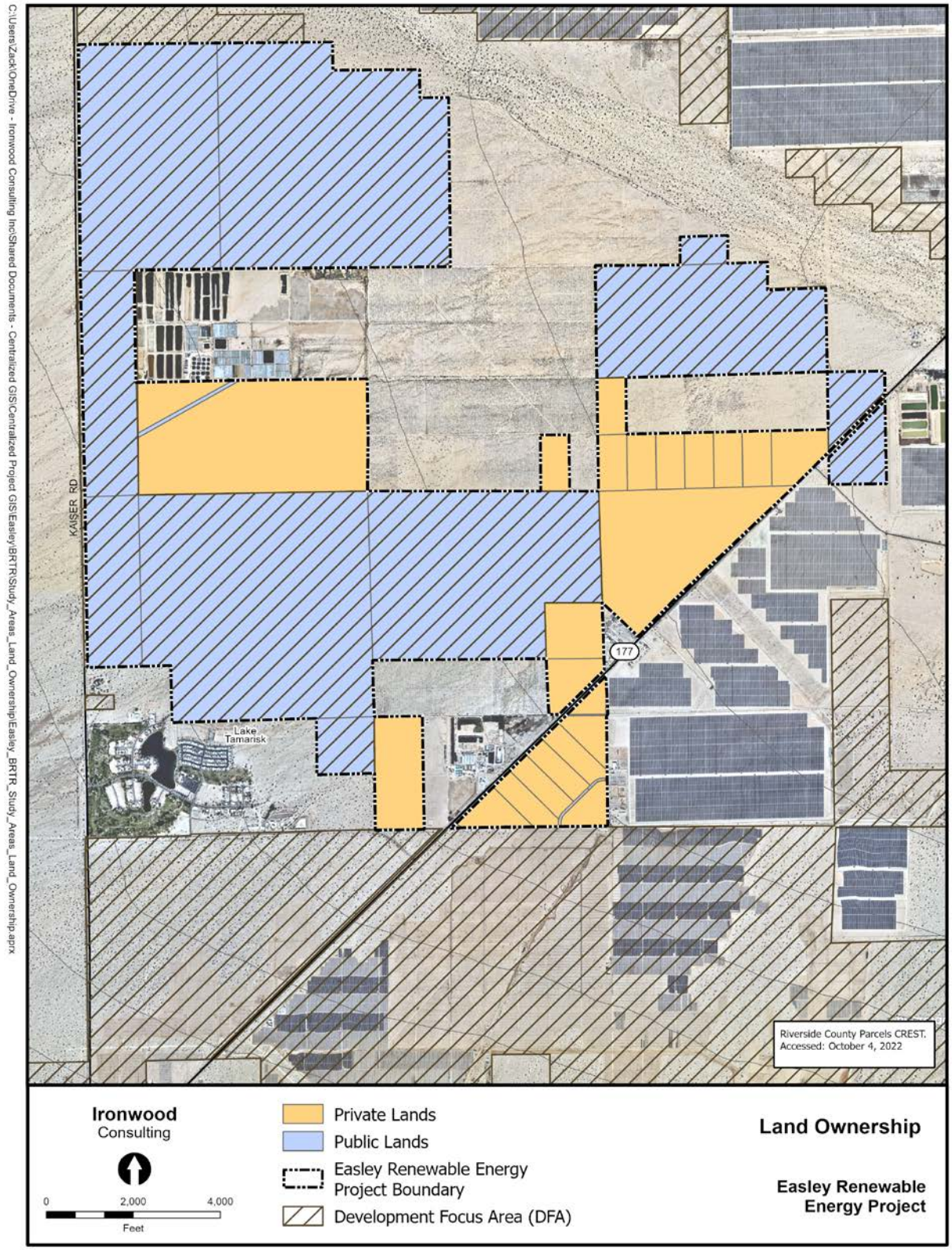

Figure 3. Soils.

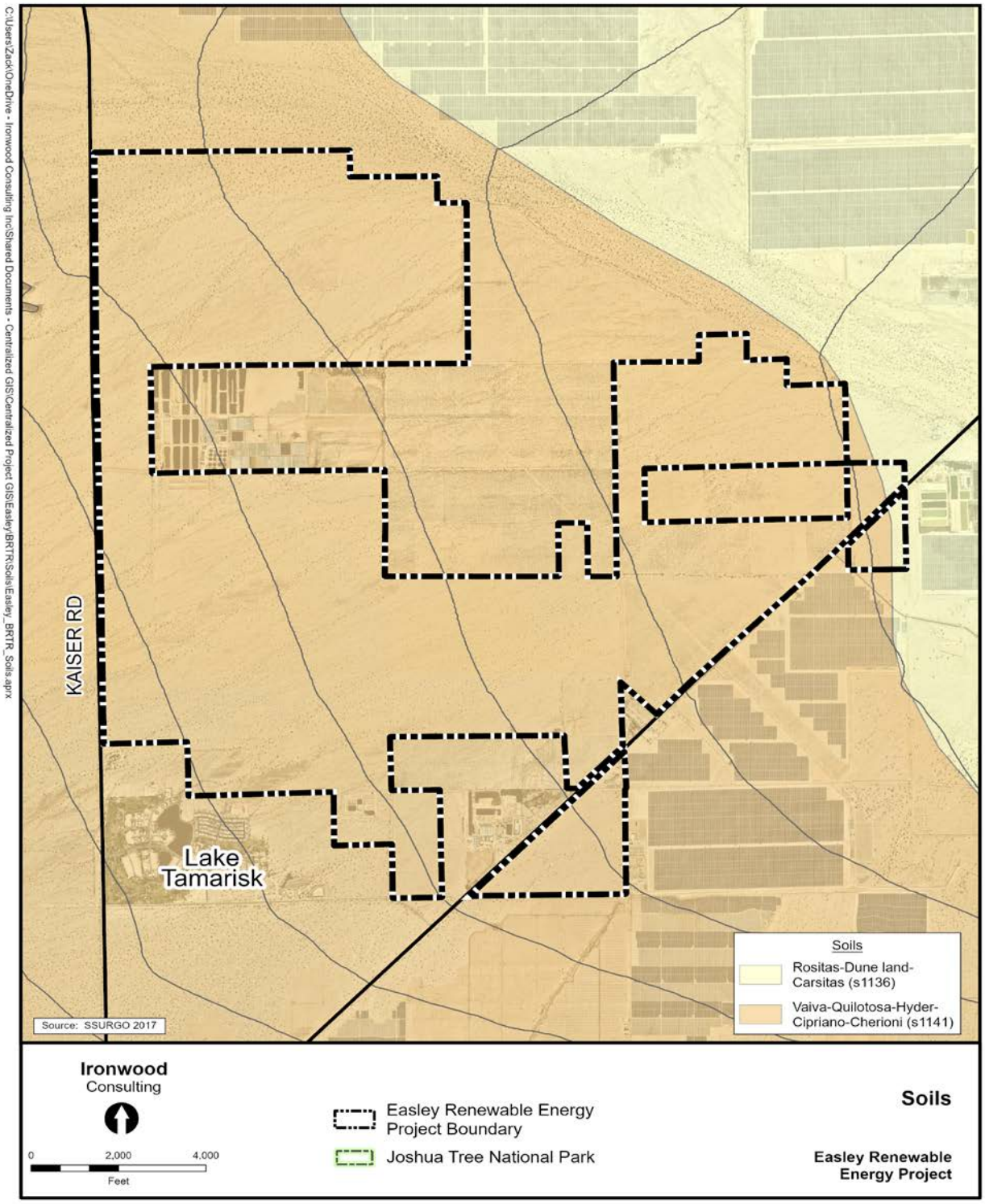

Figure 4. Sand Transport.

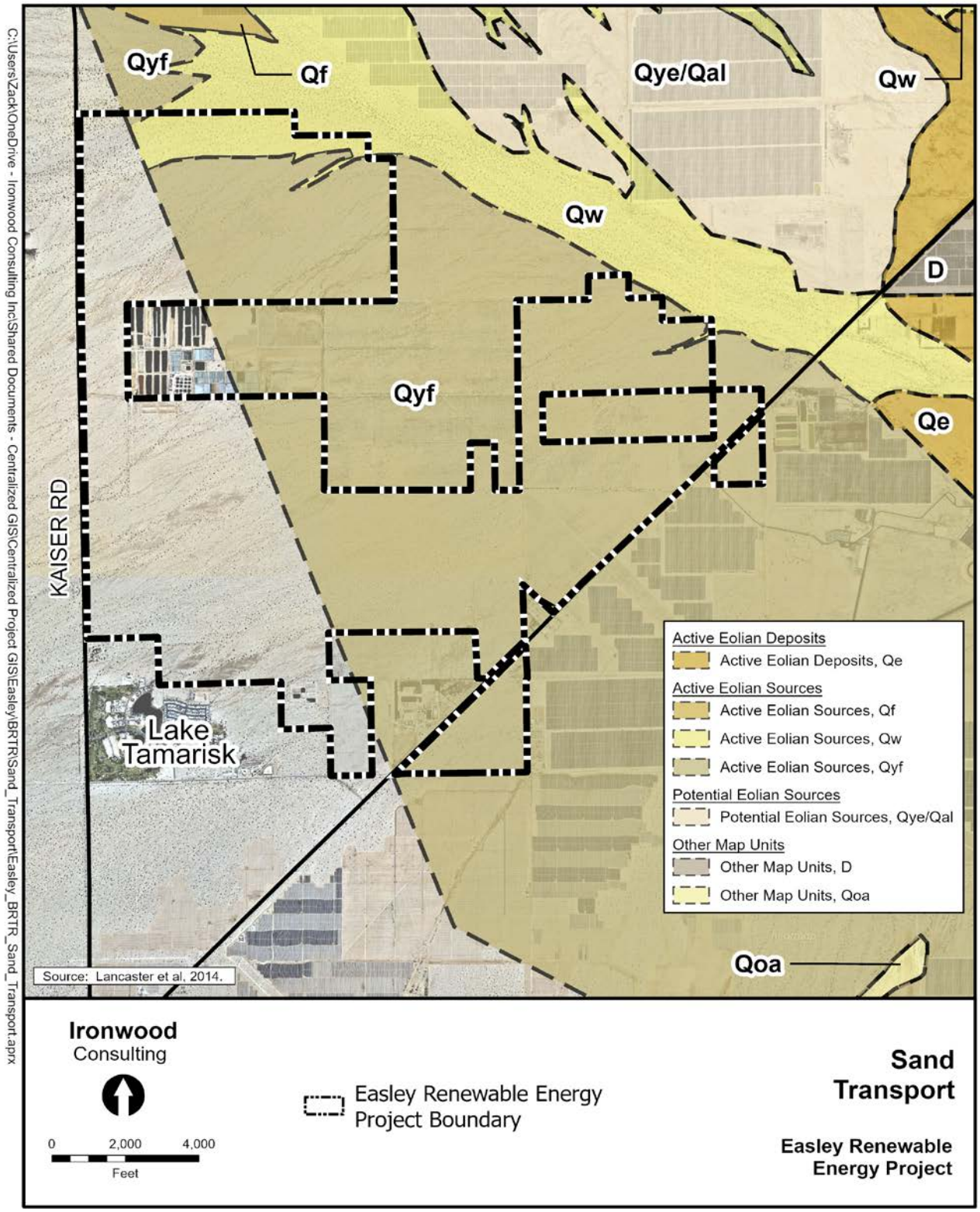

Figure 5. Vegtation Communities.

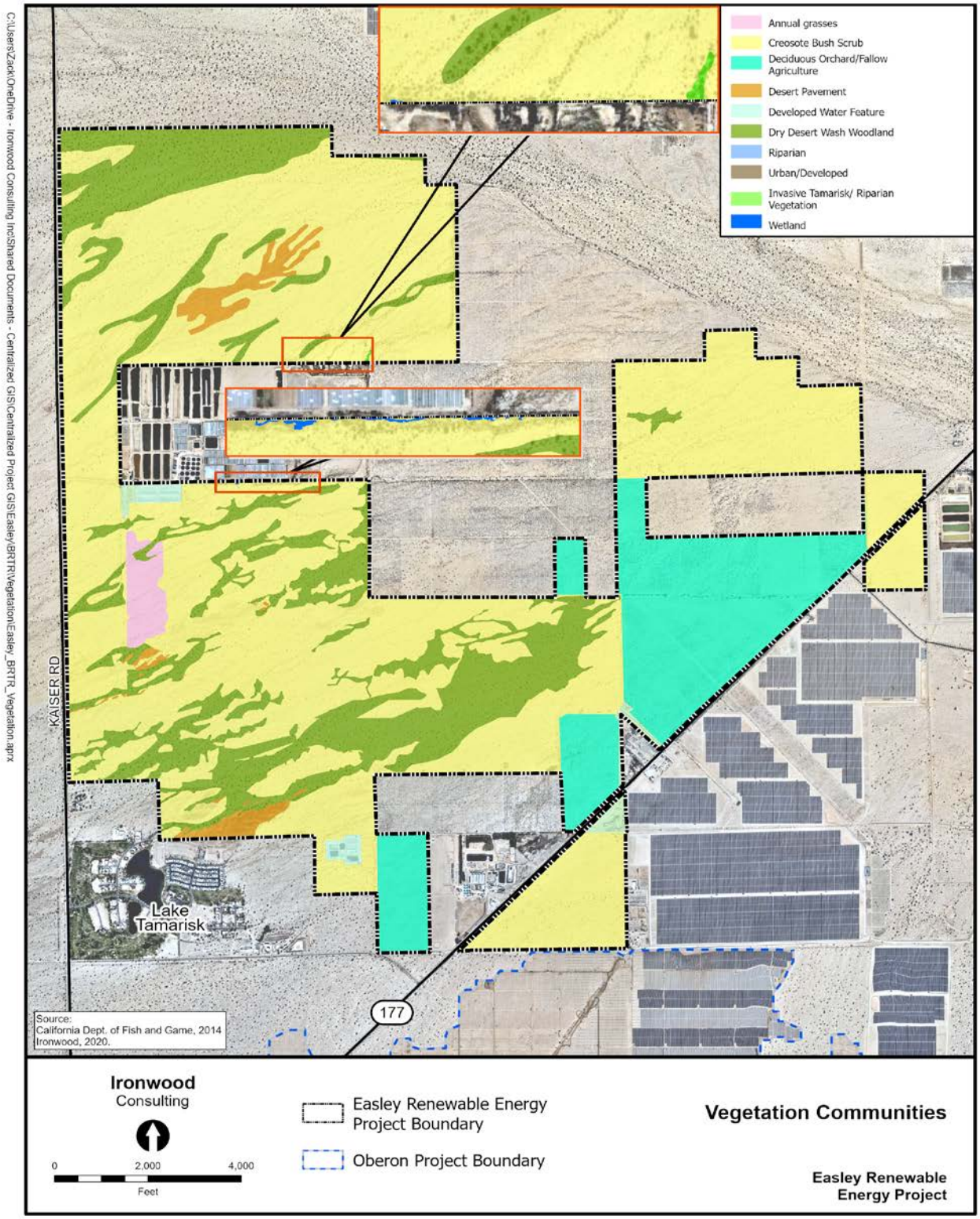

Figure 6. CNDDB Occurrences.

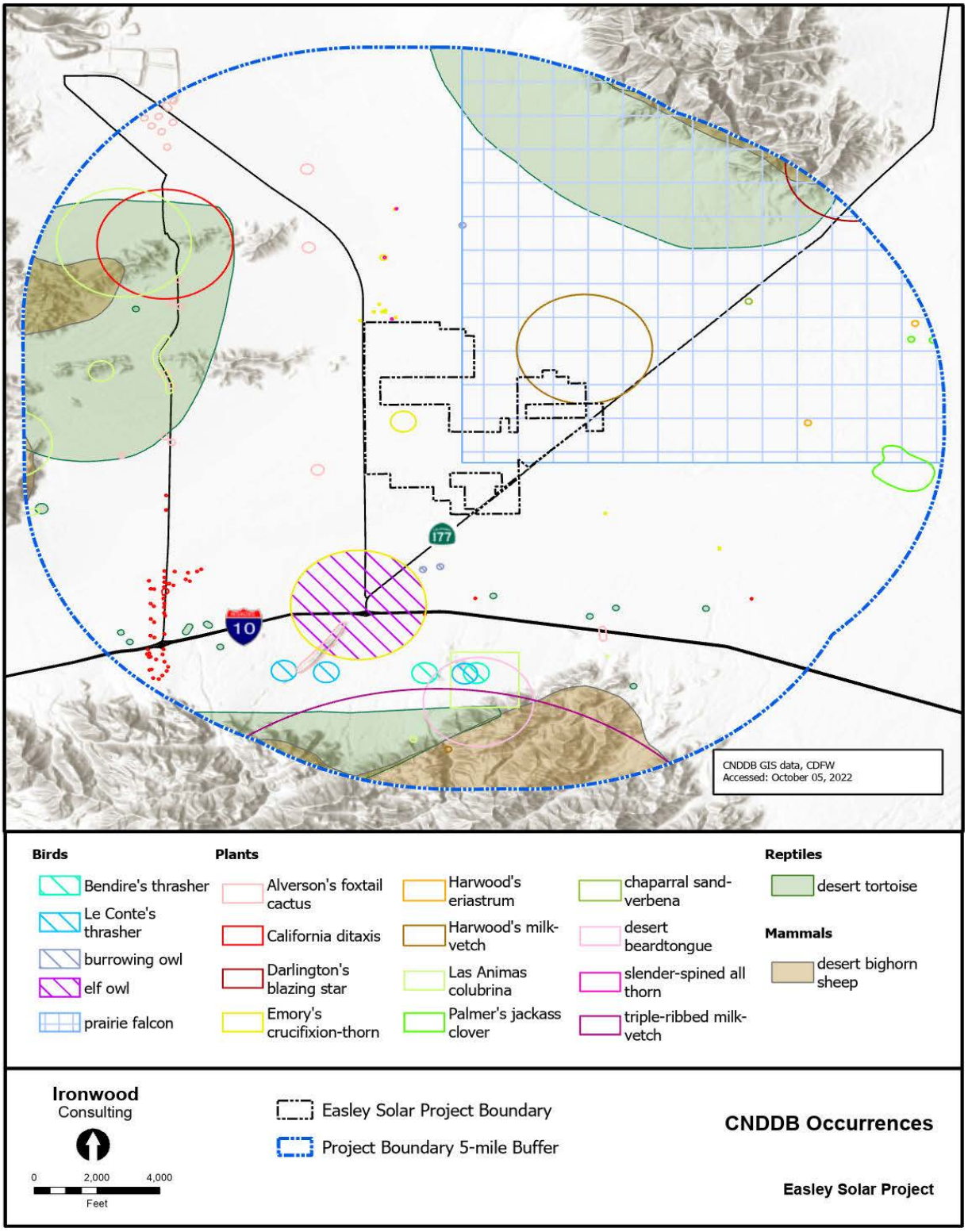

Figure 7. Study Areas.

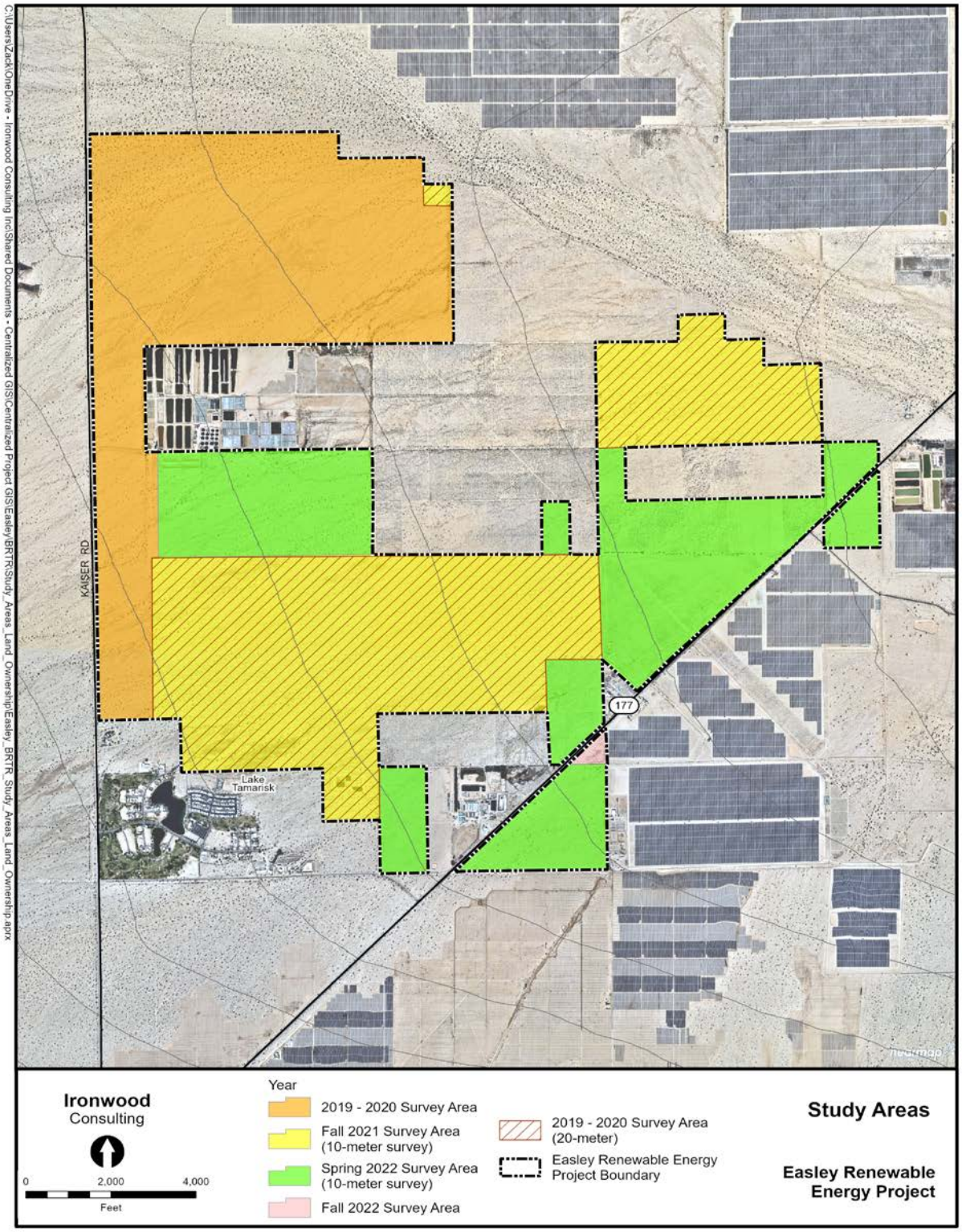

Figure 8.Crotch's Bumble Bee Range.

