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Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA Image courtesy of USGS © AND © 2013 Nokia OAND 1:6,000 1 inch = 500 feet Legend: N Detail Map Extent Waters of the U.S. and State (USACE, CDFW, RWQCB) Nonwetland Water, Streambed Project Site Boundary Figure No. 6K Wetland, Riparian **CUP** Boundary CUP Wetland, Streambed Biological Study Area 1..... Waters of the State (CDFW) Electric Collector Line Corridor Floodplain Riparian Streambed Wistaria Ranch Solar Energy Center 0051 CUP 13-0052 Biological Technical Report **Potential Jurisdictional Waters** Project Name: Wistaria Solar Ranch Projection: NAD 83 CA State Plane Zone 6 of the U.S. and State Project Number: 60250473 Date: 3/12/2014

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and portions of parcels along the New River were added to the BSA subsequent to the completion of the wildlife habitat assessment. These areas were evaluated by reviewing aerial photography and data collected in adjacent habitat.

AECOM biologists recorded wildlife sign, track, and direct observations that were incidentally detected during the habitat assessment and BUOW protocol surveys conducted during April, May, and June 2012. Additionally, habitat connectivity and potential wildlife movement corridors within the BSA were evaluated during these surveys.

#### 2.1.5 Burrowing Owl Surveys

During the habitat assessment, areas with suitable BUOW habitat were mapped as one of two categories: (1) foraging habitat or (2) burrow (i.e., nesting) and foraging habitat. Essentially all vegetation types on-site, with the exception of developed habitat, were considered suitable for BUOW foraging. Irrigation drains and canals; fallow fields, nonagricultural upland habitat; and earthen berms along roads or agriculture fields were considered suitable for BUOW nesting and foraging habitat. Developed habitat was not considered suitable BUOW habitat.

To evaluate impacts to BUOW, protocol breeding season BUOW surveys were conducted within the BSA and a 500-foot (150-meter) buffer of the BSA according to the methods described in *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Per the 2012 CDFW BUOW breeding season protocol, four site visits were conducted with at least one site visit between February 15 and April 15; and a minimum of three additional survey visits at least 3 weeks apart between April 15 and July 15, with at least one of these surveys occurring after June 15. Surveys were conducted generally from morning civil twilight until 10:00 a.m. and 2 hours before sunset until evening civil twilight (CDFW 2012). Surveys were conducted by walking straight-line transects spaced approximately 23 to 66 feet (7 to 20 meters) apart, adjusting for vegetation height and density, when winds were less than 12 miles per hour (19 kilometers per hour), temperatures were greater than 68 degrees Fahrenheit (20 degrees Celsius), and cloud cover was less than 75 percent (CDFW 2012).

Transects were completed in all nesting habitat within the BSA, with the exception of habitat within CUP area 13-0047 of the Project, between April 10 and June 28, 2012 (Figure 7 and Table 3). Detailed weather conditions for each survey day are included as Appendix B. CUP area 13-0047 of the Project and portions of parcels along the New River (not suitable BUOW nesting habitat) were added to the BSA subsequent to the completion of BUOW surveys in 2012. Potential for burrowing owl presence in this area was assessed via desktop analysis. Visual coverage scans using binoculars were completed within the 500-foot (150-meter) buffer of the BSA, which included a portion of CUP area 13-0047, as opposed to transects due to the lack of landowner permission to access to these areas (Figure 7). Four site visits were completed per the 2012 CDFW BUOW guidance with two minor exceptions. The first survey extended 3 days beyond the April 15 survey window and ended on April 18 due to delays caused by high wind conditions (i.e., excess of 12 miles per hour [19 kilometers per hour]). Additionally, during the second survey ornithologists were unable to access two, approximately 0.43-mile-long (700-meter-long), dirt roads with irrigation drains and canals. These two dirt roads were scanned using binoculars during the second survey, and during the third survey the roads were visited twice (visits spaced 3 days apart) in order to ensure that this parcel received four full coverage

surveys. Both of these deviations to the protocol were approved by CDFW prior to completion (Appendix C).