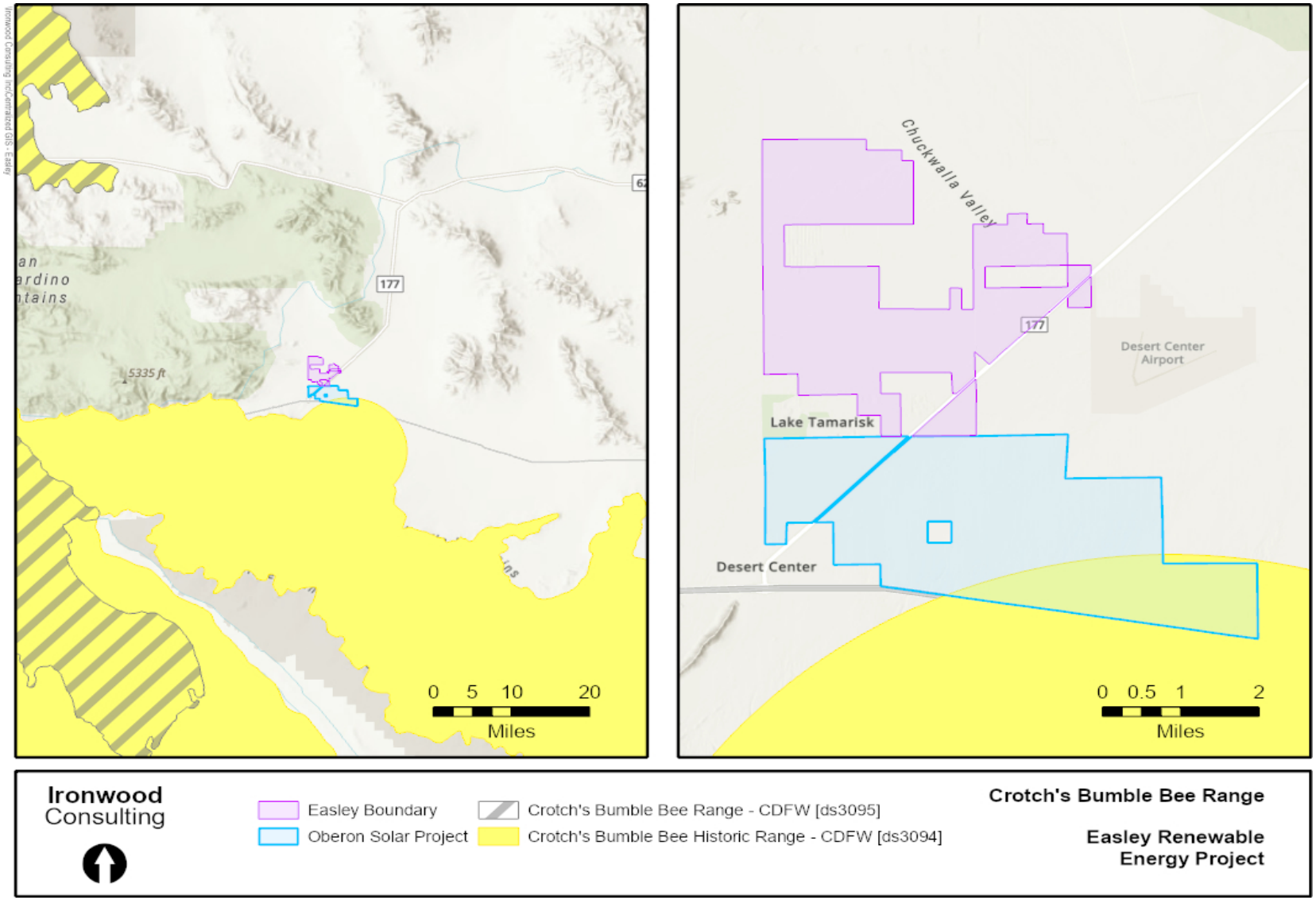

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Figure 9. Desert Tortoise Conservation Areas (TCAs) and Linkages

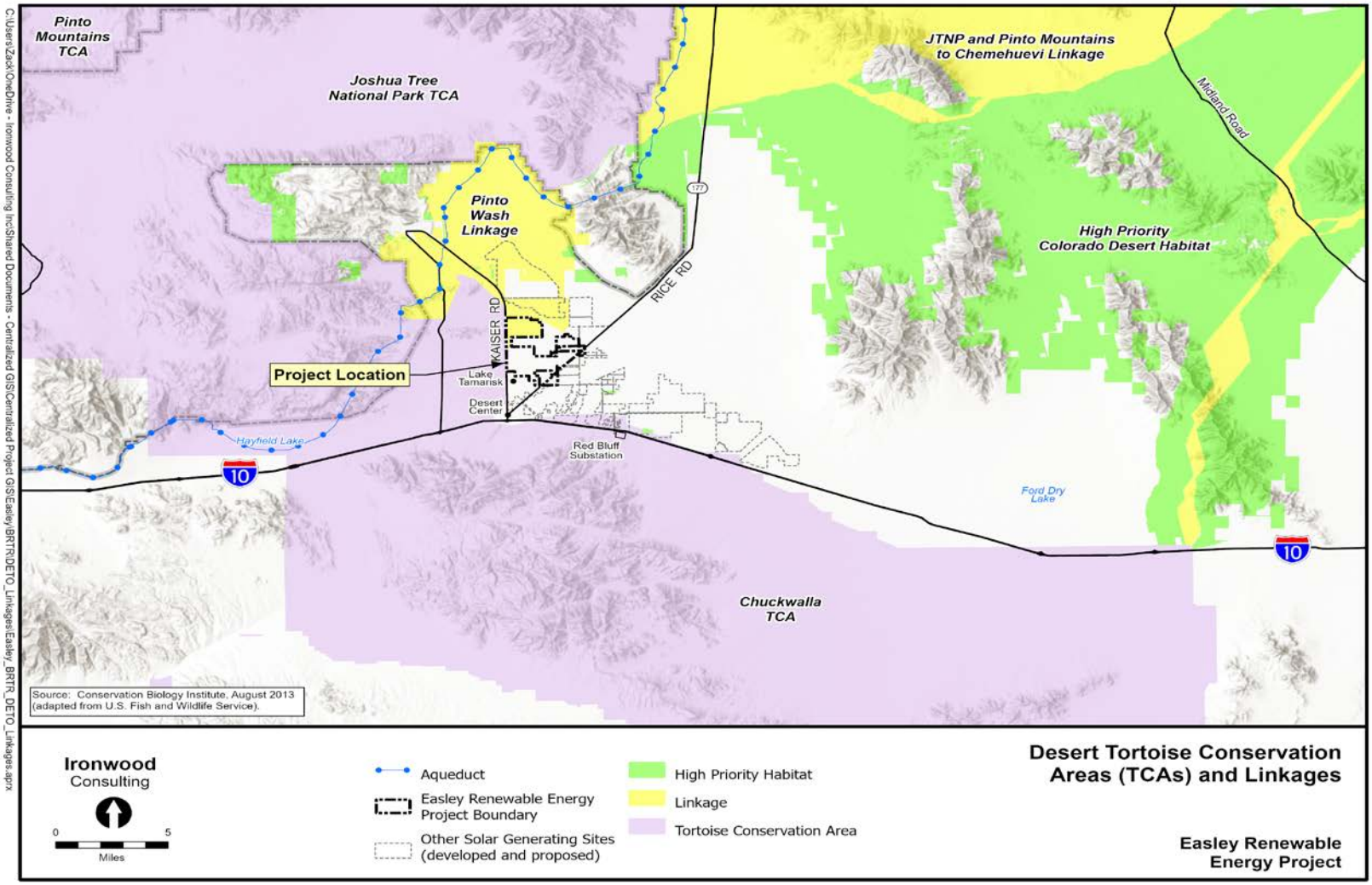


Figure 10.Noteworthy Reptile and Amphibian Observations.

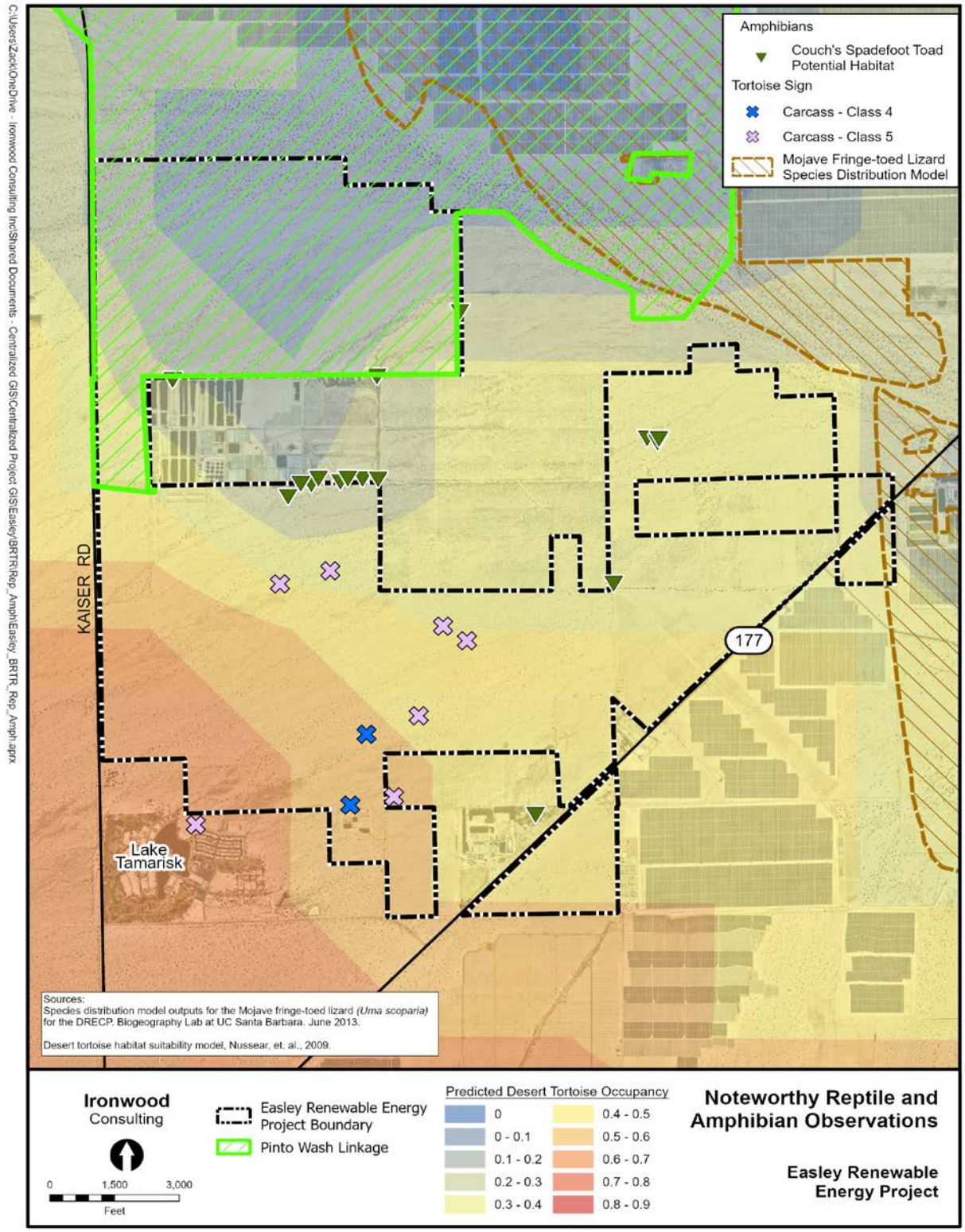


Figure 11. Notable Avian Observations.

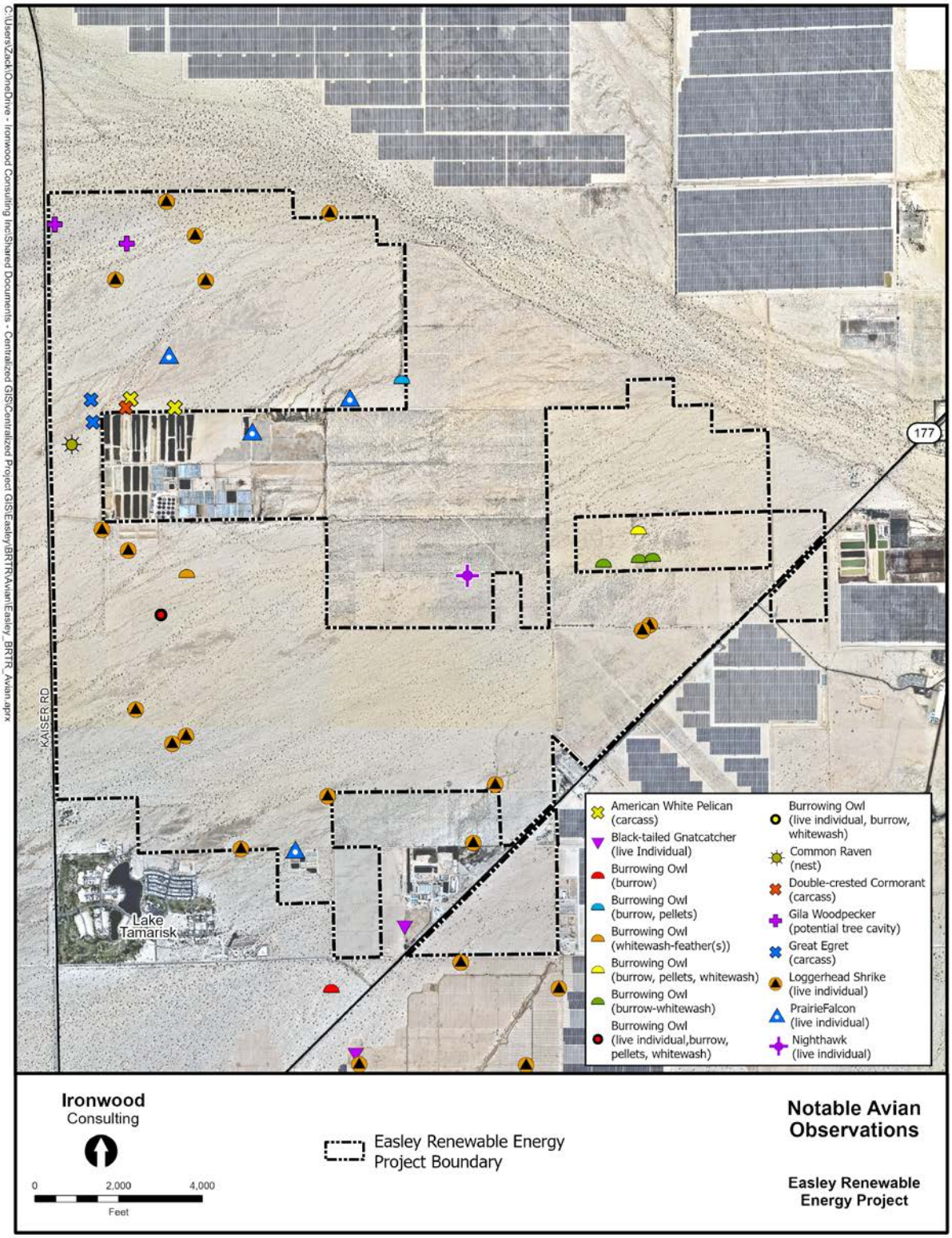


Figure 12. Golden Eagle Survey Results 2010-2015.

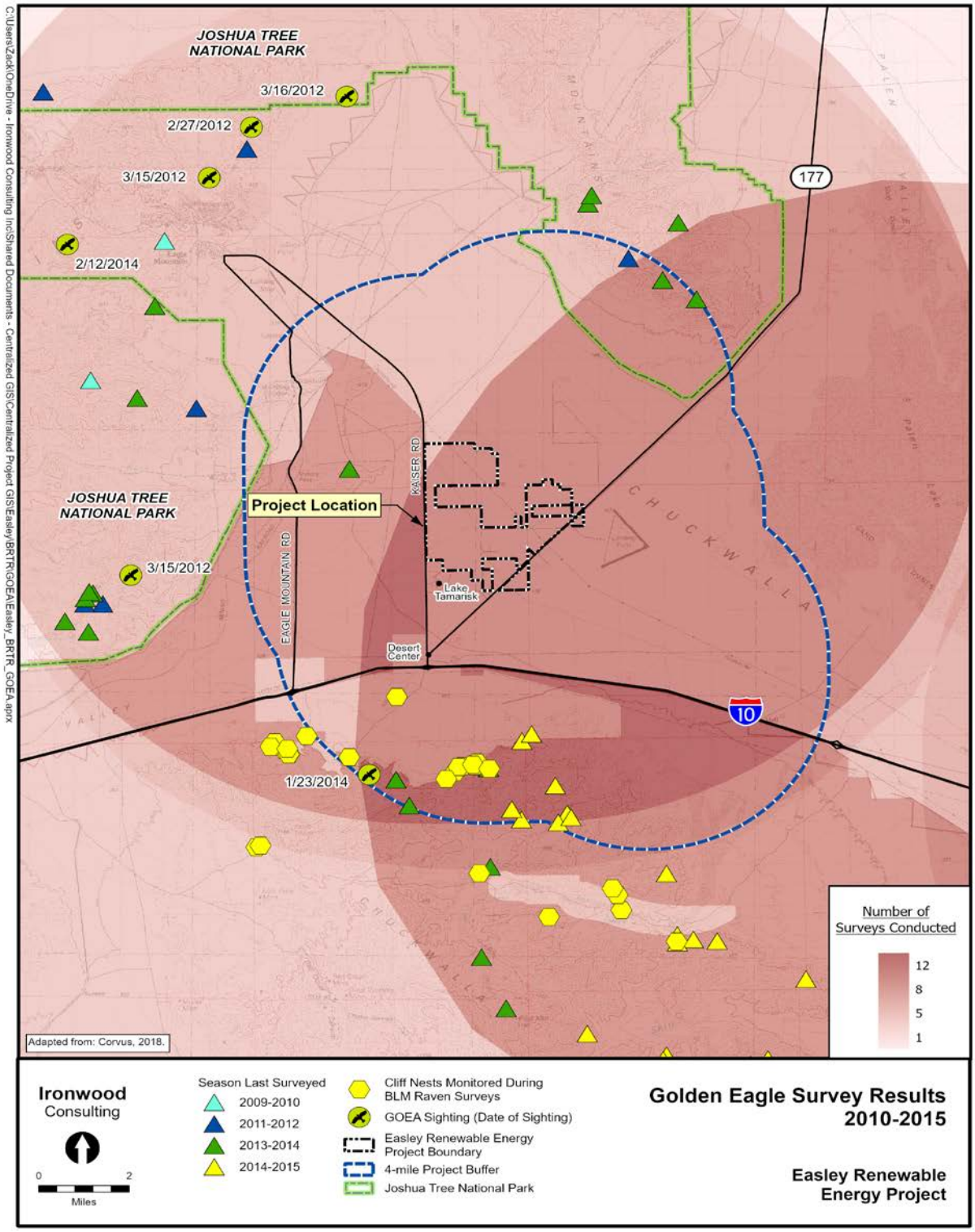


Figure 13. Noteworthy Mammal Observations.

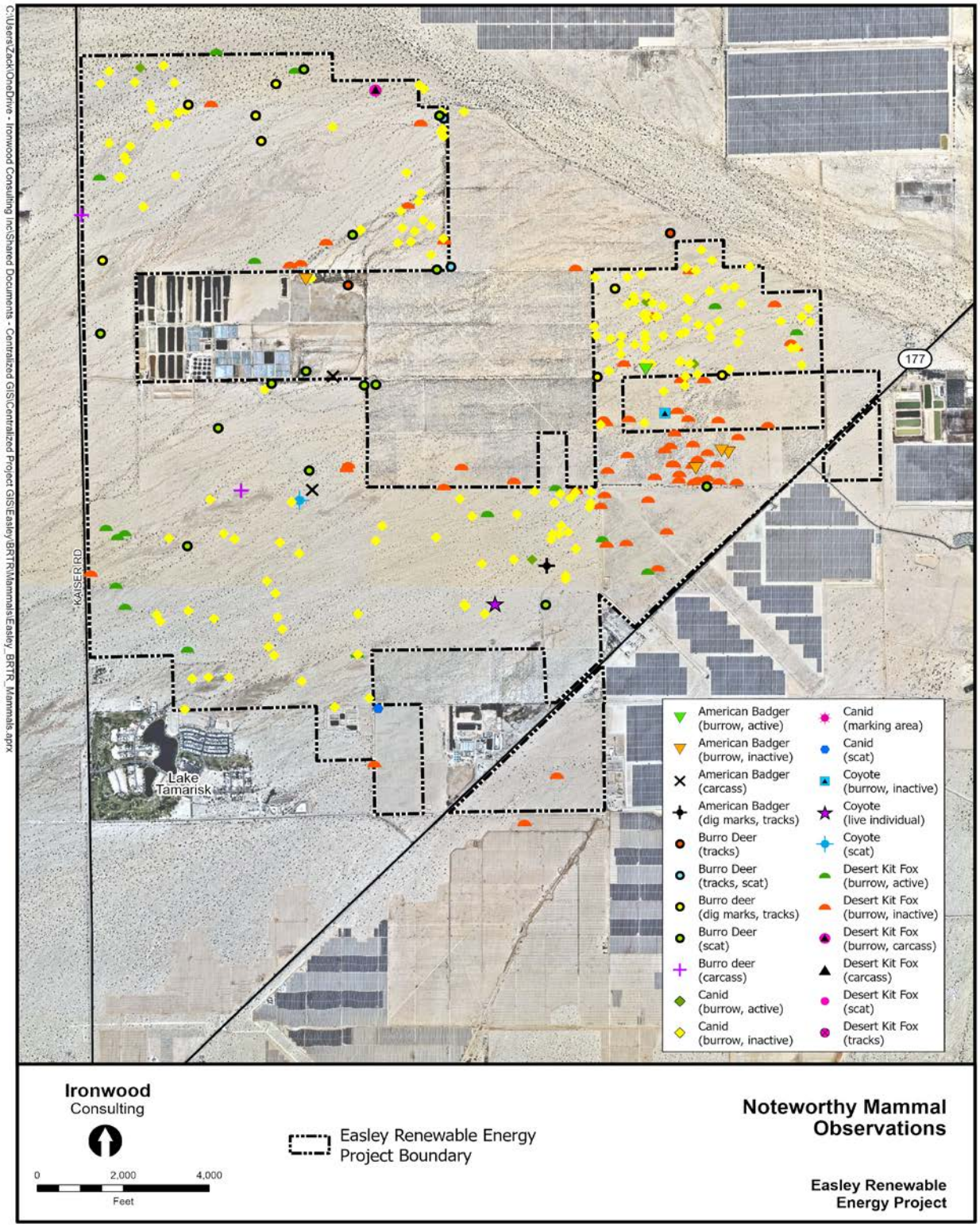


Figure 14. Wildlife Connectivity.

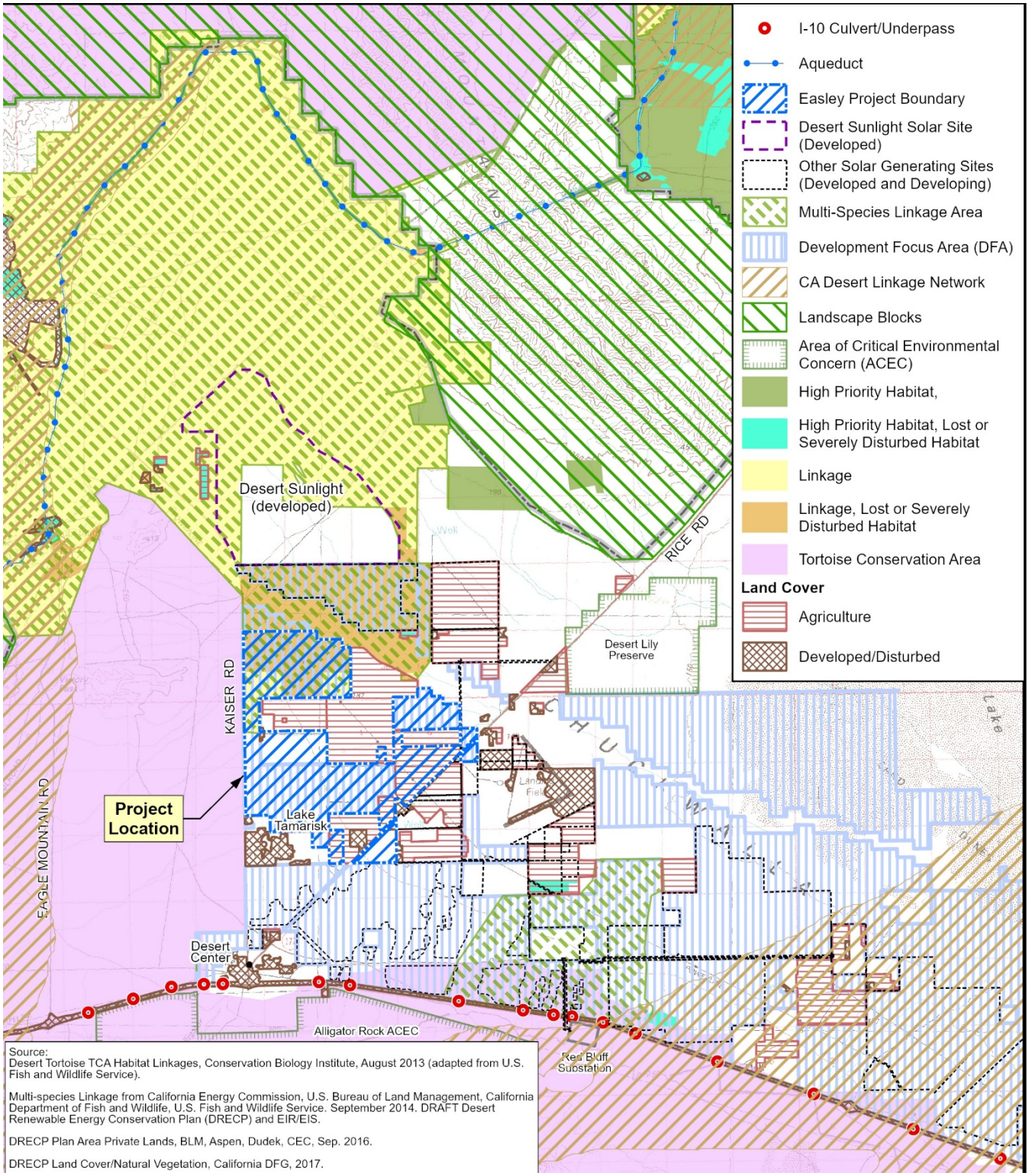


Figure 15. Pinto Wash Linkage Habitat Quality.

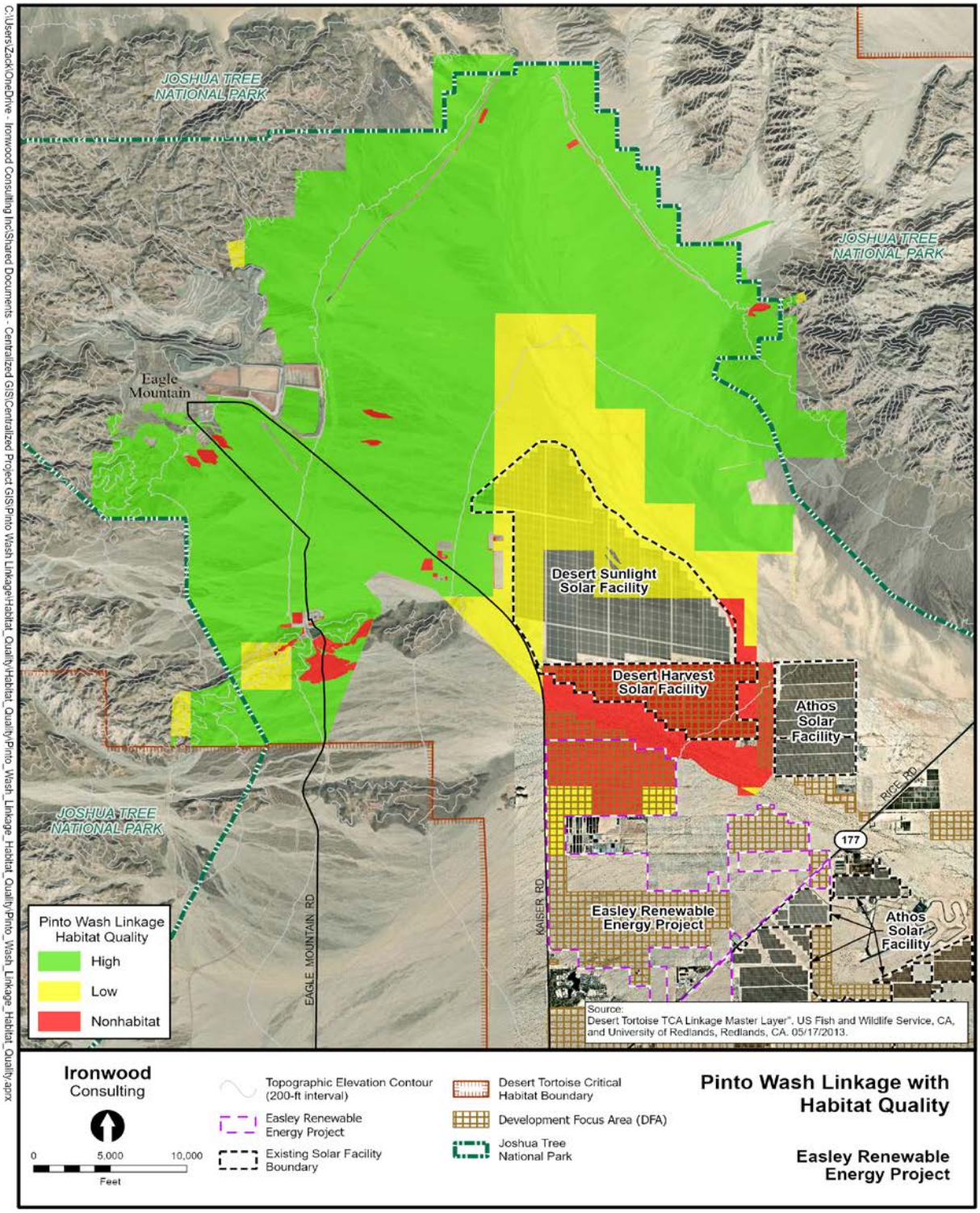


Figure 16.Least Cost Paths and CA Desert Linkage.

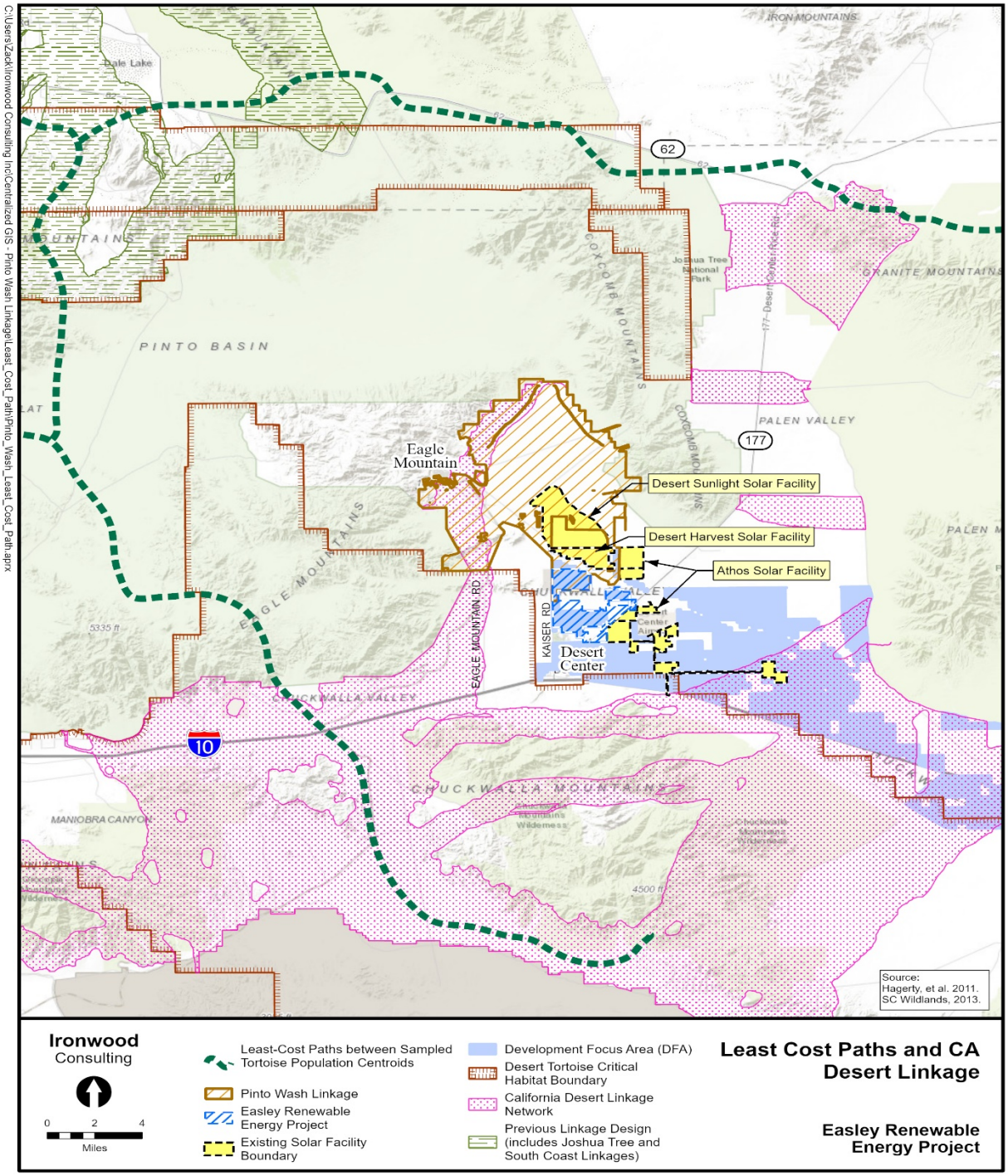


Figure 17. Potential Impact Area within Pinto Wash Linkage

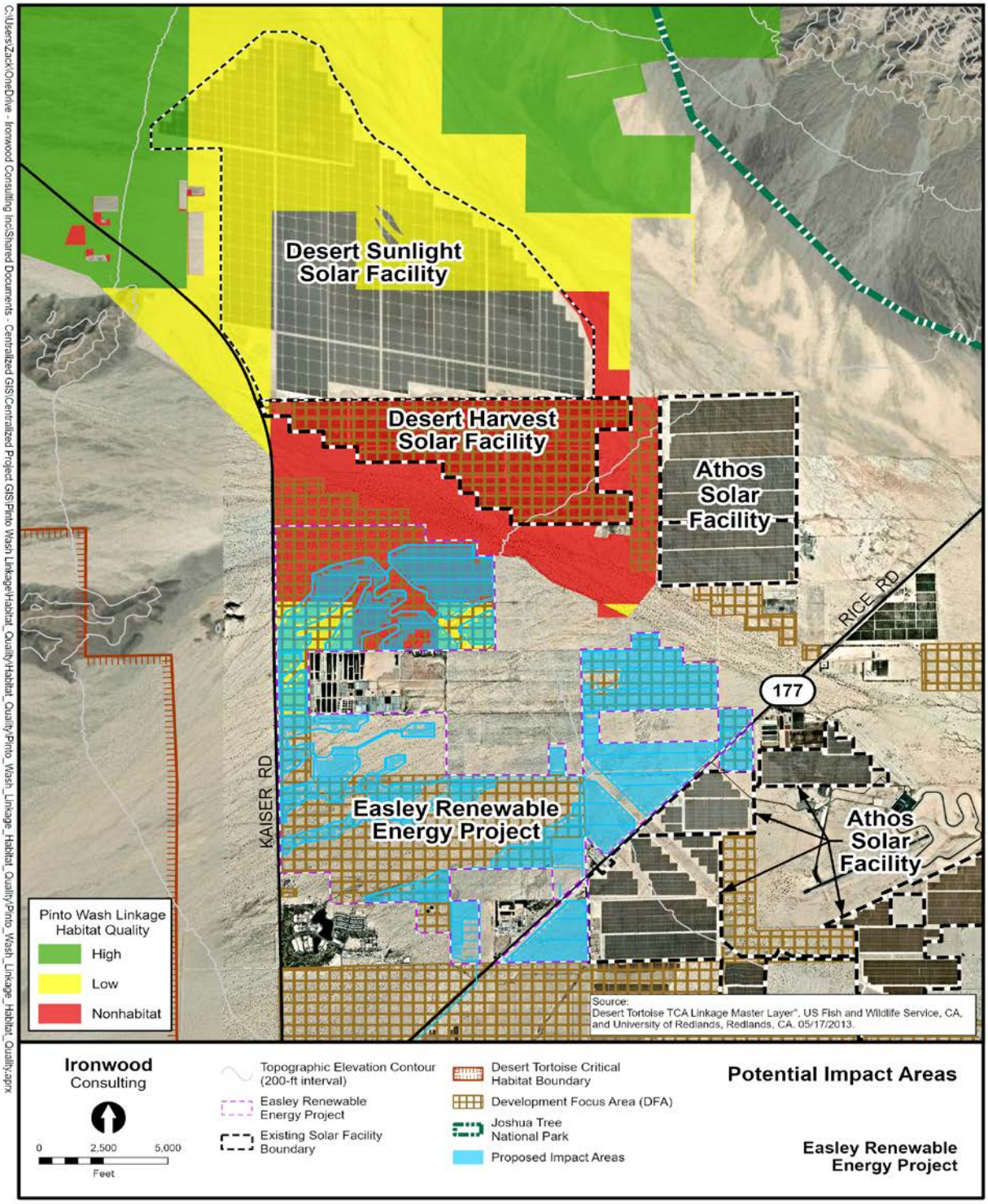


Figure 18. Special Status Plant Observations

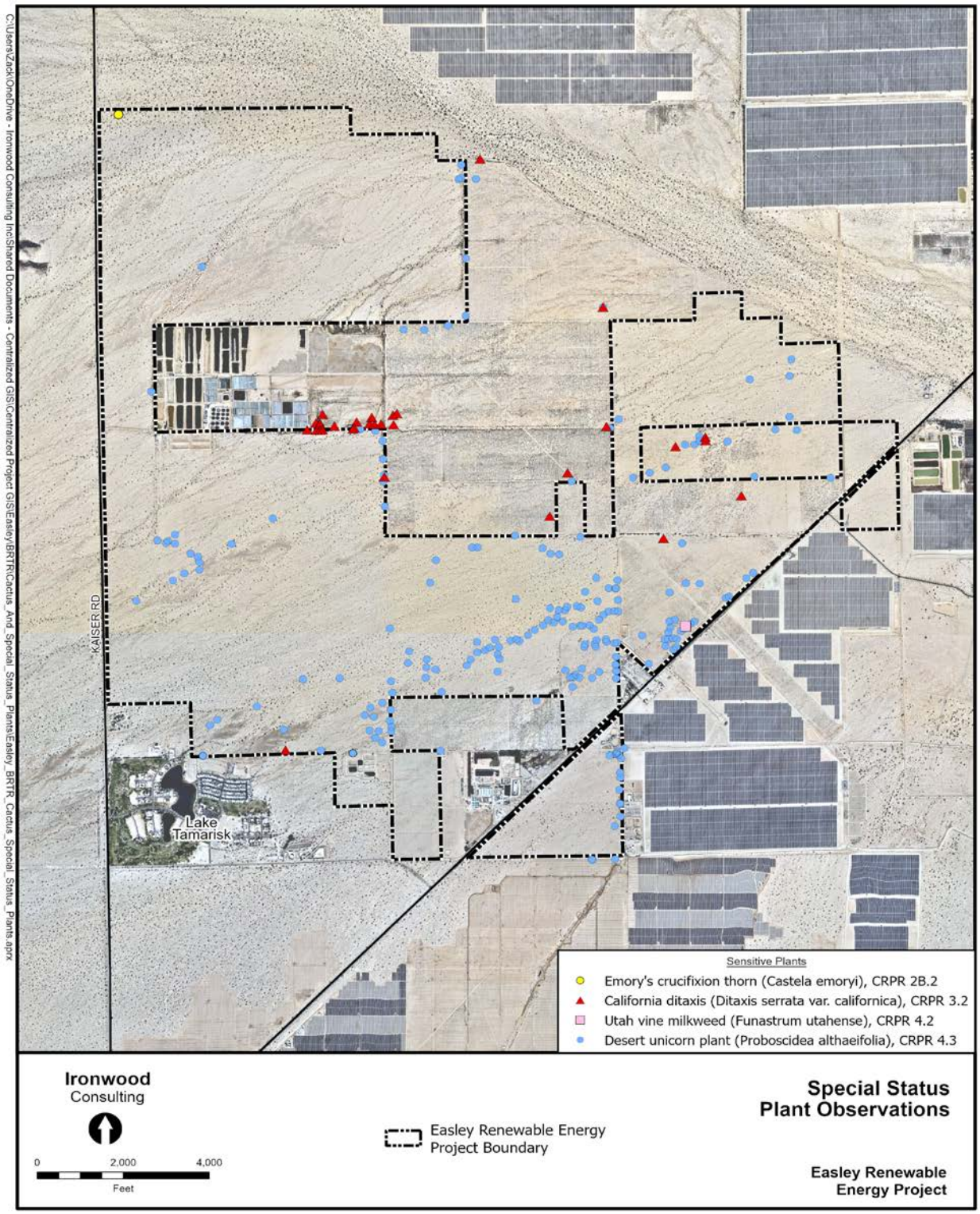


Figure 19. Cactus Observations.