Sumary Number	Survey Dates		Dereennel	
Survey Number	Start	End	Personnei	
# 1, Walking	4/10/2012	4/18/2012	Rocky Brown; Shelly Dayman; Rob Conohan; Brennan Mulrooney; Andrew Fisher	
# 2, Walking	5/07/2012	5/11/2012	Rocky Brown; Shelly Dayman; Rob Conohan; Robbie Sweet	
# 3, Walking	5/29/2012	6/2/2012	Michael Anguiano; Marie Barrett; Rocky Brown; Shelly Dayman; Andrew Fisher	
# 4, Walking and Driving	6/25/2012	6/28/2012	Michael Anguiano; Rocky Brown; Shelly Dayman; James McMorran	

Table 3Western Burrowing Owl Survey Schedule

The minimal vegetation in nesting habitat throughout the BSA allowed transects to be spaced at the maximum distance of 66 feet (20 meters) apart, per CDFW guidance (2012). In linear areas, transects ran parallel to roads, canals, and/or drains. Transects were completed on both sides of roads, canals, and/or drains and were often less than 66 feet (20 meters) apart due to narrow linear habitat. As a result, only one transect was usually needed to cover the area on each side of the road, canal, and/or drain, but additional transects were added in cases where the nesting habitat was greater than 66 feet (20 meters) wide (i.e., greater than the width of one transect) on a given side. In larger, nonlinear areas of suitable nesting habitat, linear transects were spaced 66 feet (20 meters) apart to ensure full coverage surveys of the area.

During each survey (including the habitat assessment), individual BUOW and potentially suitable BUOW burrows were recorded and marked using GPS. Suitable burrows were defined as burrows greater than approximately 4 inches (10 centimeters) in diameter (height and width) and greater than approximately 60 inches (150 centimeters) in depth (Johnson et al. 2010). If a burrow was of adequate diameter and the end of the burrow could not be seen, it was considered suitable. It was not possible to measure the depth of each burrow. For each BUOW observation made at a burrow, the number and ages of individuals were recorded and the locations were recorded using a GPS. For each BUOW observation not associated with a burrow, the number and ages of individuals were recorded using a GPS where the owl was initially detected. Additional notes, such as BUOW behavior, were recorded as necessary.



At each suitable BUOW burrow, presence of BUOW sign (e.g., pellets, prey remains, whitewash, decorations, tracks) and number of BUOW present at the burrow were recorded for each survey visit. All burrows were marked and assigned a burrow identification such that in subsequent surveys each burrow was revisited (i.e., burrows marked during survey one were visited a total of four times). Any additional burrows not identified during a previous survey were also marked during subsequent surveys. During each visit, the "survey status" of each burrow for the specific survey number was classified as follows:

- Occupied a BUOW individual was observed to be present at the burrow;
- Active a BUOW burrow with fresh BUOW sign but no BUOW individual was present;
- Inactive suitable for BUOW but no BUOW individuals or sign was observed or a previously suitable burrow was no longer suitable due to erosion, a natural burrow collapse, or inadvertent damage from anthropogenic activities.

Following the completion of surveys, the repeat visits to each burrow generated a survey history for that specific burrow within in the BSA. The 3-week time frame between surveys resulted in the activity and/or suitability of burrows often changing from one survey to the next. In some cases, previously suitable burrows became no longer suitable due to erosion, a natural burrow collapse, or inadvertent damage from anthropogenic activities. New burrows were also created between surveys as a result of ground squirrel activity within the BSA. Additionally, the activity at a burrow (i.e., occupied, active, or inactive) often changed between surveys possibly due to BUOW predation or individuals moving to another burrow in the vicinity.

As a result, a final status was assigned to each burrow for impact analysis purposes. For this final status, burrows were classified as occupied if owls were present directly at the burrow during any survey (i.e., one, two, three, or four). Burrows were classified as active if fresh or recent sign was present during the habitat assessment or any survey (i.e., one, two, three, or four) (no owls observed at the burrows). Burrows were classified as inactive if fresh or recent sign was absent during both the habitat assessment and surveys one through four. Burrows were also classified as inactive if a previously suitable burrow was no longer suitable due to erosion, a natural burrow collapse, or inadvertent damage from anthropogenic activities.