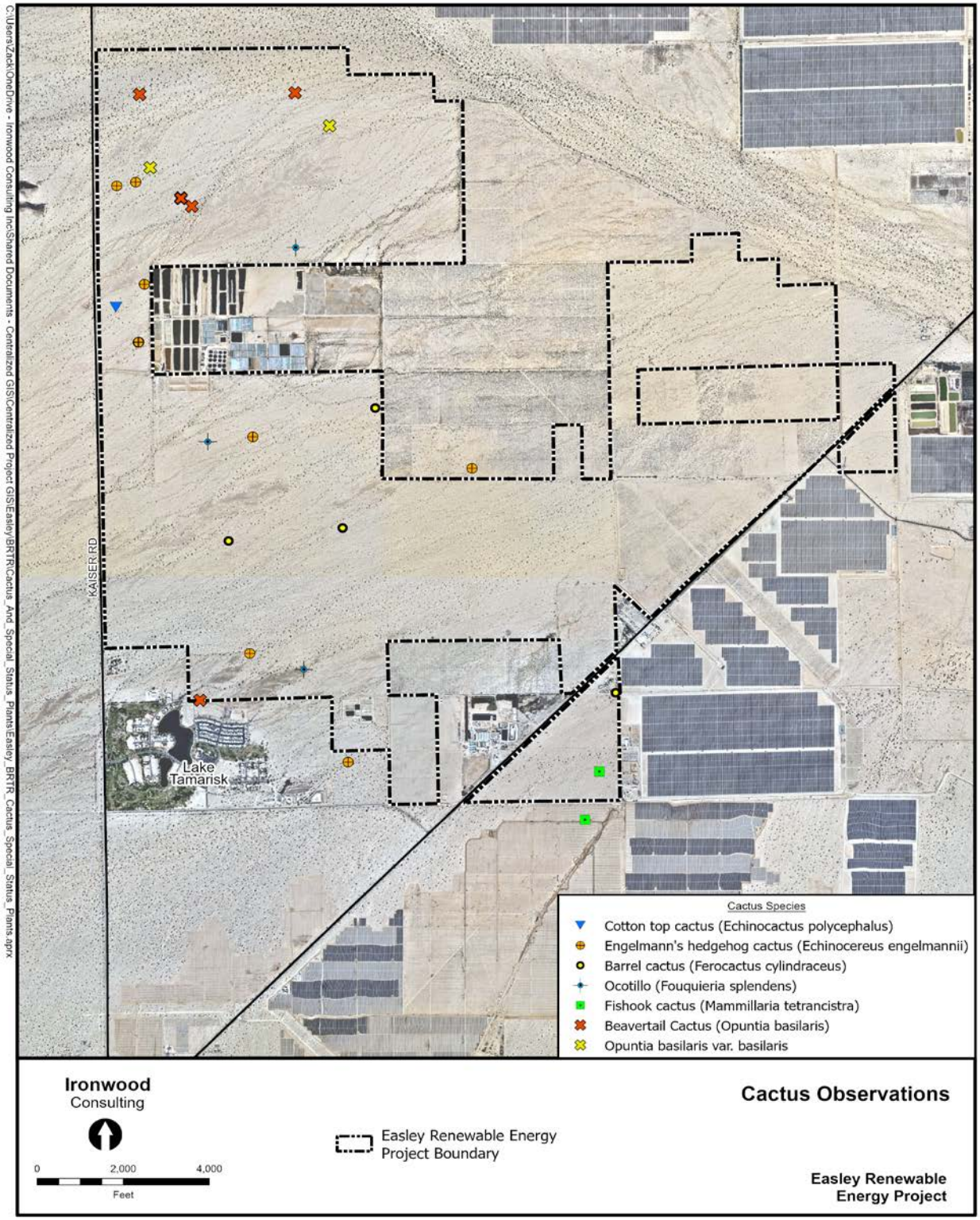
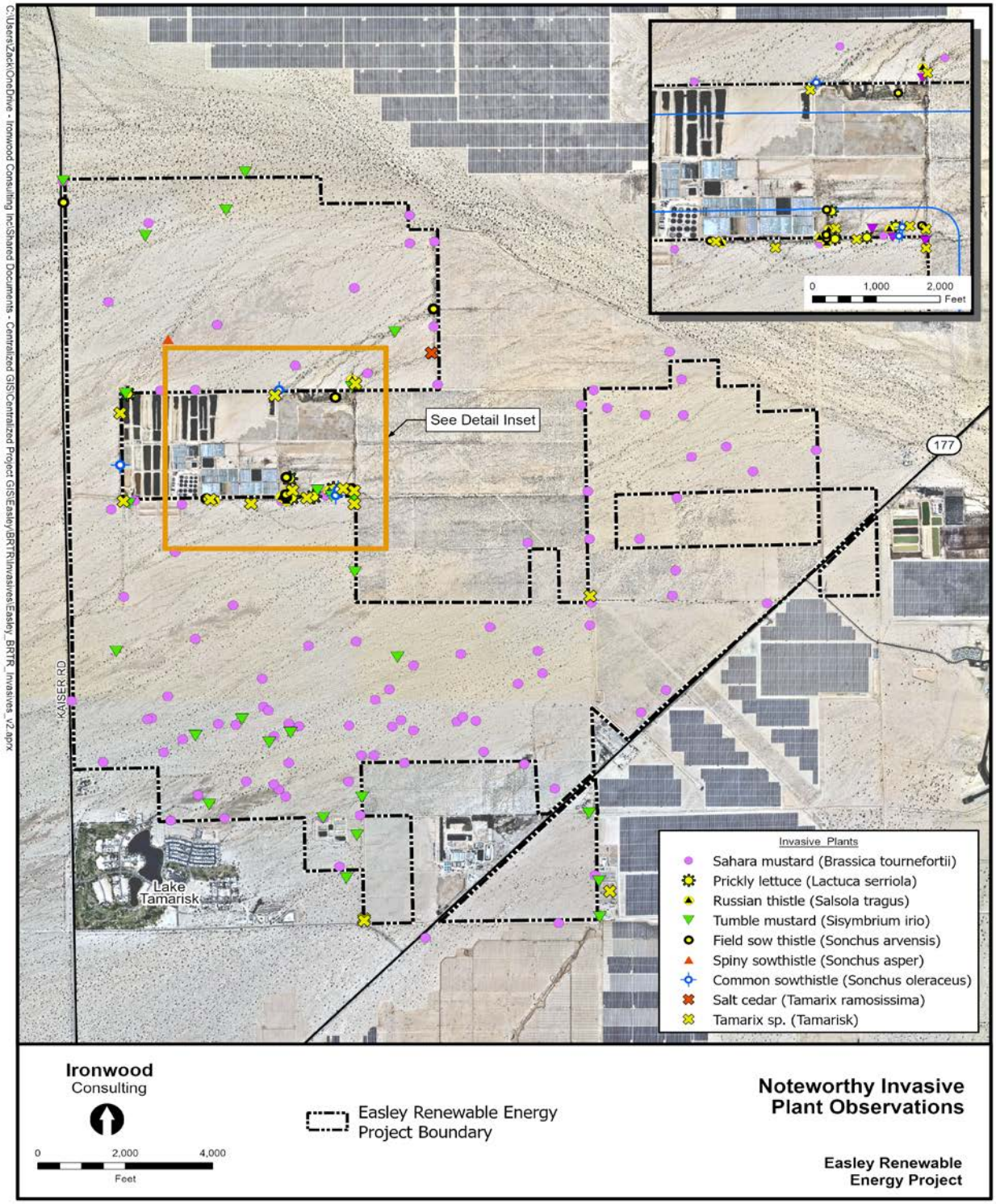


Figure 20. Noteworthy Invasive Plant Observations.



Appendix A – Potential for Special Wildlife Species to Occur

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
INVERTEBRATE						
Crotch's bumble bee *Bombus crotchii*	SE candidate	-	-	Widely distributed in southwestern California but numbers have been declining. Bees are generalists, but this species has been associated with specific genera and families of plants. However, development and pesticides have a negative impact on their presence. Nearest records in Corn Springs and Palm Springs – most recent records have been in the western side of Riverside County. (CNDDB 2023). Project is outside historic range.	Low to Moderate	Some families and genera of plants observed on the Project site, but surrounding development may make the habitat less suitable. Not detected during surveys.
REPTILES						
Agassiz's desert tortoise *Gopherus agassizii*	ST	FT	FOC	This species is widely distributed in the Mojave, Sonoran, and Colorado deserts from below sea level to 2200 m (7220 ft) (Grover and DeFalco 1995). Most common in desert scrub, desert wash, and Joshua tree habitats, but occurs in almost every desert habitat except those on the most precipitous slopes. Desert tortoises occur in a wide variety of habitats in arid and semiarid regions. They require friable soil for burrow and nest construction. Highest densities are achieved in creosote bush communities with extensive annual wildflower blooms, such as occur in the western Mojave. However, tortoises can be found in areas of extensive lava formations, alkali flats and most other desert habitats.	Low to Moderate	Recent sign of desert tortoise was not detected (no live tortoises) within the proposed solar facility during 2021 habitat assessment surveys. Historical sign, including one old, disarticulated carcass was detected during 2021 surveys. The western extent of gen-tie likely supports occupied habitat based on predicted occupancy modelling. Proposed solar facility located in DRECP Clearance Survey Only zone.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Mojave fringe-toed lizard *Uma scoparia*	SSC	BLM-S	FOC	It is restricted to fine, loose, wind-blown deposits in sand dunes, dry lakebeds, riverbanks, desert washes, sparse alkali scrub and desert shrub habitats. The CNDDB indicate 4 historic and 26 recent occurrences in Riverside County (CNDDB 2022).	Low	The Project site is just outside the distribution model for the species and soils are marginally suitable on the northeastern portion of the Project site for the species to occur.
AMPHIBIANS						
Couch's spadefoot toad *Scaphiopus couchii*	SSC	BLM-S	-	This species frequents arid and semi-arid habitats of the southwest, occurring along desert washes, in desert riparian, palm oasis, desert succulent shrub, and desert scrub habitats. It is also found in cultivated cropland areas. It breeds in temporary pools within rocky streambeds, washes, at the edges of agricultural fields, in depressions adjacent to roads and railroad tracks, and cattle tanks. Pools of water need to persist for at least 7 to 8 days to facilitate eggs hatching and larvae fully transform. The CNDDB indicate 1 historic and 2 recent occurrences in Riverside County, all greater than 10 miles from the Project, near the Salton Sea and Colorado River (CNDDB 2022).	Low to Moderate	Evidence of ponded water was recorded along an earthen levee in the eastern proposed solar facility parcel. While potential aquatic breeding habitat may occur, this habitat is substantially disturbed due to proximity to I-10.
MAMMALS						

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Colorado Valley woodrat *Neotoma albigula venusta*	-	-	-	Variety of habitats including low desert, pinyon-juniper woodlands, and desert-transition chaparral. Suitable habitat elements for this species include washes where organic debris gathers, areas of prickly pear cactus and mesquite, rocky areas, and crevices in boulders which are used for cover and nest sites. The CNDDB indicate 7 historic and 1 recent occurrence in Riverside Co. The nearest CNDDB occurrence is a 2001 record near Corn Springs campground, located approximately 5.1 miles south of the project and another on Pilot Mountain (CNDDB 2022).	Low	Project site does not support typical rocky wash habitat.
Burro deer *Odocoileus hemionus eremicus*	CPGS	-	FOC	Occur in early to intermediate successional stages of most forest, woodland, and brush habitats. Prefer a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and free water.	High	Detected on site, with high potential to occur. There is suitable foraging habitat on site. Scat and tracks observed primarily within dry wash woodland.
Desert bighorn sheep* *Ovis canadensis nelsoni* *Excludes the Peninsular Ranges distinct population segment, which is restricted to the Peninsular Ranges located 50 miles west.	CFP	BLM-S FSS	-	Habitats used include alpine dwarf-shrub, low sage, sagebrush, bitterbrush, pinyon-juniper, palm oasis, desert riparian, desert succulent shrub, desert scrub, subalpine conifer, perennial grassland, montane chaparral, and montane riparian (DeForge 1980, Monson and Sumner 1980, Wehausen 1980). Use rocky, steep terrain for escape and bedding. Remain near rugged terrain while feeding in open habitat. The CNDDB indicate 8 historical, and 0 recent record in Riverside Co. (CNDDB 2022).	Low	Project site greater than 5 miles from suitable mountainous habitat and provides low intact habitat value.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Yuma mountain lion *Puma concolor browni*	SSC	-	-	In the DRECP planning area, mountain lions primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho Mountains, Milpitas Wash, Vinagre Wash, and other washes in that area. Mountain lions typically occur in habitat areas with extensive, well-developed riparian or shrubby vegetation interspersed with irregular terrain, rocky outcrops, and community edges. Mountain lions are restricted to the southern Colorado Desert from Joshua Tree National Park south and east to the Colorado River. Burro deer, the primary prey item, are known to spend the hot summer and fall in riparian areas along the Colorado River and in dense microphyll woodlands near the Coachella Canal.	Low to Moderate	Project site provides suitable habitat and burrow deer (prey source) present on the Project site.
American badger *Taxidea taxus*	SSC	-	-	Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils. The CNDDB indicate 13 historic and 4 recent occurrences in Riverside Co. (CNDDB 2022).	High	There is suitable foraging and burrowing habitat on the Project site.
Desert kit fox *Vulpes macrotis arsipus*	-	-	FOC	Lives in annual grasslands or grassy open stages of vegetation dominated by scattered brush, shrubs, and scrub. Cover provided by dens they dig in open, level areas with loose-textured, sandy, and loamy soils.	High	Several active dens/complexes with sign were observed during the 2021 field surveys.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
BATS						
Pallid bat *Antrozous pallidus*	SSC	BLM-S FSS	FOC L	Inhabit low elevation (less than 6,000 feet/1829 meters) rocky, arid deserts and canyonlands, shrub/steppe grasslands. Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees with exfoliating bark, and various human structures (WBWG, 2005). The CNDDB indicates there are 13 historical, and 2 recent records for this species in Riverside Co. The nearest CNDDB record is approximately 4.2 miles southeast of the project site (CNDDB 2022).	Foraging - Moderate Roosting - Low	Detected during acoustic sampling conducted at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site; however, roosting opportunities may exist outside the site in the Project vicinity.
Townsend's big-eared bat *Corynorhinus townsendii*	SSC	BLM-S FSS	FOC H	This species has been reported in a wide variety of habitat types ranging from sea level to approximately 9,000 feet (2743 meters) above MSL. Habitat associations include coniferous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats. The CNDDB indicate there are 9 historical, and 4 recent records in Riverside Co. (CNDDB 2022).	Foraging - Moderate Roosting - Low	Not detected at the Palen Solar Project approximately 7 miles to the northwest during acoustic surveys; however, this species is difficult to detect with acoustic surveys due to low intensity echolocation signals. Typical roosting habitat is not present within the Project site.
Big brown bat *Eptesicus fuscus*	-	-	L	This widespread and abundant species has been recorded in virtually every North American vegetation type. Common to abundant in most of its range, the big brown bat is uncommon in hot desert habitats and is absent only from the highest alpine meadows and talus slopes. Vagrant individuals may be seen in any habitat. Uses buildings and other human-made structures for roosting to such an extent that natural roosting habits are under documented.	Low	Not detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Spotted bat *Euderma maculatum*	SSC	BLM-S	M	Arid, low desert habitats to high elevation conifer forests and prominent rock features appear to be a necessary feature for roosting.	Low	Not detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.
Western mastiff bat *Eumops perotis californicus*	SSC	BLM-S	M	Variety of habitats, from desert scrub to chaparral to oak woodland and into the ponderosa pine belt and high elevation meadows of mixed conifer forests. The nearest CNDDB record is approximately 4.2 miles southwest of the Project site (CNDDB 2022).	Low	Not detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.
Hoary bat *Lasiurus cinereus*	-	-	M	Highly associated with forested habitats in the west. Hoary bat roosts usually are located at the edge of a clearing, although more unusual roosting sites have been reported in caves, beneath rock ledges, woodpecker holes, squirrel nests, building sides, and in dried palm fronds on palm trees. The CNDDB indicate 5 historic, and 0 recent occurrences in Riverside Co. The closest CNDDB record is a historical 1919 occurrence approximately 23.6 miles east of the project area in the town of Neighbors. (CNDDB 2021).	Foraging - Moderate Roosting - Low	Not confirmed during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest; several call sequences were associated with either hoary or pocketed free-tailed bats but lacked features for confirmation of species. Typical roosting habitat is not present within the Project site.
Western yellow bat *Lasiurus xanthinus*	SSC	-	H	Recorded below 600 m (2000 ft) in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. This species occurs year-round in California. The CNDDB indicate 22 historic and 2 recent occurrences in Riverside Co. (CNDDB 2021).	Moderate	Detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest, specifically at the artificial pond located near the date palm farm. The Project site lacks typical foraging and roosting habitat.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
California leaf-nosed bat *Macrotus californicus*	SSC	BLM-S	FOC H	Deserts of California, southern Nevada, Arizona and south to northwestern Mexico. This species depends on either caves or mines for roosting habitat. All major maternity, mating, and overwintering sites are in mines or caves (BLM CDD, 2002). Radio-telemetry studies of *Macrotus* in the California desert show that the California leaf-nosed bat forage almost exclusively among desert wash vegetation within 10 km of their roost (WBWG, 2005). The CNDDB indicate 13 historic and 4 recent occurrences in Riverside Co. The nearest record is from 1993 near the McCoy Mountains area approximately 14.0 miles northwest of the project, in creosote bush scrub habitat where approximately 300 adults were observed roosting in 1993 and 100 were observed during in flight in 1997 (CNDDB 2021).	Low	Not detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.
California myotis *Myotis californicus*	-	-	L	Optimal habitats for this species include all desert, chaparral, woodland, and forest from sea level up through ponderosa pine, mixed conifer, and Jeffrey pine.	Foraging - Moderate Roosting - Low	Detected during acoustic surveys at the Palen Solar Project. Typical roosting habitat is not present within the Project site.
Arizona myotis *Myotis occultus*	SSC	-	M	Commonly known from conifer forests from 6,000 to 9,000 feet (1829-2743 meters) in elevation, although maternity roosts are known from much lower elevations including areas along the Colorado River in California. The CNDDB indicate 2 historic and 0 recent occurrence in Riverside Co. The closest record is a historical occurrence from 1945 approximately ten miles south of the Study Area near the town of Ripley.	Low	Not detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Cave myotis *Myotis velifer*	SSC	BLM-S	M	Found primarily at lower elevations (the Sonoran and Transition life zones) of the arid southwest in areas dominated by creosote bush, palo verde, and cactus. This species is a "cave dweller" and caves are the main roosts although this species may also use mines, buildings, and bridges for roosts. The CNDDB indicate 3 historic and 4 recent occurrences in Riverside County. The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe where individual bats of this species were detected acoustically during April 2002 (CNDDB 2022).	Low	Not detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.
Yuma myotis *Myotis yumanensis*	-	BLM-S	L	Associated with permanent sources of water, typically rivers and streams, feeding primarily on aquatic emergent insects, but Yuma myotis also use tinajas (small pools in bedrock) in the arid west. It occurs in a variety of habitats including riparian, arid scrublands and deserts, and forests. The species roosts in bridges, buildings, cliff crevices, caves, mines, and trees. The CNDDB indicate 0 historic and 5 recent occurrences in Riverside County. The nearest CNDDB record is from 2002 near the Blythe bridge over the Colorado River where individual bats of this species were detected acoustically during April 2002 (CNDDB 2022).	Low	Not detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Pocketed free-tailed bat *Nyctinomops femorosaccus*	SSC	-	M	Known to occur in the desert from March through August, when they then migrate out of the area. In California, they are found primarily in creosote bush and chaparral habitats in proximity to granite boulders, cliffs, or rocky canyons. The CNDDB indicate 7 historic and 2 recent occurrences in Riverside Co. The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe. Individual bats of this species were detected acoustically during April 2002 (CNDDB 2022).	Low	Not detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.
Big free-tailed bat *Nyctinomops macrotis*	SSC	-	M	Found generally sea level to 8,000 feet (2438 meters) in elevation. This species occurs in desert shrub, woodlands, and coniferous forests. It roosts mostly in the crevices of rocks although big free-tailed bats may roost in buildings, caves, and tree cavities. The CNDDB indicate 2 historic and 0 recent occurrence in Riverside Co. The nearest occurrences for this species in Riverside County are from the vicinity of Palm Springs and Joshua Tree National Park (CNDDB 2022).	Foraging - Moderate Roosting - Low	Detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.
Canyon bat *Parastrellus hesperus*	-	-	L	The canyon bat (once known as the western pipistrelle) is a common to abundant resident of deserts, arid grasslands, and woodlands. Occupies all desert, brush, grassland, and woodland habitats up through mixed conifer forests. The most abundant bat in desert regions. Common in arid brushlands, grasslands, and woodlands, and uncommon in conifer forests. This species is a yearlong resident in California.	Foraging - Moderate Roosting - Low	Detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.
Mexican free-tailed bat *Tadarida brasiliensis*	-	-	L	Overall, this species is common in California and may be locally abundant. All habitats up through mixed conifer forests are used, but open habitats such as woodlands, shrublands, and grasslands are preferred.	Foraging - Moderate Roosting - Low	Detected during acoustic surveys at the Palen Solar Project approximately 7 miles to the northwest. Typical roosting habitat is not present within the Project site.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Birds						
Golden eagle *Aquila chrysaetos*	CFP WL CDF-S	BLM-S	FOC	Typically rolling foothills, mountain areas, sage-juniper flats, desert. Nests on cliffs of all heights and in large trees in open areas. Rugged, open habitats with canyons and escarpments used most frequently for nesting. The CNDDB indicates there are 10 historical, and 6 recent detections within Riverside County, all greater than 10 miles from the Project site (CNDDB 2022).	Nesting - Absent Foraging - Low	The nearest suitable nesting habitat is approximately 5 miles north of the proposed solar facility in the Palen Mts. The site may provide suitable foraging habitat; however, regional surveys indicate relatively few golden eagle observations near the Project and prey sources are limited.
Short-eared owl *Asio flammeus*	SSC	BCC	-	Year-round residents in Northern California and may be found in other portions of California during wintering. Require open country that supports small mammal populations, and that also provides adequate vegetation to provide cover for nests. This includes salt- and freshwater marshes, irrigated alfalfa, or grain fields, and ungrazed grasslands and old pastures. The CNDDB contained no records within Riverside County (CNDDB 2022).	Nesting or Wintering - Absent Migration - Moderate	The Project site is not located within the geographic range for nesting habitat for this species. Short-eared owl is likely an uncommon migrant within agricultural lands in the vicinity of the Project during the non-breeding season.
Western burrowing owl *Athene cunicularia hypugaea*	SSC	BLM-S BCC	FOC	A yearlong resident of open, dry grassland and desert habitats. Uses rodent or other burrows for roosting and nesting cover. In the Colorado Desert, western burrowing owls generally occur at low densities in scattered populations (BLM 2013).	High	Potential habitat was detected on site during habitat assessment surveys. Western burrowing owl is likely a resident, in relatively low densities, within the Project vicinity. The Project site supports suitable foraging and nesting habitat. Suitable habitat is also found along the gen-tie line. Focused surveys will be performed during the 2022 breeding season

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Redhead (Nesting) *Aythya americana*	SSC	-	-	During breeding season may be found along the Colorado River and Salton Sea. Also breeds locally in the Central Valley, coastal Southern California, eastern Kern County, and the Salton Sea. Nests in fresh emergent wetland bordering open water. The CNDDB contained no records within Riverside County (CNDDB 2022).	Low	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site does not support typical foraging or nesting habitat. Occurrences are expected to be of migrants only.
Ferruginous hawk (Wintering) *Buteo regalis*	WL	-	-	Most common in grassland and agricultural areas in the southwest. Ferruginous hawks are found in open terrain from grasslands to deserts and are usually associated with concentrations of small mammals. There are 3 historical and 9 recent CNDDB records for this species in Riverside County, and the nearest CNDDB record was more than 90 miles west of the project area (CNDDB 2022).	Nesting or Wintering - Low Migration - Moderate	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site does not support typical nesting habitat, is outside its typical nesting geographic range, and prey sources are limited. The Project site is within the non-breeding (wintering) range of this species. Occurrences are expected to be of migrants only.
Swainson's hawk *Buteo swainsoni*	ST	BLM-S	FOC	Require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Swainson's hawks typically nest in large native trees such as valley oak, cottonwood, walnut, and willow, and occasionally in nonnative trees, such as eucalyptus within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands. The CNDDB indicates there are 3 historical and 0 recent records for Riverside Co (CNDDB 2022).	Nesting - Low Migration - High	Regularly detected in groups during migration over the Project vicinity during avian surveys. The Project site is outside the current geographic range for nesting. The DRECP species distribution model indicates low probability of suitable habitat within the Project site.
Costa's hummingbird (Nesting) *Calypte costae*	-	BCC	-	Primary habitats are desert wash, edges of desert riparian and valley foothill riparian, coastal scrub, desert scrub, desert succulent shrub, lower-elevation chaparral, and palm oasis.	Moderate	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest). The Project site supports suitable foraging habitat and nesting habitat within desert scrub and microphyll woodlands.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Vaux's swift (Nesting) *Chaetura vauxi*	SSC	BCC	-	This species is not known to breed in Riverside County or elsewhere in Southern California. Vaux's swifts prefer to nest in the hollows formed naturally inside of large old conifer trees, especially snags, which are entirely lacking from the project site.	Nesting - Low Migration - High	Regularly detected during migration in the Project vicinity during avian surveys. The Project site is outside the current geographic range for nesting. Occurrences are expected to be of migrants only.
Mountain plover (Wintering) *Charadrius montanus*	SSC	BLM-S BCC	FOC	Mountain plover habitat includes short-grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas. The CNDDB indicate 1 historical, and 1 recent occurrence in Riverside Co (CNDDB 2022). The closest CNDDB (2016) record for this species is in Imperial County at the southern end of the Salton Sea.	Nesting - Low Wintering or Migration - Moderate	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site is outside the geographical range for nesting. This species may use the dry lakebed and nearby agricultural areas as winter habitat. The DRECP species distribution model depicts the agricultural land within Chuckwalla Valley as potential wintering habitat.
Black tern *Chlidonias niger*	SSC	BCC	-	Although restricted to freshwater habitats while breeding, can be fairly common on bays, salt ponds, river mouths, and pelagic waters in spring and fall migration (Grinnell and Miller 1944, Cogswell 1977).	Low	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site is outside the geographical range for nesting. Black tern is likely an uncommon migrant within the Project vicinity during the non-breeding season.
Northern harrier (Nesting) *Circus hudsonius*	SSC	BCC	-	This species does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields. The CNDDB indicate there is 1 historical, and 2 recent occurrences for this species in Riverside Co (CNDDB 2022).	Nesting - Low Wintering or Migration - High	Regularly detected in the Chuckwalla Valley. Project site is outside the geographical range for nesting. The Project site supports suitable foraging habitat during winter and migration.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Gilded flicker *Colaptes chrysoides*	SE	BLM-S BCC	-	Stands of giant cactus, Joshua tree, and riparian groves of cottonwoods and tree willows in warm desert lowlands and foothills. This species nests primarily in cactus, but also will use cottonwoods and willows of riparian woodlands. This species may be nearly extinct in California. The CNDDB indicate 5 historical, and 1 recent record from 2012 in Riverside Co (CNDDB 2022). The closest CNDDB records for this species are along the Colorado River.	Low	Not detected in the Project vicinity; previous records are near the Colorado River. Project site does not support typical foraging or nesting habitat.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	SE	FT BLM-S FSS	FOC	Breeds along the major river valleys in southern and western New Mexico, and central and southern Arizona. In California, the western yellow-billed cuckoo's breeding distribution is now thought to be restricted to isolated sites in the Sacramento, Amargosa, Kern, Santa Ana, and Colorado River valleys.	Low	Not detected in the Project vicinity; the closest suitable habitat for this species is along the Colorado River approximately 25 miles to the east of the Project. Project site does not support suitable breeding or wintering habitat.
Black swift (Nesting) *Cypseloides niger*	SSC	BCC	-	Nests in moist crevice or cave on sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons. Forages widely over many habitats. The CNDDB indicate there are 7 historical, and 0 recent records in Riverside Co (CNDDB 2022).	Low	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site is outside the geographical range for nesting. Black swift is likely an uncommon migrant within the Project vicinity during the non-breeding season.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Willow flycatcher (Nesting) (including southwestern) *Empidonax traillii (*including ssp. *extimus)*	SE	FE (ssp. *extimus*) FSS (ssp. *Traillii*)	-	All subspecies are state-listed and one subspecies (*E. t. extimus)* is federal-listed. Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows (Serena 1982). Common spring (mid-May to early June) and fall (mid-August to early September) migrant at lower elevations, primarily in riparian habitats throughout the state exclusive of the North Coast. The CNDDB indicate there are 3 historical, and 6 recent records in Riverside Co. all greater than 10 miles from the Project site (CNDDB 2022).	Low	The Project site does not support typical foraging or nesting habitat. Occurrences are expected to be of migrants only.
California horned lark *Eremophila alpestris actia*	WL	-	-	A common to abundant resident in a variety of open habitats, usually where trees and large shrubs are absent. Found from grasslands along the coast and deserts near sea level to alpine dwarf-shrub habitat above treeline. In winter, flocks in desert lowlands and other areas augmented by winter visitants, many migrating from outside the state (Garrett and Dunn 1981). The CNDDB indicate there are 2 historical, and 17 recent records in Riverside Co. (CNDDB 2022).	High	Regularly detected in the Project vicinity during avian and wildlife surveys. The Project supports suitable foraging and nesting habitat for this species.
Prairie falcon (Nesting) *Falco mexicanus*	WL	-	-	Occurs in annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Typically nests cliffs and bluffs. The CNDDB indicates 30 historical occurrences in Riverside Co. (CNDDB 2022).	Nesting - Low Foraging - High	Regularly detected in the Project vicinity during avian surveys. The Project supports suitable foraging but lacks nesting habitat for this species. The DRECP species distribution model indicates low to moderate probability of suitable habitat within the Project site.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
American peregrine falcon (Nesting) *Falco peregrinus anatum*	CFP CDF-S	-	-	Rare in the arid southeast, but they occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures. This species was recorded during avian studies for the Palen Solar Project.	Nesting - Low Foraging - Moderate	Previously documented in Project vicinity. The Project supports suitable foraging but lacks nesting habitat for peregrine falcon.
Lesser sandhill crane (Wintering) *Antigone canadensis canadensis* *Greater sandhill crane (Nesting and Wintering)*	SSC FP ST	- BLM-S FSS	-	Breeds in open wetland habitats surrounded by shrubs or trees. They nest in marshes, bogs, wet meadows, prairies, burned-over aspen stands, and other moist habitats, preferring those with standing water. Outside of known wintering grounds, extremely rare except during migration over much of interior California.	Nesting - Low Migration - Moderate	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site does not support typical foraging or nesting habitat. Occurrences are expected to be of migrants only.
Yellow-breasted chat (Nesting) *Icteria virens*	SSC	-	-	This species occupies shrubby riparian habitat with an open canopy, and will nest in non-native species, including tamarisk. The CNDDB indicate 7 historic, and 5 recent occurrences in Riverside Co., associated with the Salton Sea or the Colorado River (CNDDB 2022). The closest CNDDB records for this species are two 1986 records east of the project site at the Colorado River.	Low	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site does not support typical foraging or nesting habitat. Occurrences are expected to be of migrants only.
Loggerhead shrike (Nesting) *Lanius ludovicianus*	SSC	-	-	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. The CNDDB indicate 2 historic, and 32 recent occurrences in Riverside Co. (CNDDB 2022).	High	Regularly detected in Chuckwalla Valley. The Project site supports suitable foraging and nesting habitat.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Gila woodpecker *Melanerpes uropygialis*	SE	BLM-S BCC	-	In California, this species is found primarily along the Colorado River and in small numbers in Imperial County. In southeastern California, Gila woodpeckers formerly were associated with desert washes extending up to 1 mile from the Colorado River; however, their range may be expanding. The CNDDB indicate 12 historic and 1 recent occurrence (2008) in Riverside County (CNDDB 2022). The closest CNDDB record for this species is a 1986 record approximately 30 miles east of the project site at the Colorado River (CNDDB 2021). Another individual was documented by the USFWS at the Rio Mesa project site near the Colorado River in 2012.	Low	Nearest observation was recorded greater than 5 miles from the Project site. The Project site does not support typical foraging or nesting habitat.
Elf owl *Micrathene whitneyi*	SE	BLM-S	-	A very rarely seen spring and summer resident of the Colorado River Valley. West of the Colorado River, there are records at the oases of Cottonwood Springs and Corn Springs over 6 miles from the Project site. Nests in desert riparian habitat with cottonwood, sycamore, willow, or mesquite; absent from desert riparian habitat dominated by saltcedar. The CNDDB indicates 5 historic and 2 recent occurrences in Riverside County (CNDDB 2022).	Low	Not detected on site, or in the Project vicinity, during focused suitability surveys for elf owl or within numerous small bird count stations within microphyll woodland. The Project site does not support typical foraging or nesting habitat.
Long-billed curlew (Nesting) *Numenius americanus*	WL	-	-	Preferred breeding and winter habitats include large coastal estuaries, upland herbaceous areas, and croplands. On estuaries, feeding occurs mostly on intertidal mudflats.	Nesting - Low Migration - Moderate	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site does not support typical foraging or nesting habitat. Occurrences are expected to be of migrants only.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Lucy's warbler (Nesting) *Leiothlypis luciae*	SSC	BLM-S	-	An uncommon to common, summer resident and breeder along the Colorado River, fairly common locally in a few other desert areas, and rare near Salton Sea. It occurs in desert wash and desert riparian habitats, especially those dominated by mesquite; also ranges into saltcedar and other thickets. May use abandoned verdin nests.	Moderate	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site does not support typical nesting habitat (mesquite thickets), but the tamarisk and dry wash woodland within the Project site may serve as nesting habitat.
American white pelican (Nesting colony) *Pelecanus erythrorhynchos*	SSC	BCC	-	Common spring and fall migrant at Salton Sea and Colorado River. Migrant flocks pass overhead almost any month, but mainly in spring and fall throughout the state, especially in southern California (Cogswell 1977, McCaskie et al. 1979, Garrett and Dunn 1981).	Nesting/Wintering - Low Migration - Moderate	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site does not support typical foraging or nesting habitat. Occurrences are expected to be of migrants only.
Black-tailed gnatcatcher *Polioptila melanura*	WL	-	-	A year-round resident in southwestern United States and central and northern Mexico, in California the black-tailed gnatcatcher is found in the southeast desert wash habitat from Palm Springs and Joshua Tree National Park south, and along the Colorado River. It is now rare in eastern Mojave Desert north to the Amargosa River, Inyo County. This species nests primarily in wooded desert wash habitat, but also occurs in creosote scrub habitat during the non-breeding season. The CNDDB indicate 14 historic and 4 recent occurrences in Riverside County (CNDDB 2022).	High	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest). The Project site supports suitable foraging and nesting habitat, primarily associated with larger trees within microphyll woodlands.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Purple martin *Progne subis*	SSC	-	-	The historical breeding range of the purple martin includes southern California, though populations have shrunk dramatically. Neither the historical nor current breeding range, however, includes the Colorado Desert. Purple martins habitat requirements include adequate nest sites and availability of large aerial insects, and therefore are most abundant near wetlands and other water sources. The CNDDB indicate 6 historic and 0 recent occurrences in Riverside County (CNDDB 2022). .	Low	The Project site does not support typical wintering or nesting habitat. Occurrences are expected to be of migrants only.
Vermilion flycatcher (Nesting) *Pyrocephalus rubinus*	SSC	-	-	They are usually found near water in arid scrub, farmlands, parks, golf courses, desert, savanna, cultivated lands, and riparian woodlands; nesting substrate includes cottonwood, willow, and mesquite. The CNDDB indicate 7 historic and 0 recent occurrence in Riverside County (CNDDB 2022). The closest record includes a 1983 record from the Blythe golf course.	Low	The Project site does not support typical habitat for this species. Occurrences are expected to be of migrants only.
Ridgeway's [Yuma Ridgway's] rail *Rallus obsoletus yumanensis*	ST, CFP	FE	-	Formerly Yuma clapper rail, it occurs in inland areas in the southwestern United States. This subspecies is partially migratory, with many birds wintering in brackish marshes along the Gulf of California. Some remain on their breeding grounds throughout the year; for example, the Salton Sea (south) Christmas Bird Count frequently records this species in the fresh-water marshes in and around the Imperial Wildlife Area (Wister Unit). Nesting and foraging habitat occurs only along the Lower Colorado River (from Topock Marsh southward) and around the Salton Sea.	Low	There is no suitable foraging habitat, and no nesting habitat on site. Nearest records are associated with the Salton Sea and Colorado River, over 25 miles from the Project site.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Bank swallow (Nesting) *Riparia riparia*	ST	BLM-S	-	A neotropical migrant found primarily in riparian and other lowland habitats in California west of the deserts during the spring-fall period. Uses holes dug in cliffs and riverbanks for cover. Will also roost on logs, shoreline vegetation, and telephone wires.	Nesting/Wintering - Low Migration - Moderate	The Project site is outside the geographical range for nesting. Bank swallow is likely a relatively common migrant within the Project vicinity during the non-breeding season.
Sonora Yellow warbler (Nesting) *Setophaga petechia sonorana*	SSC	-	-	In southeastern California, this species is known only from the lower Colorado River Valley from the middle of San Bernardino County through Riverside and Imperial Counties. This species commonly uses wet, deciduous thickets for breeding, and seeks a variety of wooded, scrubby habitats in winter. The CNDDB indicate 2 historic and 0 recent occurrence in Riverside County (CNDDB 2022). The closest extant CNDDB records for this species are two 1986 records 25 miles east of the project site at the Colorado River.	Nesting - Low Migration - Moderate	Detected in Project vicinity (Palen Solar Project approximately 7 miles to the northwest); however, the Project site is outside the typical geographical range for nesting, which is primarily associated with the Colorado River. Occurrences are expected to be of migrants only.
Lawrence's goldfinch (Nesting) *Spinus lawrencei*	-	BCC	-	Highly erratic and localized in occurrence. Rather common along western edge of southern deserts. Breeds in open oak or other arid woodland and chaparral, near water. Typical habitats in southern California include desert riparian, palm oasis, pinyon-juniper, and lower montane habitats. The CNDDB indicate 0 historic and 2 recent occurrences in Riverside County, both greater than 10 miles from the Project site.	Low	The Project site does not support typical wintering or nesting habitat. Occurrences are expected to be of migrants only.
Bendire's thrasher *Toxostoma bendirei*	SSC	BLM-S BCC	-	Favors open grassland, shrubland, or woodland with scattered shrubs, primarily in areas that contain large cholla, Joshua tree, Spanish bayonet, Mojave yucca, palo verde, mesquite, catclaw, desert-thorn, or agave. The CNDDB indicate 14 historical, and 3 recent record in Riverside County, two records are located within 10 miles of the site near Desert Center (CNDDB 2022).	Low	The Project site does not support typical habitat for this species. Occurrences are expected to be of migrants only.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Crissal thrasher *Toxostoma crissale*	SSC	BLM-S	-	This species prefers habitats characterized by dense, low scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush. The CNDDB indicate 14 historic and 22 recent occurrences in Riverside County (CNDDB 2022). The closest occurrence based on the CNDDB is from 1977 and is over 10 miles south of the project site.	Low	The Project site does not support typical wintering or nesting habitat. Occurrences are expected to be of migrants only.
Le Conte's thrasher *Toxostoma lecontei*	SSC	BLM-S BCC	-	Occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; also occurs in Joshua tree habitat with scattered shrubs. The CNDDB indicate 16 historic and 34 recent occurrences in Riverside County (CNDDB 2021).	High	Regularly detected in Chuckwalla Valley. The Project site supports suitable foraging and nesting habitat, primarily associated with larger trees within dry wash woodlands.
Bell's vireo *Vireo bellii* Arizona Bell's vireo *V. b. arizonae* least Bell's vireo *V. b. pusillus*	 SE SE	 BLM-S FE	 - -	Subspecies *V. b. pusillus* (endemic to California and northern Baja California and state-listed and federal-listed) and subspecies *V. b. arizonae* are state-listed. Bell's vireo is now a rare, local, summer resident below about 600 m (2000 ft) in willows and other low, dense valley foothill riparian habitat and lower portions of canyons mostly in San Benito and Monterey cos.; in coastal southern California from Santa Barbara Co. south; and along the western edge of the deserts in desert riparian habitat. The CNDDB indicate 14 historic and 92 recent occurrences in Riverside County, all greater than 30 miles from the Project site (CNDDB 2022).	Low	The Project site does not support typical wintering or nesting habitat. Occurrences are expected to be of migrants only.

Species	Status			Habitat Requirements, Geographic Range, Regional Occurrence Records	Potential to Occur on Project Site	Comments
	State	Federal	Other			
Yellow-headed blackbird (Nesting) *Xanthocephalus xanthocephalus*	SSC	-	-	Nests in fresh emergent wetland with dense vegetation and deep water, often along borders of lakes or ponds. Forages in emergent wetland and moist, open areas, especially cropland and muddy shores of lacustrine habitat. Occurs as a migrant and local breeder in deserts. The CNDDB indicate 1 historic and 2 recent occurrences in Riverside County, over 30 miles from the Project site (CNDDB 2022).	Low	Detected in the Project vicinity during avian surveys (6 observations from 2013 to 2015). The Project site does not support typical wintering or nesting habitat. Occurrences are expected to be of migrants only.

Conservation Status

Federal
- FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
- FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
- FCT = Proposed for federal listing as a threatened species
- BCC = Fish and Wildlife Service: Birds of Conservation Concern
- FSS = United States Forest Service Sensitive

State
- SSC = State Species of Special Concern
- CFP = California Fully Protected
- SE = State listed as endangered
- ST = State listed as threatened
- WL = State watch list
- CPF = California Protected Furbearing Mammal
- CPGS = California Protected Game Species
- CDF-S = California Department of Forestry & Fire Protection Sensitive

Bureau of Land Management
- BLM-S = BLM Sensitive
- FOC = DRECP Focus and Planning Species

Western Bat Working Group (WBWG)
- H = imperiled or at high risk of imperilment
- M = warrant closer evaluation, more research, and conservation actions
- L = most of the existing data support stable populations

**Species not detected during previous surveys may have the potential to occur on the Project site in the future

Appendix B– Potential for Special Status Plant Species to Occur

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
Chaparral sand verbena *Abronia villosa* var. *aurita*	Annual herb; sandy – chaparral, coastal scrub, desert dunes; Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura; Palen sand dunes, Desert Lily Sanctuary	Federal: none CRPR: 1B.1 BLM sensitive	75 - 1600	Jan-Sep	Minimal - no suitable habitat Not observed
Angel trumpets *Acleisanthes longiflora*	Perennial herb; Sonoran desert scrub (carbonate); known in CA only from one occurrence in the Maria Mountains	Federal: none CRPR: 2B.3	90 - 95	May	Low – distant from known records Not observed
Desert sand parsley *Ammoselinum giganteum/ Spermolepis gigantea*	Annual herb; Sonoran Desert scrub, Riverside-known in CA only from Hayfields Dry Lake	Federal: none CRPR: 2B.1	~152	Mar-Apr	Low - distant from known records Not observed
Small-flowered androstephium *Androstephium breviflorum*	Perennial bulbiferous herb; desert dunes, Mojavean desert scrub (bajada); San Bernardino, Riverside, Inyo; Eastern edge of Eagle Mountains	Federal: none CRPR: 2B.2	220 - 800	Mar-Apr	Minimal - no suitable habitat Not observed
Harwood's milkvetch *Astragalus insularis* var. *harwoodii*	Annual herb; sandy or gravelly - desert dunes, Mojavean Desert scrub; Riverside, San Bernardino, San Diego, Inyo	Federal: none CRPR: 2B.2	0-710	Jan-May	Moderate Not observed

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
Coachella Valley milkvetch *Astragalus lentiginosus* var. *coachellae*	Annual/perennial herb; Desert dunes -Sonoran desert scrub (sandy); endemic to Coachella Valley	Federal: FE CRPR: 1B.2 BLM sensitive	40-655	Feb-May	Minimal - no suitable habitat, outside range Not observed
California ayenia *Ayenia compacta*	Perennial herb; Mojavean desert scrub Sonoran desert scrub; Riverside, San Bernardino, San Diego; Chuckwalla Mountains	Federal: none CRPR: 2B.3	150-1095	Mar-Apr	Low - marginal habitat Not observed
Pink fairy duster *Calliandra eriophylla*	Perennial deciduous shrub Sonoran Desert scrub (sandy or rocky); Imperial, Riverside, San Diego; south of Ford Dry Lake	Federal: none CRPR: 2B.3	120 - 1500	Jan-Mar	Low – marginal habitat Not observed
Sand evening-primrose *Chylisimia [Camissonia] arenaria*	Annual / perennial herb; Sonoran Desert scrub (sandy or rocky); Imperial, Riverside, San Bernardino; Hayfield Lake and Orocopia Mountains	Federal: none CRPR: 2B.2	70-915	Nov-May	Low – marginal habitat Not observed
Crucifixion thorn *Castela emoryi*	Perennial deciduous shrub; gravelly -Mojavean desert scrub, Playas, Sonoran Desert scrub, Imperial, Inyo, Riverside, San Bernardino	Federal: none CRPR: 2B.2	90-725	Apr-Oct	**Present** One live individual

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
Abram's spurge *Chamaesyce abramsiana*	Annual herb; sandy - Mojavean desert scrub, Sonoran Desert scrub, Imperial, San Bernardino, San Diego, Riverside; Hayfields Lake	Federal: none CRPR: 2B.2	5-1310	Aug-Nov	Minimal – no suitable habitat Not observed
Arizona spurge *Chamaesyce arizonica*	Perennial herb; Sonoran Desert scrub (sandy); Imperial, Riverside, San Diego; Santa Rosa Mountains	Federal: none CRPR: 2B.3	50-300	Mar-Apr	Low - distant from known records Not observed
Flat-seeded spurge *Chamaesyce platysperma*	Annual herb; Desert dunes - Sonoran Desert scrub (sandy); Imperial Riverside, San Bernardino, San Diego; Coachella Valley	Federal: none CRPR: 1B.2 BLM sensitive	65-100	Feb-Sep	Minimal – no suitable habitat, distant from known records Not observed
Las Animas colubrina *Colubrina californica*	Perennial deciduous shrub; Mojavean desert scrub, Sonoran desert scrub Imperial; Riverside, San Diego; Chuckwalla Mountains	Federal: none CRPR: 2B.3	10-1000	Apr-Jun	Moderate Not observed
Spiny abrojo *Condalia globosa* var. *pubescens*	Perennial deciduous shrub, Sonoran desert scrub, Imperial, Riverside, San Diego	Federal: none CRPR: 4.2	85-1000	Mar-Nov	Moderate Not observed