During surveys one through three, all transects were completed on foot (i.e., walking surveys). During survey four, with CDFW approval (Appendix C), driving surveys were conducted in combination with walking surveys. All transects along roads that could be accessed via vehicle were driven. Transects that could not be accessed with a vehicle were surveyed on foot. The driving approach for survey four had two key benefits. First, BUOW in this region have habituated to vehicle/machinery activity, and survey methods with ornithologists on foot are three times more likely to displace a BUOW than when an ornithologist remains inside a vehicle (Manning and Kaler 2011). The vehicles essentially acted as a blind and allowed ornithologists to maneuver in proximity to occupied burrows before BUOW retreated to their burrow or flushed. This allowed for accurate estimation of occupied burrows and BUOW numbers. This was especially important for survey four because juveniles were also present. Juveniles tend to retreat quickly to the burrow when they are young, but as they get older the entire

family may flush. In both cases, it becomes difficult to determine the number of juveniles using a specific burrow. Second, this method minimized disturbance to nesting BUOW. Due to the linear nature of the canals and drains, ornithologists on foot had to walk by occupied burrows; in most cases this flushed the BUOW from burrows, whereas ornithologists within a vehicle typically did not flush a BUOW.

BUOW survey data were collected using electronic data forms installed on HP iPAQ Travel Companions. Electronic data forms included built-in data validation procedures for quality assurance and quality control purposes.

## 3.0 Existing Conditions

#### 3.1 PHYSICAL SETTING

The BSA is located within active agriculture west of Calexico, California. Elevation of the BSA is approximately at sea level. The agriculture fields are relatively flat with sparse vegetation between fields. Irrigation canals and drains traverse the BSA for agricultural purposes. The northern portion of the BSA is near the New River and immediately south of the BSA is the All American Canal and the U.S./Mexico border (Figure 2). Greeson Wash flows southeast through the BSA and is directly adjacent to the BSA on the western edge and through the central area (Figure 2). Other development features within and adjacent to the BSA include asphalt and compacted earthen roads, fencing, and single-family residences.

As noted in the methodology (Chapter 2), the BSA does not include the Mount Signal Solar gen-tie line corridor. The BTR for the Mount Signal Solar Project (RECON 2011) is referenced to discuss biological resources that exist within the Mount Signal Solar gen-tie line corridor. The Mount Signal Solar Project began construction in November 2012 and many of the agricultural areas within the Mount Signal Solar Project began Solar Project are now developed (8minutenergy 2013). The Mount Signal Solar Project has already constructed a 230-kV single-circuit gen-tie line that the Project would use. Gen-tie facilities occur within compacted earthen roads. Agriculture fields and IID canals and/or drains are adjacent to the Mount Signal Solar gen-tie line corridor. Site photographs of the BSA and gen-tie facilities outside the BSA that would be shared with the Mount Signal Solar Project are included in Appendix D.

### 3.2 VEGETATION COMMUNITIES

Ten vegetation communities and other cover types were identified within the BSA, including upland, riparian, and other cover types (Table 4 and Figure 5). As previously noted, the BSA is dominated by agriculture fields. Vegetation communities and other cover types found in the BSA are described in detail below. The Mount Signal Solar Project has completed construction of their gen-tie line. The Mount Signal Solar gen-tie line corridor is disturbed from installation of the gen-tie line and associated access roads. IID canals and/or drains and agriculture fields remain in the areas adjacent to the corridor. Vegetation communities and other cover types within these gen-tie facilities are not discussed further in this section.

#### 3.2.1 Riparian and Wetland Vegetation Communities

#### 3.2.1.1 Arrow Weed Scrub

The dominant and indicator plants of this community within the BSA was arrow weed (*Pluchea sericea*), as well as honey mesquite (*Prosopis glandulosa*), tamarisk (*Tamarix ramosissima*), cattail (*Typha* spp.), and ravenna grass (*Saccharum ravennae*). Arrow weed scrub occurs in the eastern portion of the BSA near the New River and within the drainage in the southern portion of the BSA.

Vegetation Communities and Other Cover Types	Study Area <sup>1</sup>
Riparian and Wetlands	145.32
Arrow Weed Scrub	25.76
Drains and Canals	32.13
Open Water	1.61
Tamarisk Scrub	85.82
Uplands	22.01
Badlands/Mudhills	0.27
Mesquite Bosque	0.99
Salt Bush Scrub	20.75
Other Cover Types	3,510.15
Agriculture	3,017.39
Developed	428.11
Disturbed Habitat	64.65
Total	3,677.48

Table 4
Vegetation Communities and Cover Types within the Biological Study Area (Acres)

<sup>1</sup> All values were rounded to the nearest hundredth-acre after summation.