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
Foxtail cactus *Coryphantha alversonii*	Perennial stem succulent; sandy or rocky, usually granitic - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, Imperial	Federal: none CRPR: 4.3	75-1525	Apr-Jun	Low – marginal habitat Not observed
Ribbed cryptantha *Cryptantha costata*	Annual herb; sandy - Desert dunes, Mojavean desert scrub, Sonoran desert scrub; Imperial, Inyo, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.3	-560	Feb-May	Minimal - no suitable habitat Not observed
Winged cryptantha *Cryptantha holoptera*	Annual herb; Mojavean desert scrub - Sonoran desert scrub Imperial, Inyo, Riverside, San Bernardino, San Diego; McCoy Mountains	Federal: none CRPR: 4.3	100-1690	Mar-Apr	Low - distant from known records Not observed
Wiggins' cholla *Cylindropuntia wigginsii*	Perennial stem succulent. Sonoran desert scrub (sandy) Imperial, Riverside, San Bernardino, San Diego; Palo Verde	Federal: none CRPR: 3.3	30-885	Mar	Low - distant from known records Not observed
Utah milkvine *Funastrum (Cynanchum) utahense*	Perennial herb; sandy or gravelly - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.2	100-1435	Mar-Oct	**Present** One individual

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
Glandular ditaxis *Ditaxis claryana*	Perennial herb; sandy; Mojavean desert scrub; Sonoran desert scrub; Imperial, Riverside, San Diego	Federal: none CRPR: 2B.2	0-465	Oct-Mar	Moderate Not observed
California ditaxis *Ditaxis serrata* var. *californica*	Perennial herb; Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 3.2	30-1000	Mar-Dec	**Present** Several individuals
Cottontop cactus *Echinocactus polycephalus* var. *polycephalus*	Perennial stem succulent. Rocky hills, silt valleys; Sonoran desert scrub; Imperial, Inyo, Riverside, San Bernardino, San Diego	Federal: none CRPR: CBR	<1400	Mar-Aug	Low – marginal habitat Not observed
Harwood's eriastrum *Eriastrum harwoodii*	Annual herb; Desert dunes; Riverside, San Bernardino, San Diego	Federal: none CRPR: 1B.2	125-915	Mar-Jun	Moderate Not observed
California satintail *Imperata brevifolia*	Perennial rhizomatous herb; Chaparral, Coastal scrub, Mojavean desert scrub, meadows, and seeps (often alkali), Riparian scrub; Butte, Fresno, Imperial, Inyo, Kern, Lake, Los Angeles, Orange, Riverside, San Bernardino, Tehama, Tulare, Ventura	Federal: none CRPR: 2B.1	0-1215	Sep-May	Low - distant from known records Not observed

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
Pink velvet mallow *Horsfordia alata*	Perennial shrub; Sonoran desert scrub (rocky); Imperial, Riverside; Palm Springs	Federal: none CRPR: 4.3	100-500	Feb-Dec	Low - distant from known records Not observed
Bitter hymenoxys *Hymenoxys odorata*	Annual herb sandy; Riparian scrub, Sonoran desert scrub; San Bernardino, Riverside, Imperial; near Blythe	Federal: none CRPR: 2B.1	45-150	Feb-Nov	Low - distant from known records Not observed
Spearleaf *Matelea parvifolia*	Perennial herb; rocky - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego; Hayfield Lake	Federal: none CRPR: 2B.3	440-1095	Mar-May	Low – marginal habitat Not observed
Argus blazing star *Mentzelia puberula*	Perennial herb; sandy or rocky -Mojavean desert scrub Sonoran desert scrub, Imperial, Riverside, San Bernardino	Federal: none CRPR: 2B.2	90-1280	Mar-May	Moderate Not observed
Slender wooly heads *Nemacaulis denudata* var. *gracilis*	Annual herb; coastal dunes, desert dunes, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego; Arica Mountains	Federal: none CRPR: 2B.2	-450	Mar-May	Low - distant from known records Not observed
Narrow-leaved sandpaper plant *Petalonyx linearis*	Perennial shrub; sandy or rocky canyons, generally in creosote bush scrub; Riverside County, Joshua Tree SE Coxcomb Mountains	Federal: none CRPR: 2B.3	<1000	Mar-May	Minimal – no suitable habitat Not observed

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
Lobed cherry *Physalis lobata*	Perennial herb; Mojavean desert scrub (decomposed granitic), Playas; San Bernardino; Hwy 62	Federal: none CRPR: 2B.3	500-800	May-Jan	Low - distant from known records Not observed
Desert portulaca *Portulaca halimoides*	Annual herb; Joshua tree woodland (sandy, San Bernardino, Riverside	Federal: none CRPR: 4.2	1000-2000	Sep	Minimal - unsuitable elevation Not observed
Desert unicorn plant *Proboscidea althaeifolia*	Perennial herb; gently sloping sandy flats and washes, sometimes roadsides, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.3	85-1000	May-Oct	**Present** Common
Orocopia sage *Salvia greatae*	Perennial evergreen shrub; Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino; Orocopia and Chocolate Mountains	Federal: none CRPR: 1B.3 BLM sensitive	30-450	Mar-Apr	Minimal – unsuitable elevation Not observed
Desert spikemoss *Selaginella eremophila*	Perennial rhizomatous herb; chaparral, Sonoran desert scrub (gravelly or rocky); Imperial, Riverside, San Diego; Orocopia Mountains	Federal: none CRPR: 2B.2	200-1295	May-Jul	Minimal – no suitable habitat Not observed

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
Cove's cassia *Senna covesii*	Perennial herb; dry, sandy desert washes and slopes, Sonoran desert scrub; Imperial, Riverside, Kern, San Bernardino, San Diego	Federal: none CRPR: 2B.2	225-1295	Mar-Aug	Minimal – unsuitable elevation Not observed
Mesquite nest straw *Stylocline sonorensis*	Annual herb; Sonoran desert scrub (sandy) Known in CA from only a single collection (1930) at Hayfields Dry Lake Possibly extirpated after 1930 by development	Federal: none CRPR: 2A	+/- 400	Apr	Low - distant from known records Not observed
Dwarf germander *Teucrium cubense* ssp. *depressum*	Annual herb; desert dunes, playas margins; Sonoran desert scrub, Imperial, Riverside; Hayfield Lake	Federal: none CRPR: 2B.2	45-400	Mar-Nov	Low - distant from known records Not observed
Jackass clover *Wislizenia refracta* ssp. *refracta*	Annual herb; desert dunes, Mojavean desert scrub, playas, Sonoran desert scrub, Riverside, San Bernardino	Federal: none CRPR: 2B.2	600-800	Apr-Nov	Minimal - - no suitable habitat Not observed
Palmer's jackass clover *Wislizenia refracta* ssp. *Palmeri*	perennial deciduous shrub; Chenopod scrub, Desert dunes, Sonoran desert scrub, Sonoran thorn woodland, Riverside, San Diego; Palen sand dunes, Palen Mountains	Federal: none CRPR: 2B.2	0-300	Jan-Dec	Minimal – no suitable habitat Not observed

Plant Species	Form; Habitat; Distribution (Counties)	Conservation Status	Elevation (Meters)	Blooming Period	Potential To Occur on the Project Site
"Palen Lake atriplex" *Atriplex sp. nov. J. Andre* *(Atriplex canescens* var. *macilenta)*	Perennial shrub; Saline habitats, playa margins of Palen Dry Lake; Riverside	Federal: none CRPR: none BLM sensitive	<160	May-Jun	Minimal – no suitable habitat Not observed

Federal FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range

FT = Federally listed, threatened: species likely to become endangered within the foreseeable future

California Rare Plant Rank (CRPR)

CRPR 1A = Presumed extirpated in California and either rare or extinct elsewhere

CRPR 1B = Rare, threatened, or endangered in California and elsewhere

CRPR 2A = Presumed extirpated in California but more common elsewhere

CRPR 2B = Rare, threatened, or endangered in California but more common elsewhere

CRPR 3 = Plants which need more information

CRPR 4 = Limited distribution – a watch list

CBR = Considered, But Rejected

1 = Seriously endangered in California (high degree/immediacy of threat; over 80% of occurrences threatened)

2 = Fairly endangered in California (moderate degree/immediacy of threat; 20%-80% of occurrences threatened)

3 = Not very endangered in California (low degree/immediacy of threats or no current threats known; <20% of occurrences threatened or no current threats known)

Appendix C – Survey Results Summary

Table C 1. Noteworthy Reptile Observations.

Species	Sign Types	Notes	Date
Desert tortoise	Carcass	Class 4: 4 years; shell bone falling apart; growth rings on scutes peeling; bone fissured	9/14/2021
Desert tortoise	Carcass	Class 5: > 4 years disarticulated and scattered	9/17/2021
Desert tortoise	Carcass	Class 5: > 4 years disarticulated and scattered	9/22/2021
Desert tortoise	Carcass	Class 5: > 4 years disarticulated and scattered	9/22/2021
Desert tortoise	Carcass	Class 4: 4 years; shell bone falling apart; growth rings on scutes peeling; bone fissured	3/21/2022
Desert tortoise	Carcass	Class 5: > 4 years disarticulated and scattered	3/23/2022
Desert tortoise	Carcass	Class 5: > 4 years disarticulated and scattered	3/28/2022
Desert tortoise	Carcass	Class 5: > 4 years disarticulated and scattered	3/30/2022
Desert tortoise	Carcass	Class 5: > 4 years disarticulated and scattered	3/31/2022
Couch's spadefoot toad	Potential habitat	Potential habitat. Cracked soil. 5” depth	9/23/2021
Couch's spadefoot toad	Potential habitat	6” depth	9/23/2021
Couch's spadefoot toad	Potential habitat	10” depth with 3mm cracks	9/23/2021
Couch's spadefoot toad	Possible breeding depression	Large depression. Likely holds water for more than a week. No thick clay at bottom, but near a large wash.	3/28/2022
Couch's spadefoot toad	Pond, mud with cracks	-	3/29/2022
Couch's spadefoot toad	Potential habitat	-	3/30/2022
Couch's spadefoot toad	potential habitat	-	3/30/2022
Couch's spadefoot toad	potential habitat	wetland area south of the fish farm with clay soil. habitat extends in east/west linear distribution.	3/30/2022
Couch's spadefoot toad	potential habitat	Fish farm	3/30/2022

Species	Sign Types	Notes	Date
Couch's spadefoot toad	Potential habitat	Ephemeral drainage from fish farm/ riparian habitat. Unsure how long it holds water but seems to stay moist for long periods. Worth surveying during breeding seas	3/30/2022
Couch's spadefoot toad	Potential habitat	2" mud cracks	4/4/2022
Couch's spadefoot toad	Potential habitat	Multiple empty retention ponds within 300 meters have potential for spadefoot toads	4/4/2022
Couch's spadefoot toad	Potential habitat	Large 2-3-inch-thick mud cracks. Currently dry	4/4/2022
Couch's spadefoot toad	Potential habitat	Mud cracks and free-standing water	4/4/2022
Couch's spadefoot toad	Potential habitat	Mud cracks 2 inches thick	4/4/2022
Couch's spadefoot toad	Potential habitat	Incised section of wash in shade of tree. Several depressions within 50m of each other. Likely holds water for over a week.	4/7/2022
Couch's spadefoot toad	Potential habitat	-	10/23/2019
Couch's spadefoot toad	Potential habitat	Long berm with cracks, mud puddle along east & west sides	10/24/2019
Couch's spadefoot toad	Potential habitat	Long berm with cracks, mud puddle along east & west sides	10/24/2019

Table C 2. Noteworthy Avian Observations.

Species	Sign Types	Notes	Date
American white pelican	Carcass	-	10/23/2019
American white pelican	Carcass	-	10/23/2019
Black-tailed gnatcatcher	Live Individual	Foraging	9/10/2021
Black-tailed gnatcatcher	Live Individual	Foraging, Perching	3/20/2022
Burrowing Owl	Burrow, Whitewash	-	3/29/2022
Burrowing Owl	Burrow, Pellets	-	10/24/2019
Burrowing Owl	Burrow	-	5/26/2020
Burrowing Owl	Burrow, Whitewash	-	3/29/2022
Burrowing Owl	Burrow, Pellets, Whitewash	-	3/29/2022
Burrowing Owl	Burrow, Whitewash	-	3/29/2022
Burrowing Owl	Live Individual, Burrow, Pellets, Whitewash	Flying, Resting	3/30/2022

Species	Sign Types	Notes	Date
Burrowing owl	Whitewash, Feather(s)	-	3/31/2022
Burrowing owl	Live Individual, Burrow, Whitewash	Flying	10/21/2019
Common raven	Nest	-	10/23/2019
Double-crested cormorant	Carcass	-	10/23/2019
Gila woodpecker	Potential tree cavity	-	4/5/2020
Gila woodpecker	Potential tree cavity	-	4/5/2020
Great egret	Carcass	-	10/23/2019
Great egret	Carcass	-	10/23/2019
Loggerhead shrike	Live Individual	Perching, Singing	10/12/2021
Loggerhead shrike	Live Individual	Perching	10/12/2021
Loggerhead shrike	Live Individual	Perching	9/15/2021
Loggerhead shrike	Live Individual	Perching	3/28/2022
Loggerhead shrike	Live Individual	-	3/30/2022
Loggerhead shrike	Live Individual	Perching, Resting	3/31/2022
Loggerhead shrike	Live Individual	Resting	4/3/2022
Loggerhead shrike	Live Individual	Singing	6/2/2020
Loggerhead shrike	Live Individual	Flying, Singing	6/2/2020
Loggerhead shrike	Live Individual	Flying	3/25/2020
Loggerhead shrike	Live Individual	Flying	3/25/2020
Loggerhead shrike	Live Individual	Singing	4/3/2020
Loggerhead shrike	Live Individual	Resting	4/3/2020
Loggerhead shrike	Live Individual	Singing	4/4/2020
Loggerhead shrike	Live Individual	Singing	4/4/2020
Loggerhead shrike	Live Individual	Calling	4/5/2020
Loggerhead shrike	Live Individual	Flying, Perching	4/13/2020
Loggerhead shrike	Live Individual	Flying, Perching	10/22/2019
Loggerhead shrike	Live Individual	Flying, Perching	10/25/2019
Loggerhead shrike	Live Individual	Flying, Foraging, Perching	10/21/2019
nighthawk	Live Individual	Flying	3/29/2022
Prairie falcon	Live Individual	Flying, Perching	9/14/2021
Prairie falcon	Live Individual	Flying	4/4/2022
Prairie falcon	Live Individual	Flying, Perching	10/24/2019
Prairie falcon	Live Individual	Perching	10/24/2019

Table C 3. Noteworthy Mammal Observations.

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
American badger	Dig marks / tracks	Active	Claw marks in shallow hole	9/21/2021
American badger	Burrow, dig marks / tracks	Active	Single entrance	9/23/2021
American badger	Burrow, dig marks	Inactive	-	3/28/2022
American badger	Burrow, dig marks	Inactive	-	3/28/2022
American badger	Burrow, dig marks	Inactive	-	4/4/2022
American badger	Burrow, dig marks	Inactive	-	3/28/2022
American badger	Carcass	-	Skull	3/30/2022
American badger	Carcass	-	Skull fragment only	3/31/2022
Burro deer	Scat	-	-	9/13/2021
Burro deer	Dig marks / tracks	Active	-	9/22/2021
Burro deer	Dig marks / tracks	Active	50m radius	9/23/2021
Burro deer	Dig marks / tracks	Active	Tracks within 1 week old	9/23/2021
Burro deer	Tracks, scat	Active	-	3/27/2022
Burro deer	Tracks, scat	Active	-	4/7/2022
Burro deer	Scat	-	-	10/17/2021
Burro deer	Carcass	-	Skull portion	10/12/2021
Burro deer	Scat	-	-	3/29/2022
Burro deer	Scat	-	-	3/29/2022
Burro deer	Scat	-	-	3/30/2022
Burro deer	Scat	-	-	3/30/2022
Burro deer	Tracks, scat	Active	Scattered piles of scat throughout this area	3/30/2022
Burro deer	Scat	-	-	3/31/2022
Burro deer	Scat	-	-	3/31/2022
Burro deer	Scat	-	-	3/31/2022
Burro deer	Scat	-	A few scat piles scattered nearby	4/3/2022
Burro deer	Scat	-	-	3/29/2022
Burro deer	Tracks	Active	-	4/4/2022

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Burro deer	Scat	-	Piles scattered throughout area	4/4/2022
Burro deer	Scat	-	-	4/5/2022
Burro deer	Tracks	Active	-	4/6/2022
Burro deer	Scat	-	-	4/7/2022
Burro deer	Tracks, scat	Active	Tracks and scat scattered throughout the area	4/7/2022
Burro deer	Tracks, scat	Active	Multiple scats within 800 m	3/28/2022
Burro deer	Carcass	-	Deer hit by vehicle, located on east side of roadway on shoulder	10/24/2019
Burro deer	Dig marks / tracks	Active	-	10/24/2019
Burro deer	Scat	-	Not sure how old	4/4/2020
Burro deer	Dig marks / tracks	Active	-	4/5/2020
Burro deer	Scat	-	-	10/23/2019
Burro deer	Dig marks / tracks	Active	Nice set of deer tracks	10/23/2019
Burro deer	Dig marks / tracks	Active	-	10/23/2019
Burro deer	Scat	-	-	10/23/2019
Burro deer	Dig marks / tracks	Inactive	-	5/27/2020
Burro deer	Dig marks / tracks	Active	Fresh tracks	4/4/2020
Canid	Burrow/dig marks / tracks	Active	Recent dig at burrow mouth	9/21/2021
Canid	Burrow, dig marks / tracks	Active	Single entrance	9/23/2021
Canid	Burrow, dig marks / tracks, scat	Active	-	4/5/2020
Canid	Dig marks / tracks, Scat	Active	Single entrance	10/21/2019
Canid	Dig marks / tracks, burrow, scat	Active	3 entrances	10/22/2019
Canid	Burrow, dig marks / tracks	Active	Single entrance	9/24/2021
Canid	Canid marking area	Active	Canid signpost	10/22/2019
Canid	Burrow	Inactive	-	9/13/2021
Canid	Burrow	Inactive	-	9/13/2021
Canid	Burrow	Inactive	-	9/13/2021
Canid	Burrow	Inactive	-	9/13/2021
Canid	Burrow	Inactive	Single entrance	9/14/2021

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Canid	Burrow	Inactive	Single entrance	9/14/2021
Canid	Burrow	Inactive	Single entrance	9/14/2021
Canid	Burrow	Inactive	Single entrance	9/14/2021
Canid	Burrow	Inactive	Single entrance	9/15/2021
Canid	Burrow	Inactive	Single entrance	9/15/2021
Canid	Burrow	Inactive	Large, single entrance	9/15/2021
Canid	Burrow	Inactive	Single entrance	9/16/2021
Canid	Burrow	Inactive	Single entrance	9/16/2021
Canid	Burrow	Inactive	Single entrance	9/16/2021
Canid	Burrow	Inactive	Single entrance	9/16/2021
Canid	Burrow	Inactive	Single entrance	9/16/2021
Canid	Burrow	inactive	2 entrances, likely coyote	9/17/2021
Canid	Burrow	inactive	Single entrance, likely coyote	9/17/2021
Canid	Burrow	inactive	Single entrance, likely coyote	9/17/2021
Canid	Burrow	Inactive	Single entrance	9/18/2021
Canid	Burrow	Inactive	Single entrance	9/18/2021
Canid	Burrow	Inactive	3 entrances	9/18/2021
Canid	Burrow	Inactive	2 entrances	9/18/2021
Canid	Burrow	Inactive	Single entrance	9/19/2021
Canid	Burrow	Inactive	Single entrance	9/19/2021
Canid	Burrow	Inactive	Single entrance	9/21/2021
Canid	Burrow	Inactive	Single entrance	9/21/2021
Canid	Burrow, scat	Inactive	Single entrance	9/21/2021
Canid	Burrow	Inactive	2 entrances	9/21/2021
Canid	Burrow	Inactive	2 entrances	9/21/2021
Canid	Burrow	Inactive	Single entrance	9/21/2021
Canid	Burrow	Inactive	Single entrance. Large enough for coyote	9/21/2021
Canid	Burrow	Inactive	Single entrance	9/21/2021
Canid	Burrow	Inactive	5 entrances	9/21/2021
Canid	Burrow	Inactive	2 entrances	9/21/2021
Canid	Burrow	inactive	-	9/21/2021
Canid	Burrow	inactive	-	9/21/2021
Canid	Burrow	inactive	3 entrances	9/21/2021
Canid	Burrow	inactive	-	9/21/2021
Canid	Burrow	inactive	-	9/21/2021

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Canid	Burrow	inactive	Single entrance	9/21/2021
Canid	Burrow	inactive	Single entrance	9/21/2021
Canid	Burrow	inactive	Single entrance	9/21/2021
Canid	Burrow	inactive	Single entrance	9/21/2021
Canid	Burrow	inactive	Single entrance	9/21/2021
Canid	Burrow	Inactive	Single entrance	9/22/2021
Canid	Burrow	Inactive	Single entrance	9/22/2021
Canid	Burrow	inactive	-	9/22/2021
Canid	Burrow	inactive	-	9/22/2021
Canid	Burrow	inactive	-	9/22/2021
Canid	Burrow	Inactive	-	9/22/2021
Canid	Burrow	Inactive	-	9/22/2021
Canid	Burrow	Inactive	-	9/22/2021
Canid	Burrow	Inactive	-	9/22/2021
Canid	Burrow	Inactive	-	9/22/2021
Canid	Burrow	Inactive	-	9/22/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	2 entrances	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow, scat	Inactive	Single entrance	9/23/2021
Canid	Burrow, scat	Inactive	2 entrances	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	2 entrances	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	3 entrances	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	3 entrances	9/23/2021
Canid	Burrow	Inactive	8 entrances	9/23/2021
Canid	Burrow	Inactive	2 entrances	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	2 entrances	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	6 entrances	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	5 entrances	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	-	3/27/2022
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	-	3/27/2022
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	-	3/27/2022
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	Single entrance	9/23/2021
Canid	Burrow	Inactive	-	3/28/2022
Canid	Burrow	Inactive	-	4/7/2022
Canid	Burrow	Inactive	Single entrance	9/24/2021

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Canid	Burrow	Inactive	Single entrance	9/24/2021
Canid	Burrow, Scat	Inactive	Single entrance	9/24/2021
Canid	Burrow	Inactive	Single entrance	9/24/2021
Canid	Burrow	Inactive	Single entrance	9/24/2021
Canid	Burrow	Inactive	Single entrance	9/24/2021
Canid	Burrow	Inactive	Single entrance	9/24/2021
Canid	Burrow, Scat	Inactive	Single entrance	9/24/2021
Canid	Burrow	Inactive	-	10/17/2021
Canid	Burrow, Scat	Inactive	-	10/17/2021
Canid	Burrow, Scat	Inactive	-	10/17/2021
Canid	Burrow, Scat	Inactive	-	10/17/2021
Canid	Burrow	Inactive	-	10/17/2021
Canid	Burrow	Inactive	-	10/12/2021
Canid	Burrow	Inactive	-	10/12/2021
Canid	Burrow	Inactive	-	10/12/2021
Canid	Burrow	Inactive	-	10/12/2021
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/30/2022
Canid	Burrow	Inactive	-	3/31/202
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	4/4/2022

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Canid	Burrow	Inactive	-	4/4/2022
Canid	Burrow	Inactive	-	4/6/2022
Canid	Burrow	Inactive	-	3/28/2022
Canid	Burrow	Inactive	-	3/28/2022
Canid	Burrow	Inactive	-	3/28/2022
Canid	Burrow	Inactive	-	3/28/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow, scat	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	3/29/2022
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/2019
Canid	Burrow	Inactive	-	10/24/201
Canid	Burrow	Inactive	-	4/5/2020
Canid	Burrow	Inactive	3 burrows close to one another, all inactive	4/5/2020
Canid	Burrow	Inactive	-	4/5/2020
Canid	Burrow	Inactive	-	4/5/2020
Canid	Burrow	Inactive	-	4/5/2020
Canid	Burrow	Inactive	3 pieces old scat	4/5/2020
Canid	Burrow	Inactive	-	4/5/2020
Canid	Burrow	Inactive	-	4/5/2020
Canid	Burrow	Inactive	-	4/5/2020

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Canid	Burrow	Inactive	-	4/5/2020
Canid	Burrow	Inactive	Single entrance	4/5/2020
Canid	Burrow	Inactive	Single entrance	4/5/2020
Canid	Burrow	Inactive	Single entrance	4/5/2020
Canid	Scat	-	-	4/14/2020
Canid	Burrow	Inactive	-	10/23/2019
Canid	Burrow	Inactive	-	10/23/2019
Canid	Burrow	Inactive	-	10/23/2019
Canid	Burrow, scat	Inactive	5 entrances	10/23/2019
Canid	Burrow	Inactive	-	10/23/2019
Canid	Burrow	Inactive	Potential BUOW, several entrances	5/26/2020
Canid	Burrow	Inactive	-	5/28/2020
Canid	Burrow	Inactive	-	10/25/2019
Canid	Burrow, scat	Inactive	2 burrows right next to each other	7/14/2020
Coyote	Live individual	Active	Heard the animal a few hundred meters north	9/17/2021
Coyote	Live individual	Active	-	3/28/2022
Coyote	Live individual	Active	-	4/5/2022
Coyote	Scat	Active	Fresh scat	10/12/2021
Coyote	Burrow, scat	Inactive	-	3/27/2022
Coyote	Burrow	Inactive	-	3/27/2022
Coyote	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow, dig marks / tracks	Active	5 entrances	9/22/2021
Desert Kit Fox	Burrow, dig marks / tracks	Active	Multiple entrances with fresh tracks	9/23/2021
Desert Kit Fox	Burrow, dig marks / tracks, scat	Active	5 entrances	9/23/2021
Desert Kit Fox	Burrow, dig marks / tracks, scat	Active	4 entrances	9/24/2021
Desert Kit Fox	Burrow, tracks	Active	-	3/29/2022
Desert Kit Fox	Burrow, dig marks	Active	-	3/30/2022
Desert Kit Fox	Burrow	Active	-	4/2/2022
Desert Kit Fox	Burrow	Active	-	4/2/2022
Desert Kit Fox	Tracks	Active	-	3/29/2022

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Desert Kit Fox	Dig marks / tracks, burrow, scat	Active	9 entrances	10/22/2019
Desert Kit Fox	Dig marks / tracks, burrow, scat	Active	3 entrances	10/23/2019
Desert Kit Fox	Burrow, dig marks / tracks	Active	Not much beside digs and burrows	4/4/2020
Desert Kit Fox	Burrow, dig marks / tracks, scat	Active	Recent dig	4/4/2020
Desert Kit Fox	Burrow, dig marks / tracks, scat	Active	-	4/5/2020
Desert Kit Fox	Dig marks / tracks, burrow	Active	1 entrance	10/23/2019
Desert Kit Fox	Dig marks / tracks, burrow	Active	3 entrances	10/23/2019
Desert Kit Fox	Dig marks / tracks, burrow, scat	Active	7 entrances	10/23/2019
Desert Kit Fox	Dig marks / tracks, burrow	Active	1 entrance	10/24/2019
Desert Kit Fox	Dig marks / tracks, burrow	Active	9 entrances	10/24/2019
Desert Kit Fox	Dig marks / tracks, burrow, scat	Active	3 entrances	10/24/2019
Desert Kit Fox	Dig marks / tracks, burrow, scat	Active	5 entrances	10/24/2019
Desert Kit Fox	Burrow	Inactive	-	9/13/2021
Desert Kit Fox	Burrow, scat	Inactive	Multiple entrances	9/23/2021
Desert Kit Fox	Burrow	Inactive	2 entrances	9/23/2021
Desert Kit Fox	Burrow, scat	Inactive	7 entrances	9/23/2021
Desert Kit Fox	Burrow, scat	Inactive	3 pieces of scat	9/23/2021
Desert Kit Fox	Burrow	Inactive	7 entrances	9/23/2021
Desert Kit Fox	Burrow	Inactive	AMBA claw marks at entrance	3/27/2022
Desert Kit Fox	Burrow	Inactive	-	3/27/2022
Desert Kit Fox	Burrow	Inactive	-	3/27/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	Single entrance	9/23/2021
Desert Kit Fox	Burrow, scat	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow	Inactive	-	3/30/2022
Desert Kit Fox	Burrow	Inactive	-	3/30/2022
Desert Kit Fox	Burrow	Inactive	-	3/30/2022
Desert Kit Fox	Burrow	Inactive	-	3/30/2022
Desert Kit Fox	Burrow	Inactive	-	3/30/2022
Desert Kit Fox	Burrow	Inactive	-	3/30/2022
Desert Kit Fox	Burrow	Inactive	-	3/30/2022
Desert Kit Fox	Burrow	Inactive	-	4/2/2022
Desert Kit Fox	Burrow	Inactive	-	4/2/2022
Desert Kit Fox	Burrow	Inactive	-	4/2/2022
Desert Kit Fox	Burrow	Inactive	-	4/2/2022
Desert Kit Fox	Burrow	Inactive	-	4/2/2022
Desert Kit Fox	Burrow	Inactive	-	4/3/2022
Desert Kit Fox	Burrow	Inactive	-	4/2/2022
Desert Kit Fox	Burrow	Inactive	-	4/2/202
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow	Inactive	-	3/30/2022
Desert Kit Fox	Burrow	Inactive	-	4/6/2022
Desert Kit Fox	Burrow	Inactive	-	4/6/2022
Desert Kit Fox	Burrow	Inactive	-	4/6/2022
Desert Kit Fox	Burrow	Inactive	-	4/6/2022
Desert Kit Fox	Burrow	Inactive	-	4/7/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/202
Desert Kit Fox	Burrow	Inactive	-	3/28/2022

Mammal Species	Mammal Sign Types	Activity Level	Notes	Date
Desert Kit Fox	Burrow	Inactive	Rat den, claimed by Kitfox, entrance then opened potentially by badger	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/28/2022
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow	Inactive	-	3/29/2022
Desert Kit Fox	Burrow, scat	Inactive	BUOW whitewash present	3/29/2022
Desert Kit Fox	Burrow, scat	Inactive	-	10/24/2019
Desert Kit Fox	Burrow, scat	Inactive	Pellet at mouth	10/24/2019
Desert Kit Fox	Burrow	Inactive	-	10/22/2019
Desert Kit Fox	Burrow	Inactive	-	4/5/2020
Desert Kit Fox	Burrow, scat	Inactive	5 entrances	10/23/2019
Desert Kit Fox	Burrow, scat	Inactive	-	10/23/2019
Desert Kit Fox	Burrow	Inactive	-	10/23/2019
Desert Kit Fox	Burrow	Inactive	-	10/23/2019
Desert Kit Fox	Burrow, carcass	Inactive	-	4/4/2020
Desert Kit Fox	Scat	Inactive	3 entrances, 160mm wide	10/21/2019
Desert Kit Fox	Carcass	-	-	10/21/2019
Desert Kit Fox	Burrow	Inactive	-	10/21/2019
Desert Kit Fox	Burrow	Inactive	-	10/22/2019
Desert Kit Fox	Burrow	Inactive	-	6/2/2020

Table C 4. Noteworthy Plant Observations.

Plant Species	Phenology	Date
Castela emoryi (Emory's crucifixion thorn)	Vegetative	4/4/2020
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit, Vegetative	4/7/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/7/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/7/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/28/2022
Ditaxis serrata var. *californica* (California ditaxis)	Fruit only	4/6/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Vegetative	4/5/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower only	4/6/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/6/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower only	3/29/2022
Ditaxis serrata var. *californica* (California ditaxis)	Vegetative	3/29/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/30/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/30/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit, Vegetative	3/30/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/30/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/30/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/31/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit, Vegetative	3/31/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower only	4/3/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/2/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/29/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/29/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	3/30/2022
Ditaxis serrata var. *californica* (California ditaxis)	Fruit only	3/30/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Vegetative	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022

Plant Species	Phenology	Date
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower only	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit, Vegetative	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit, Vegetative	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Vegetative	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Vegetative	4/4/2022
Ditaxis serrata var. *californica* (California ditaxis)	Flower / Fruit	4/4/2022
Echinocactus polycephalus (Cotton top cactus)	Vegetative	10/23/2019
*Echinocereus engelmannii (*Engelmann's hedgehog cactus)	Vegetative	10/23/2019
*Echinocereus engelmannii (*Engelmann's hedgehog cactus)	Vegetative	10/23/2019
*Echinocereus engelmannii (*Engelmann’s hedgehog cactus)	Vegetative	10/22/2019
*Echinocereus engelmannii (*Engelmann's hedgehog cactus)	Vegetative	9/15/2021
*Echinocereus engelmannii (*Engelmann’s hedgehog cactus)	Vegetative	4/7/2022
*Echinocereus engelmannii (*Engelmann’s hedgehog cactus)	Vegetative	3/31/2022
*Echinocereus engelmannii (*Engelmann’s hedgehog cactus)	Flower only	3/30/2022
*Echinocereus engelmannii (*Engelmann’s hedgehog cactus)	Flower only	4/3/2020
*Echinocereus engelmannii (*Engelmann’s hedgehog cactus)	Flower only	4/5/2020
*Echinocereus engelmannii (*Engelmann’s hedgehog cactus)	Vegetative	4/1/2020
Ferocactus cylindraceus (barrel cactus)	Vegetative	3/28/2022
Ferocactus cylindraceus (barrel cactus)	Vegetative	10/17/2021
Ferocactus cylindraceus (barrel cactus)	Vegetative	10/17/2021
Ferocactus cylindraceus (barrel cactus)	Vegetative	3/30/2022
Fouquieria splendens (ocotillo)	Vegetative	9/15/2021
Fouquieria splendens (ocotillo)	Flower only	3/31/2022
Fouquieria splendens (ocotillo)	Vegetative	10/23/2019
Funastrum utahense (Utah vine milkweed)	Vegetative	4/2/2022
Mammillaria tetrancistra (fishhook cactus)	Fruit only	3/29/2022

Plant Species	Phenology	Date
Mammillaria tetrancistra (fishhook cactus)	Vegetative	10/21/2019
Mammillaria tetrancistra (fishhook cactus)	Vegetative	10/22/2019
Mammillaria tetrancistra (fishhook cactus)	Vegetative	3/20/2022
Opuntia basilaris (beavertail cactus)	Vegetative	10/24/2019
Opuntia basilaris (beavertail cactus)	Vegetative	9/16/2021
Opuntia basilaris (beavertail cactus)	Flower only	4/3/2020
Opuntia basilaris (beavertail cactus)	Vegetative	4/3/2020
Opuntia basilaris (beavertail cactus)	Vegetative	4/4/2020
Opuntia basilaris (beavertail cactus)	Fruit only	4/5/2020
Opuntia basilaris var. *basilaris* (beavertail cactus)	Vegetative	10/24/2019
Opuntia basilaris var. *basilaris* (beavertail cactus)	Vegetative	10/23/2019
Proboscidea althaeifolia (Desert unicorn plant)	Fruit only	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Fruit only	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Fruit only	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	10/12/2021
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	4/7/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	4/7/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	4/7/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	4/7/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	4/7/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	4/7/2022
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	3/28/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	3/28/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	3/27/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	3/28/2022
Proboscidea althaeifolia (Desert unicorn plant)	Plant dried up / Not chlorophytic	3/28/2022
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/16/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/16/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/16/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/16/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021

Plant Species	Phenology	Date
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Fruit only	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Fruit only	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/17/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/18/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/18/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/18/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Fruit only	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/21/2021

Plant Species	Phenology	Date
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/21/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Flower only	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	9/22/2021
Proboscidea althaeifolia (Desert unicorn plant)	Vegetative	10/22/2019
Proboscidea althaeifolia (Desert unicorn plant)	Flower / Fruit	10/22/2019

Table C 5. Noteworthy Invasive Plant Species Observations.

Plant Species	Phenology	Date
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/13/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/13/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/13/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/14/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/14/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/15/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/15/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/15/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/15/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/15/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/16/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/16/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/16/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/16/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/17/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/17/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/17/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/17/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/17/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/17/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/18/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/18/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/18/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/18/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/18/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/19/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/19/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/19/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/19/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/19/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/21/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/21/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/21/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/21/2021

Plant Species	Phenology	Date
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/21/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/22/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/22/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/22/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/22/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/22/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/22/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/22/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/23/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/23/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/23/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/23/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/23/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/23/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/23/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	9/24/2021
Brassica tournefortii (Sahara mustard)	Flower only, Flower / Fruit, Vegetative	4/7/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	4/7/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	3/27/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	3/28/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	3/28/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	3/28/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	3/29/202
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	3/29/2022
Brassica tournefortii (Sahara mustard)	Flower / Fruit	3/29/2022
Brassica tournefortii (Sahara mustard)	Flower / Fruit	3/29/2022
Brassica tournefortii (Sahara mustard)	Vegetative	3/29/2022
Brassica tournefortii (Sahara mustard)	Fruit only	3/30/2022
Brassica tournefortii (Sahara mustard)	Flower / Fruit	3/30/2022
Brassica tournefortii (Sahara mustard)	Flower / Fruit, Fruit only	3/30/2022
Brassica tournefortii (Sahara mustard)	Flower / Fruit, Plant dried up / Not chlorophytic	3/31/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	3/31/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	4/2/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	4/2/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	4/3/2022

Plant Species	Phenology	Date
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	4/3/2022
Brassica tournefortii (Sahara mustard)	Fruit only	4/4/2022
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/4/202
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	4/5/2022
Brassica tournefortii (Sahara mustard)	Fruit only	4/5/2022
Brassica tournefortii (Sahara mustard)	Fruit only	4/5/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	4/6/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	4/6/2022
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/12/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/12/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/12/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/12/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/17/2021
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/21/2019
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/1/2020
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/3/2020
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/4/2020
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/5/2020
Brassica tournefortii (Sahara mustard)	Fruit only	4/11/2020
Brassica tournefortii (Sahara mustard)	Fruit only	4/11/2020
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/13/2020
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/13/2020
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/14/2020
Brassica tournefortii (Sahara mustard)	Flower / Fruit	4/14/2020
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/22/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/22/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/22/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/22/2019
Brassica tournefortii (Sahara mustard)	Fruit only	5/22/2020
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/23/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/23/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/23/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/23/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/23/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/23/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/23/2019

Plant Species	Phenology	Date
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/23/2019
Brassica tournefortii (Sahara mustard)	Fruit only	10/23/2019
Brassica tournefortii (Sahara mustard)	Fruit only	10/23/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/24/2019
Brassica tournefortii (Sahara mustard)	Vegetative	10/24/2019
Brassica tournefortii (Sahara mustard)	Fruit only	10/24/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/25/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / Not chlorophytic	10/25/2019
Lactuca serriola (prickly lettuce)	Fruit only	4/4/2022
Lactuca serriola (prickly lettuce)	Vegetative	4/4/2022
Lactuca serriola (prickly lettuce)	Vegetative	4/4/2022
Lactuca serriola (prickly lettuce)	Vegetative	4/4/2022
Lactuca serriola (prickly lettuce)	Vegetative	4/4/2022
Lactuca serriola (prickly lettuce)	Vegetative	4/5/2022
Lactuca serriola (prickly lettuce)	Flower / Fruit	4/1/2020
Salsola tragus (Russian thistle)	Vegetative	3/30/2022
Salsola tragus (Russian thistle)	Fruit only, Plant dried up / Not chlorophytic	3/31/2022
Salsola tragus (Russian thistle)	Fruit only, Plant dried up / Not chlorophytic, Vegetative	3/31/2022
Salsola tragus (Russian thistle)	Vegetative	4/4/2022
Salsola tragus (Russian thistle)	Plant dried up / Not chlorophytic	4/4/2022
Salsola tragus (Russian thistle)	Plant dried up / Not chlorophytic	4/3/2020
Sisymbrium irio (tumble mustard)	Plant dried up / Not chlorophytic	9/13/2021
Sisymbrium irio (tumble mustard)	Plant dried up / Not chlorophytic	9/14/2021
Sisymbrium irio (tumble mustard)	Plant dried up / Not chlorophytic	9/15/2021
Sisymbrium irio (tumble mustard)	Plant dried up / Not chlorophytic	9/18/2021
Sisymbrium irio (tumble mustard)	Plant dried up / Not chlorophytic	9/18/2021
Sisymbrium irio (tumble mustard)	Plant dried up / Not chlorophytic	9/18/2021
Sisymbrium irio (tumble mustard)	Plant dried up / Not chlorophytic	9/19/2021
Sisymbrium irio (tumble mustard)	Plant dried up / Not chlorophytic	9/22/2021
Sisymbrium irio (tumble mustard)	Fruit only	3/28/2022
Sisymbrium irio (tumble mustard)	Flower / Fruit	3/30/2022
Sisymbrium irio (tumble mustard)	Flower / Fruit	3/30/2022
Sisymbrium irio (tumble mustard)	Fruit only	3/30/2022
Sisymbrium irio (tumble mustard)	Flower / Fruit	3/30/2022
Sisymbrium irio (tumble mustard)	Fruit only	4/4/2022

Plant Species	Phenology	Date
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/4/2022
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/4/2022
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/4/2022
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/5/2022
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/1/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/1/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/3/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/3/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/3/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/4/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/4/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/4/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/13/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	4/14/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	3/25/2020
Sisymbrium irio (tumble mustard)	Flower / Fruit	3/25/2020
Sonchus arvensis (field sow thistle)	Flower only	3/30/2022
Sonchus arvensis (field sow thistle)	Flower / Fruit	3/31/2022
Sonchus arvensis (field sow thistle)	Flower only	4/4/2022
Sonchus arvensis (field sow thistle)	Flower only	4/4/2022
Sonchus arvensis (field sow thistle)	Flower / Fruit	4/4/2022
Sonchus arvensis (field sow thistle)	Flower / Fruit	4/5/2022
Sonchus arvensis (field sow thistle)	Fruit only	4/5/2022
Sonchus arvensis (field sow thistle)	Vegetative	4/3/2020
Sonchus arvensis (field sow thistle)	Flower only	4/5/2020
Sonchus asper (spiny sow thistle)	Flower / Fruit	4/3/2020
Sonchus oleraceus (common sow thistle)	Flower / Fruit	3/30/2022
Sonchus oleraceus (common sow thistle)	Vegetative	4/1/2020
Sonchus oleraceus (common sow thistle)	Vegetative	4/3/2020
Sonchus oleraceus (common sow thistle)	Flower / Fruit	4/4/2022
Tamarix ramosissima (tamarisk)	Flower / Fruit	10/24/2019
Tamarix sp. (tamarisk)	Vegetative	3/28/2022
Tamarix sp. (tamarisk)	Vegetative	3/28/2022
Tamarix sp. (tamarisk)	Flower only, Vegetative	3/30/2022
Tamarix sp. (tamarisk)	Flower / Fruit	3/30/2022
Tamarix sp. (tamarisk)	Flower only	3/31/2022

Plant Species	Phenology	Date
Tamarix sp. (tamarisk)	Flower only	3/31/2022
Tamarix sp. (tamarisk)	Vegetative	3/31/2022
Tamarix sp. (tamarisk)	Flower / Fruit	3/30/2022
Tamarix sp. (tamarisk)	Flower only	4/4/2022
Tamarix sp. (tamarisk)	Flower / Fruit	4/4/2022
Tamarix sp. (tamarisk)	Flower / Fruit	4/4/2022
Tamarix sp. (tamarisk)	Flower / Fruit	4/4/2022
Tamarix sp. (tamarisk)	Vegetative	4/5/2022
Tamarix sp. (tamarisk)	Vegetative	10/23/2019
Tamarix sp. (tamarisk)	Flower / Fruit	4/3/2020
Tamarix sp. (tamarisk)	Vegetative	4/10/2020
Tamarix sp. (tamarisk)	Vegetative	9/19/2022

Table C 6. Avian Count Summary.