#### 3.2.1.2 Drains and Canal

Cement canals and earthen drains were found throughout the BSA. The concrete canals are used to convey water to the agricultural fields. The earthen drains are used to convey water away from the agricultural fields. The drains and canals were mostly unvegetated due to high water velocity, depth, and mechanical vegetation clearing by farmers and/or IID maintenance crews. Some of the earthen canals with limited water flow have small stands of tamarisk, cattail, or ravenna grass.

#### 3.2.1.3 Open Water

The main channel of the New River passes through the far eastern edge of the BSA. The channel itself is open water, while the banks are lined with tamarisk, four-wing saltbush (*Atriplex canescens*), ravenna grass, arrow weed, and common reed (*Phragmites australis*).

#### 3.2.1.4 Tamarisk Scrub

This nonnative vegetation community is a monoculture of tamarisk species. Areas of tamarisk scrub were mapped and are associated with the drainage and canals in the southern portion of the BSA and near the New River in the eastern portion of the BSA. Other common associates with this vegetation community included quail brush (*Atriplex lentiformis*) and arrow weed.

#### 3.2.2.1 Badlands and/or Mudhills

Badlands and/or mudhills are characterized by upland habitat that is unvegetated, highly unstable, and erosive. Badlands and/or mudhills occurred in the northern portion of the BSA along the western bank of the New River.

#### 3.2.2.2 Mesquite Bosque

Mesquite bosque occurs in areas where honey mesquite forms larger woodlands that are not directly associated with artificial irrigation system. This community is considered sensitive by CNDDB (CDFW 2010). One fragmented location of mesquite bosque was mapped on the western bank of the New River in the northeastern portion of the BSA.

#### 3.2.2.3 Desert Saltbush Scrub

Desert saltbush scrub is located in low areas with denser soils possibly affected by caliche, and occurs on the dry edges of arrow weed scrub, which is dominated by two saltbush species, quail brush and four-wing saltbush, along with alkali golden bush (*Isocoma acradenia* var. *eremophila*) as an occasional associate. Desert saltbush scrub occurs in fragmented segments in the northeastern portion of the BSA along the western bank of the New River.

#### 3.2.3 Other Cover Types

#### 3.2.3.1 Agriculture

Agriculture fields were found throughout the BSA. The majority of the lands mapped as agriculture within the BSA are for hay production, mainly alfalfa. Large fields were recently cleared at the time of vegetation mapping or had been temporarily fallow but did not support any substantial emergent native vegetation.

#### 3.2.3.2 Developed

The developed land within the BSA consists of roads, commercial agricultural buildings, and residences. Roads were found throughout the BSA. Single-family residences were limited to a few locations.

#### 3.2.3.3 Disturbed Habitat

The disturbed habitat was found along Greeson Wash and the western and northeastern portions of the BSA. This habitat consists of previously graded areas that are either devoid of vegetation or dominated by Saharan mustard (*Brassica tournefortii*).

### 3.3 JURISDICTIONAL WATERS AND WETLANDS

A jurisdictional delineation of waters was performed by RECON on September 8 and 9, 2012. A total of approximately 135.5 acres (54.8 hectares) of waters of the U.S. and/or state occur within the BSA (Table 5). Of this total, approximately 68.7 acres (27.8 hectares) are jurisdictional waters of the U.S.

and state under the purview of USACE, RWQCB, and CDFW, composed of vegetated wetlands (56.6 acres [22.9 hectares]) and nonwetland waters (12.1 acres [4.9 hectares]) (Table 5). The remainder of the jurisdictional resources, exclusively under the purview of CDFW, are composed of approximately 66.8 acres (27.0 hectares), and include riparian habitat (58.3 acres [23.6 hectares]) and unvegetated channels (8.5 acres [3.4 hectares]) (Table 5). The locations of jurisdictional features identified during the delineation are provided in Figures 6A through 6K.

Type of Jurisdictional Waters	Vegetation Community	Regulatory Authority	Total Acreage
Jurisdictional Waters of t	he U.S. and State	••••••	
Wetland	Tamarisk Scrub and Arrow Weed Scrub	USACE, RWQCB, and CDFW	56.6
Non-Wetland Waters	Unvegetated Channel	USACE, RWQCB, and CDFW	12.1
Subtotal of Jurisdictional W	aters of the U.S. and State		68.7
Jurisdictional Waters Exc	lusively CDFW		
Riparian	Tamarisk Scrub and Arrow Weed Scrub	CDFW Only	58.3
Other Waters	Unvegetated Channel	CDFW Only	8.5
Subtotal Jurisdictional Wate	66.8		
Total Jurisdictional Water	rs		135.5