Avian Species	Spring 2022 Avian Count Dates															Species Total
	3/22	3/23	3/24	3/26	3/27	3/28	3/29	3/30	3/31	4/2	4/3	4/4	4/5	4/6	4/7	
American avocet *(Recurvirostra americana)*								1								1
American coot *(Fulica americana)*								3								3
American kestrel (*Falco sparverius)*							2									2
American pipit *(Anthus rubescens)*								1								1
Anna's hummingbird *(Calypte anna)*		1	1	1	3				1							7
Ash-throated flycatcher (*Myiarchus cinerascens)*		1			4	4		8		1		5		5	1	29
Barn swallow (*Hirundo rustica)*	1		8			3		1	5						3	21
Belted kingfisher *(Megaceryle alcyon)*									2							2
Black phoebe *(Sayornis nigricans)*									1							1
Black-tailed gnatcatcher *(Polioptila melanura)*					1				1							2
Black-throated gray warbler *(Setophaga nigrescens)*									1							1
Blue-gray gnatcatcher (*Polioptila caerulea)*	2							1	6							9
Brewer’s blackbird *(Euphagus cyanocephalus)*									16							16
Brewer’s sparrow *(Spizella breweri)*												4				4

Avian Species	Spring 2022 Avian Count Dates															Species Total
	3/22	3/23	3/24	3/26	3/27	3/28	3/29	3/30	3/31	4/2	4/3	4/4	4/5	4/6	4/7	
Brown-headed cowbird *(Molothrus ater)*									2					1		3
Bullock's oriole *(Icterus bullockii)*					2	1										3
California quail *(Callipepla californica)*								2								2
Canada goose *(Branta canadensis)*												2				2
Cassin's vireo *(Vireo cassinii)*									1							1
Chipping sparrow *(Spizella passerine)*											4		1			5
Cliff swallow (*Petrochelidon pyrrhonota)*		6					2	13							3	24
Common poorwill *(Phalaenoptilus nuttallii)*													1			1
Common raven (*Corvus corax)*	5	8	17	2	6	15	8	26	70	1	2	18	12	4	38	232
Common yellowthroat *(Geothlypis trichas)*								6	2			2				10
Costa's hummingbird (*Calypte costae)*												1		1		2
Domestic chicken *(Gallus gallus domesticus)*									1							1
Double-crested cormorant (*Phalacrocorax auritus)*	4	7							2							13
Eurasian collared dove (*Streptopelia decoct)*					13	1		7	3			18			2	44

Avian Species	Spring 2022 Avian Count Dates															Species Total
	3/22	3/23	3/24	3/26	3/27	3/28	3/29	3/30	3/31	4/2	4/3	4/4	4/5	4/6	4/7	
European starling *(Sturnus vulgaris)*		1							5							6
Gambel's quail (*Callipepla gambelii)*					4	3		3	1			9				20
Great blue heron (Ardea herodias)												1				1
Great egret (*Ardea alba)*	1				1			1	3			3				9
Great horned owl *(Bubo virginianus)*					2											2
Greater roadrunner *(Geococcyx californianus)*									1							1
Greater yellowlegs (*Tringa melanoleuca)*								3								3
Great-tailed grackle *(Quiscalus mexicanus)*						4		4	11							19
Green winged teal *(Anas carolinensis)*												22				22
Horned lark (*Eremophila alpestris*)	3	6	3			9	7	20		4			3	2	3	60
House finch (*Haemorhous mexicanus)*			3			3		2	3			6				17
House sparrow *(Passer domesticus)*		2							4							6
Killdeer *(Charadrius vociferus)*								8	4			3				15
Ladder-backed woodpecker *(Dryobates scalaris)*				1										1		2
Least sandpiper *(Calidris minutilla)*								35				3				38

Avian Species	Spring 2022 Avian Count Dates															Species Total
	3/22	3/23	3/24	3/26	3/27	3/28	3/29	3/30	3/31	4/2	4/3	4/4	4/5	4/6	4/7	
Lesser goldfich (*Spinus psaltria)*												3				3
Lesser nighthawk (*Chordeiles acutipennis)*						1								1		2
Li3ncoln's sparrow *(Melospiza lincolnii)*									7							7
Loggerhead shrike (*Lanius ludovicianus)*			1			1		1			1		1		1	6
Mallard (*Anas platyrhynchos)*								12	2			8				22
Marsh wren *(Cistothorus palustris)*									1							1
Mourning dove (*Zenaida macroura)*		1	1			2	4		20			6	1	4		39
Nashville warbler *(Leiothlypis ruficapilla)*									1							1
Northern mockingbird (*Mimus polyglottos)*									1							1
Northern rough-winged swallow *(Stelgidopteryx serripennis)*								25	6						4	35
Orange-crowned warbler *(Leiothlypis celata)*								1	2							3
Osprey (*Pandion haliaetus)*									1							1
Red-tailed hawk *(Buteo jamaicensis)*															1	1
Red-winged blackbird (*Agelaius phoeniceus)*								1	4							5

Avian Species	Spring 2022 Avian Count Dates															Species Total
	3/22	3/23	3/24	3/26	3/27	3/28	3/29	3/30	3/31	4/2	4/3	4/4	4/5	4/6	4/7	
Ruby crowned kinglet *(Corthylio calendula)*					1											1
Ruddy duck *(Oxyura jamaicensis)*												1				1
Savannah sparrow *(Passerculus sandwichensis)*			1		4											5
Say's phoebe *(Sayornis saya)*							1	1								2
Sora *(Porzana Carolina)*									2							2
Tree swallow (*Tachycineta bicolor)*			2						16					1	1	20
Turkey vulture (*Cathartes aura)*	28	25	33	5	28	58	55	34	63	9	11	20		6	51	426
Verdin (*Auriparus flaviceps)*		2	1		10	4	3	7	5	4	1	9	1	3	4	54
Violet green swallow *(Tachycineta thalassina)*			3			4		5	6				4	3		25
Warbling vireo *(Vireo gilvus)*									2							2
Western kingbird (*Tyrannus verticalis)*							1					3				4
Western meadowlark *(Sturnella neglecta)*									1						1	2
White-crowned sparrow (*Zonotrichia leucophrys)*		~25		1	1			4	15	2		76	3		14	141
White-faced ibis *(Plegadis chihi)*								9								9

Avian Species	Spring 2022 Avian Count Dates															Species Total
	3/22	3/23	3/24	3/26	3/27	3/28	3/29	3/30	3/31	4/2	4/3	4/4	4/5	4/6	4/7	
White-throated swift *(Aeronautes saxatalis)*	5															5
Wilson's warbler *(Cardellina pusilla)*					1				2							3
Yellow-rumped warbler (*Setophaga coronata)*	5	3			1	1		12				8				30
Yellow warbler *(Setophaga petechia)*						2										2
Yellow-rumped (Audubon's) warbler *(Setophaga auduboni)*					5											5
Total Observed	**54**	**88**	**74**	**10**	**87**	**116**	**83**	**257**	**302**	**17**	**23**	**231**	**27**	**32**	**127**	**1528**

Appendix D — Wildlife and Plant Compendiums

Table D 1. Wildlife Incidental Species Observed.

Common Name	Scientific Name
Reptiles	
Coachwhip	*Masticophis flagellum*
Desert horned lizard	*Phrynosoma platyrhinos*
Desert iguana	*Dipsosaurus dorsalis*
Long-nosed leopard lizard	*Gambelia wislizenii*
Long-tailed brush lizard	*Urosaurus graciosus*
Mojave fringe toed lizard	*Uma scoparia*
Patch-nosed snake	*Salvadora hexalepis*
Side blotched lizard	*Uta stansburyana*
Sidewinder	*Crotalus cerastes*
Western banded gecko	*Coleonyx variegates*
Western diamond-backed rattlesnake	*Crotalus atrox*
Western shovel-nosed snake	*Sonora occipitalis*
Western whiptail lizard	*Aspidoscelis tigris*
Zebra-tailed lizard	*Callisaurus draconoides*
Birds	
American avocet	*Recurvirostra americana*
American coot	*Fulica americana*
American kestrel	*Falco sparverius*
American pipit	*Anthus rubescens*
American white pelican	*Pelecanus erythyrorhynchos*
Anna's hummingbird	*Calypte anna*
Barn swallow	*Hirundo rustica*
Bell's sparrow	*Artemisiospiza belli*
Belted kingfisher	*Megaceryle alcyon*
Black phoebe	*Sayornis nigricans*
Black-tailed gnatcatcher	*Polioptila melanura*
Black-throated gray warbler	*Setophaga nigrescens*
Blue-gray gnatcatcher	*Polioptila caerulea*
Brewer's blackbird	*Euphagus cyanocephalus*
Brewer's sparrow	*Spizella breweri*
Brown-headed cowbird	*Molothrus ater*
Bullock's oriole	*Icterus bullockii*
Burrowing owl	*Athene cunicularia*

Common Name	Scientific Name
California quail	*Callipepla californica*
Canada goose	*Branta canadensis*
Cassin's vireo	*Vireo cassinii*
Cattle egret	*Bubulcus ibis*
Chipping sparrow	*Spizella passerina*
Cliff swallow	*Petrochelidon pyrrhonata*
Common poorwill	*Phalaenoptilus nuttallii*
Common raven	*Corvus corax*
Costa's hummingbird	*Calypte costae*
Dark eyed junco	*Junco hyemalis*
Domestic chicken	*Gallus gallus domesticus*
Double-crested cormorant	*Phalacrocorax auritus*
Eurasian collared-dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*
Gambel's quail	*Callipepla gambelii*
Great blue heron	*Ardea herodias*
Great horned owl	*Bubo virginianus*
Greater roadrunner	*Geococcyx alifornianus*
Greater yellowlegs	*Tringa melanoleuca*
Great-tailed grackle	*Quiscalus mexicanus*
Green winged teal	*Anas carolinensis*
Horned lark	*Eremophila alpestris*
House finch	*Carpodacus menicanus*
House sparrow	*Passer domesticus*
Killdeer	*Charadrius vociferus*
Ladder-backed woodpecker	*Dryobates scalaris*
Least sandpiper	*Calidris minutilla*
LeConte's thrasher	*Toxostoma lecontei*
Lesser nighthawk	*Chordeiles acutipennis*
Lincoln's sparrow	*Melospiza lencolnii*
Loggerhead shrike	*Lanius ludovicianus*
Mallard	*Anas platyrhynchos*
Marsh wren	*Cistothorus palustris*
Mourning dove	*Zenaida macroura*
Nashville warbler	*Oreothlypis ruficapilla*

Common Name	Scientific Name
Northern harrier	*Circus cyaneus*
Northern mockingbird	*Mimus polyglottos*
Nothern rough-winged swallow	*Stelgidopteryx serripennis*
Orange-crowned warbler	*Leiothlypis celata*
Osprey	*Pandio haliaetus*
Prairie falcon	*Falco mexicanus*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Ruby crowned kinglet	*Corythylio calendula*
Ruddy duck	*Oxyura jamaicensis*
Savannah sparrow	*Passerculus sandwichensis*
Say's phoebe	*Sayornis saya*
Sora	*Porzana carolina*
Sharp-shinned hawk	*Accipiter striatus*
Song sparrow	*Melospiza melodia*
Townsend's warbler	*Setophaga townsendi*
Tree swallow	*Tachycineta bicolor*
Turkey vulture	*Cathartes aura*
Vaux's swift	*Chaetura vauxi*
Verdin	*Auriparus flaviceps*
Violet green swallow	*Tachycineta thalassina*
Warbling vireo	*Vireo gilvus*
Western kingbird	*Tyrannus verticalis*
Western meadowlark	*Sturnella neglecta*
White-crowned sparrow	*Zonotrichia leucophrys*
White-faced Ibis	*Plegadis chihi*
White-throated swift	*Aeronautes saxatalis*
Wilson’s warbler	*Wilsonia pusilla*
Yellow-rumped warbler	*Stophaga coronata*
Yellow warbler	*Dendroica petechia*
Yellow-rumped (Audubon's) warbler	*Setophaga audubonii*
Mammals	
Antelope ground squirrel	*Ammospermophilus leucurus*
Black-tailed jackrabbit	*Lepus califonica*
Coyote	*Canis latrans*

Common Name	Scientific Name
Desert (Audobon's) cottontail rabbit	*Sylvilagus audubonii*
Desert wood rat	*Neotoma lepida*
Round tailed ground squirrel	*Xerospermophilus tereticaudus*
Invertebrates	
Arizona (Desert) hairy scorpion	*Hadrurus arizonensis*
Black witch	*Ascalapha odorata*
California harvester ant	*Pogonomyrmex californicus*
Creosote bush grasshopper	*Bootettix argentatus*
Metallic wood-boring beetle	*Gyascutus fulgidus*
Dainty sulphur	*Nathalis iole*
Darkling beetle	*Eleodes* sp.
Desert ironclad beetle	*Asbolus verrucosus*
Desert leafcutter ant	*Acromyrmex versicolor*
Desert (Arizona blond) tarantula	*Aphonopelma chalcodes*
Gulf fritillary	*Agraulis vanillae*
Large creosote gall midge	*Asphondylia auripila*
Monarch butterfly	*Danaus plexippus*
Neumoegen's checkerspot	*Chlosyne acastus*
Orange sulphur	*Colias eurytheme*
Painted lady	*Vanessa cardui*
Pygmy blue	*Brephidium exilis*
Queen (butterfly)	*Danaus gilippus*
Red harvester ant	*Pogonomyrmex* sp.
Velvet ant	*Dasymutilla* sp.
White-lined sphinx moth	*Hyles lineata*
Emerald ash borer	*Agrilus* sp.

Table D 2. Incidental Plant Species Observed.

Family	Scientific Name	Common Name
Aizoaceae	*Trianthema portulacastrum*	Horse purslane
Amaranthaceae	*Tidestromia suffruticosa var. oblongifolia*	Honeysweet
Amaranthaceae	*Amaranthus fimbriatus*	Fringed amaranth
Apocynaceae	*Asclepias albicans*	White stemmed milkweed
Apocynaceae	*Asclepias erosa*	Desert milkweed
Apocynaceae	*Asclepias subulata*	Skeleton milkweed

Family	Scientific Name	Common Name
Apocynaceae	*Funastrum hirtellum*	Hairy milkweed
Areaceae	**Phoenix dactylifera*	Date palm
Asteraceae	*Ambrosia acanthicarpa*	Annual bursage
Asteraceae	*Ambrosia dumosa*	White bursage
Asteraceae	*Ambrosia salsola*	Cheesebush
Asteraceae	*Bebbia juncea* var. *aspera*	Rush sweetbush
Asteraceae	*Chaenactis carphoclinia*	Pebble pincushion
Asteraceae	*Chaenactis* sp.	Chaenactis species
Asteraceae	*Chaenactis stevioides*	Desert pincushion
Asteraceae	*Encelia farinosa*	Brittlebush
Asteraceae	*Encelia frutescens*	Button brittlebush
Asteraceae	*Erigeron canadensis (= Conyza canadensis)*	Canada horseweed
Asteraceae	*Geraea canescens*	Desert sunflower
Asteraceae	*Isocoma acradenia*	Alkali goldenbush
Asteraceae	**Lactuca serriola*	Prickly lettuce
Asteraceae	*Malacothrix glabrata*	Desert dandelion
Asteraceae	*Palafoxia arida var. arida*	Spanish needle
Asteraceae	*Pectis papposa* var. *papposa*	Chinch weed
Asteraceae	*Pluchea sericea*	Arrow weed
Asteraceae	*Psathyrotes ramosissima*	Turtleback
Asteraceae	**Sonchus asper*	Spiny sow thistle
Asteraceae	**Sonchus oleraceus*	Sow thistle
Asteraceae	*Stephanomeria pauciflora*	Wire lettuce
Boraginaceae	*Cryptantha sp.*	Cryptantha species
Boraginaceae	*Cryptantha angustifolia*	Narrow leaved cryptantha
Boraginaceae	*Heliotropium curassavicum*	Chinese parsley
Boraginaceae	*Pectocarya heterocarpa*	Chuckwalla pectocarya
Boraginaceae	*Pectocarya platycarpa*	Broad nutted comb-bur
Boraginaceae	*Pectocarya recurvata*	Arch nutted comb-bur
Boraginaceae	*Phacelia distans*	Common phacelia
Boraginaceae	*Tiquilia plicata*	Fanleaf crinklemat
Brassicaceae	**Brassica tournefortii*	Sahara mustard
Brassicaceae	*Lepidium lasiocarpum*	Pepperweed
Brassicaceae	**Sisymbrium irio*	London rocket
Cactaceae	*Cylindropuntia echinocarpa*	Golden cholla

Family	Scientific Name	Common Name
Cactaceae	*Cylindropuntia ramosissima*	Diamond cholla
Cactaceae	*Echinocereus engelmannii*	Engelmann's hedgehog cactus
Cactaceae	*Ferocactus cylindraceus*	Barrel cactus
Cactaceae	*Mammillaria tetrancistra*	Fishhook cactus
Cactaceae	*Opuntia basilaris*	Beavertail cactus
Caryophyllaceae	*Achyronychia cooperi*	Frost mat
Chenopodiaceae	*Atriplex canescens*	Hoary saltbush
Chenopodiaceae	*Atriplex polycarpa*	Allscale saltbush
Chenopodiaceae	**Salsola tragus*	Russian thistle
Chenopodiaceae	*Suaeda nigra*	Bush seepweed
Cleomaceae	*Peritoma arborea*	Bladderpod
Cucurbitaceae	*Brandegea bigelovii*	Desert starvine
Cucurbitaceae	*Cucurbita palmata*	Coyote melon
Euphorbiaceae	*Croton californicus*	California croton
Euphorbiaceae	*Ditaxis neomexicana*	New Mexico ditaxis
Euphorbiaceae	*Ditaxis serrata* var. *californica*	California ditaxis
Euphorbiaceae	*Euphorbia micromera*	Sonoran sandmat
Euphorbiaceae	*Euphorbia polycarpa*	Smallseed sandmat
Euphorbiaceae	*Euphorbia sp.*	Euphorbia species
Euphorbiaceae	*Stillingia spinulosa*	Broad leaved stillingia
Fabaceae	*Dalea mollis*	Hairy prairie clover
Fabaceae	*Dalea mollissima*	Silky dalea
Fabaceae	*Lupinus arizonicus*	Arizona lupine
Fabaceae	*Olneya tesota*	Desert ironwood
Fabaceae	*Parkinsonia florida*	Blue palo verde
Fabaceae	*Prosopis glandulosa*	Honey mesquite
Fabaceae	*Psorothamnus emoryi*	Indigo bush
Fabaceae	*Psorothamnus schottii*	Schott's indigo bush
Fabaceae	*Psorothamnus spinosus*	Smoke tree
Fabaceae	*Senegalia greggii*	Catclaw acacia
Fouquieriaceae	*Fouquieria splendens*	Ocotillo
Krameriaceae	*Krameria bicolor*	White rhatany
Lamiaceae	*Condea emoryi (= Hyptis emoryi)*	Desert lavender
Liliaceae	*Hesperocallis undulata*	Desert lily
Loasaceae	*Petalonyx thurberi*	Dandpaper plant

Family	Scientific Name	Common Name
Malvaceae	*Eremalche rotundifolia*	Desert fivespot
Malvaceae	*Hibiscus denudatus*	Paleface
Malvaceae	*Sphaeralcea ambigua*	Desert globemallow
Malvaceae	*Sphaeralcea ambigua* var. *rosacea*	Rosy apricot mallow
Malvaceae	*Sphaeralcea sp.*	Mallow
Martyniaceae	*Proboscidea althaeifolia*	Desert unicorn plant
Nyctaginaceae	*Allionia incarnata*	Windmills
Nyctaginaceae	*Boerhavia wrightii*	Wright's boerhavia
Onagraceae	*Chylismia claviformis*	Browneyes
Onagraceae	*Oenothera deltoides* subsp. *deltoides*	Birdcage desert primrose
Orobanchaceae	*Aphyllon cooperi (= Orobanche cooperi)*	Desert broomrape
Orobanchaceae	*Orobanche cooperi*	Desert broomrape
Plantaginaceae	*Plantago ovata*	Wooly plantain
Poaceae	*Aristida adscensionis*	Three-awn
Poaceae	*Aristida purpurea*	Purple three-awn
Poaceae	*Bouteloua aristidoides*	Needle gramma
Poaceae	*Bouteloua barbata* var. *barbata*	Six-weeks gramma
Poaceae	**Bromus rubens*	Red brome
Poaceae	*Hilaria rigida*	Big galleta grass
Poaceae	*Leptochloa panicea*	Mucronate sprangletop
Poaceae	*Muhlenbergia porteri*	Bush muhley
Poaceae	**Polypogon monospeliensis*	Annual beard grass
Poaceae	**Schismus barbatus*	Common mediterranean grass
Polygonaceae	*Chorizanthe brevicornu*	Brittle spineflower
Polygonaceae	*Chorizanthe rigida*	Devil's spineflower
Polygonaceae	*Eriogonum sp.*	Buckwheat species
Resedaceae	*Oligomeris linifolia*	Leaved cambess
Simaroubaceae	*Castela emoryi*	Crucifixion thorn
Simmondsiaceae	*Simmondsia chinensis*	Jojoba
Solanaceae	*Datura discolor*	Small datura
Solanaceae	*Datura wrightii*	Jimson weed
Solanaceae	*Lycium andersonii*	Anderson's desert thorn
Solanaceae	*Nicotiana obtusifolia*	Desert tobacco
Solanaceae	*Physalis crassifolia*	Ground cherry
Tamaricaceae	**Tamarix aphylla*	Athel tamarisk

Family	Scientific Name	Common Name
Tamaricaceae	**Tamarix ramossisima*	Tamarisk
Zygophyllaceae	*Fagonia laevis*	California fagonia
Zygophyllaceae	*Kallstroemia californica*	California caltrop
Zygophyllaceae	*Larrea tridentata*	Creosote bush
Aizoaceae	*Sesuvium verrucosum*	Western sea-purslane
Asteraceae	*Pseudognaphalium luteoalbum*	Jersey cudweed
Brassicaceae	*Lepidium didymum*	Lesser pepperwort
Chenopodiaceae	*Chenopodium atrovirens*	Pinyon goosefoot
Chenopodiaceae	*Chenpodium murale*	Nettle leaf goosefoot
Cyperaceae	*Bolboschoenus glaucus*	Tubered bulrush
Fabaceae	*Acacia stenophylla*	Shoestring acacia
Fabaceae	*Parkinsonia aculeata*	Jerusalem thorn
Malvaceae	**Malva parviflora*	Cheeseweed
Poaceae	*Cynodon dactylon*	Bermuda grass
Poaceae	*Diplachne fusca*	Bearded beetle grass
Poaceae	**Hordeum murinum*	Foxtail barley
Poaceae	*Pennisetum setaceum*	Crimson fountain grass
Poaceae	*Poa annua*	Annual blue grass
Polygonaceae	*Polygonum argyrocoleon*	Silver-sheath knotweed
Portulacaceae	*Rumex obtusifolius*	Broad-leaved dock
Primulaceae	*Lysimachia arvensis*	Scarlet yellow-loosetrife
Typhaceae	*Typha latifolia*	Cattail

BOLD = special status

* = invasive species