 Table 5

 Potential Jurisdictional Water within the Biological Study Area

Wetland waters of the U.S. and state occur along the New River, Greeson Wash/Drain, and within the IID drains. Wetlands associated with the New River occur along and adjacent to the primary low flow channel, secondary channels, and within the lower floodplain terraces. Wetlands associated with Greeson Wash/Drain occur along the low flow channel and along the major secondary channels of the floodplain. Wetlands associated with the IID drains are restricted to the low flow channel and a portion of the lower banks subject to prolonged flooding or wetness. Nonwetland waters of the U.S. and state within the BSA include a few small ephemeral drainages within the Greeson Wash/Drain floodplain and the concrete-lined IID canals that lacked hydrophytic vegetation.

CDFW exclusive jurisdictional resources include larger portions of the New River and Greeson Wash/Drain floodplains that support the xeroriparian habitat occurring outside of the limits of waters of the U.S. These xeroriparian areas support hydrophytic vegetation dominated by salt cedar (*Tamarix chilensis*), arrow weed, iodine bush (*Allenrolfea occidentalis*), bush seepweed (*Suaeda moquinii*), and big saltbush (*Atriplex lentiformis*) stands of varying density and distribution; however, these areas lack hydric soils and indicators of wetland hydrology. All features delineated within the BSA convey natural flows that originate from sources that have a direct or indirect connection to a traditional navigable water (e.g., Salton Sea).

Detailed survey methods and results can be found in the 2013 RECON report (Appendix A).

## 3.4 FLORA

This section discusses plant species detected and special-status plant species with the potential to occur within the BSA or known from the vicinity of the BSA. A total of 34 plant species were detected during botanical surveys. Of these, 24 plant species are native to the region. Past and current agricultural activities have decreased the diversity of native plants within the BSA. These activities have also influenced the exotic weeds found within the BSA; 10 of the plant species detected on-site were nonnative: ravenna grass, Mediterranean grass (*Schismus arabicus*), Saharan mustard, London rocket (*Sisymbrium irio*), lambs quarters (*Chenopodium album*), russian thistle (*Salsola tragus*), white sweetclover (*Melilotus albus*), redstem stork's bill (*Erodium cicutarium*), gum (*Eucalyptus* sp.), and tamarisk. A complete list of all plant species detected during botanical surveys is included as Appendix E.

Special-status plant species that were evaluated based on the 6-quad CNDDB search and pre-field investigations are summarized in Table 6. It was determined during field surveys that there was moderate potential for one special-status plant species, California satintail (*Imperata brevifolia*), to occur along the drains and canals within the BSA. If present, this conspicuous species would have been observed during the rare plant habitat assessment and/or vegetation mapping, but it was not detected. No other special-status plant species had potential to occur within the BSA. Based on the results of the habitat assessment, rare plant surveys were determined to not be necessary. The following sections discuss the special-status plant species with potential to occur within the BSA or buffer.

The Mount Signal Solar Project has completed construction of their gen-tie line. The Mount Signal Solar gen-tie line corridor is disturbed from installation of the gen-tie line and associated access roads. IID canals and/or drains and agriculture fields remain in the areas adjacent to the corridor. No special-status plant species are expected to occur within the Mount Signal Solar gen-tie line corridor and these areas are not discussed further in this section.

#### 3.4.1 Federally Listed Plant Species

Federally listed plant species include those species listed or proposed for listing (including candidate species) as threatened or endangered per Section 4 of the ESA. Based on site-specific habitat evaluations conducted by AECOM and literature review, including a CNDDB records search, it was determined that no federally listed plant species have potential to occur within the BSA.

#### 3.4.2 State-listed Plant Species

State-listed plant species include those species listed or candidates for listing as threatened or endangered under the CESA. Based on site-specific habitat evaluations conducted by AECOM and literature review, including a CNDDB records search, it was determined that no state-listed plant species have potential to occur within the BSA.

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500- foot Buffer of the BSA <sup>2</sup>
Watson's Amaranth <i>Amaranthus</i> <i>watsonii</i>	CRPR 4.3	Usually occurs in wetlands, but occasionally found in non-wetlands	Not detected. No known locations from the vicinity. No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Salton Milk- Vetch <i>Astragalus</i> <i>crotalariae</i>	CRPR 4.3	Creosote bush scrub, <3,640 feet (1,110 meters)	Not detected. No known locations from the vicinity. No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Pink Fairy- Duster <i>Calliandra</i> eriophylla	CRPR 2B.3	Sonoran Desert, sandy washes, slopes and mesas, typically found at $\pm$ 5,000 feet (1,524 meters)	Not detected. Nearest known location is a historical (1970) CNDDB point approximately 8 miles (13 kilometers) west of the BSA (CDFW 2013). No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Emory's Crucifixion- Thorn <i>Castela emoryi</i>	CRPR 2B.2	Desert areas on dry, gravelly washes, slopes, plains found at ±2,150 feet (655 meters)	Not detected. Nearest known location is a historical (1956) CNDDB point approximately 12 miles (19 kilometers) west of the BSA (CDFW 2013). No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Wiggins' Croton Croton wigginsii	CRPR 2B.2	Creosote bush scrub, dunes	Not detected. Nearest known location is a 2010 CNDDB point approximately 10 miles (16 kilometers) northwest of the BSA near Plaster City, CA (CDFW 2013). No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Ribbed Cryptantha <i>Cryptantha</i> <i>costata</i>	CRPR 4.3	Desert dunes, quite specific to loose drifting sand <1,625 feet (495 meters)	Not detected. No known locations from the vicinity. No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Winged Cryptantha <i>Cryptantha</i> <i>holoptera</i>	CRPR 4.3	Sonoran desert scrub, primarily on rocky slopes <5500 feet (1676 meters)	Not detected. No known locations from the vicinity. No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500- foot Buffer of the BSA <sup>2</sup>
Wolf's Cholla Cylindropuntia wolfii	CRPR 4.3	Alluvial fans and rocky slope in Sonoran desert scrub	Not detected. Nearest known location is from 2010 surveys for 8minutenergy solar projects approximately 5 miles (8 kilometers) to the west in native desert habitat (RECON 2011). No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Annual Rock- Nettle <i>Eucnide</i> <i>rupestris</i>	CRPR 2B.2	Creosote bush scrub	Not detected. No known locations from the vicinity. No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Utah Vine Milkweed <i>Funastrum</i> <i>utahense</i>	CRPR 4.2	Mojave or Sonoran Desert, dry sandy or gravely areas <3,280 feet (1,000 meters)	Not detected. No known locations from the vicinity. No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Baja California Ipomopsis Ipomopsis effusa	CRPR 2B.1	Creosote bush scrub, alluvial fans	Not detected. Nearest known location is a 2004 CNDDB point approximately 8 miles (13 kilometers) west of the BSA (CDFW 2013). No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Brown Turbans <i>Malperia tenuis</i>	CRPR 2B.3	Sonoran desert scrub; sandy areas and rocky slopes; <1,640 feet (500 meters)	Not detected. Nearest known location is a 1992 CNDDB point approximately 8 miles (13 kilometers) west of the BSA (CDFW 2013). No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Thurber's Pilostyles <i>Pilostyles</i> <i>thurberi</i>	CRPR 4.3	Creosote bush scrub, sandy alluvial plains	Not detected. Nearest known location is from 2010 surveys for 8minutenergy solar projects approximately 5 miles (8 kilometers) to the west in native desert habitat (RECON 2011). No suitable habitat present in BSA or buffer. Not expected to occur in BSA or buffer.	Not Expected	Not Expected
Parish's Desert Thorn <i>Lycium parishii</i>	CRPR 2B.3	Sonoran desert scrub. sandy–rocky slopes and canyons; <3,281 feet (<1000 meters)	Not detected. Nearest known location is from 2010 surveys for 8minutenergy solar projects approximately 5 miles (8 kilometers) to the west in native desert habitat (CDFW 2013; RECON 2011). Low potential to occur in CUP area 13-0047 and portions of parcels along the New River due to the presence of sandy or rocky areas along the edge of the New River.	Low	Low

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500- foot Buffer of the BSA <sup>2</sup>
Chaparral Sand Verbena <i>Abronia villosa</i> var. <i>aurita</i>	CRPR 1B.1	Chaparral, coastal scrub, desert dunes.	Not detected. Nearest known location is a historical (1949) CNDDB point approximately 5 miles (8 kilometers) away in Calexico, CA (CDFW 2013). Low potential to occur in CUP area 13-0047 and portions of parcels along the New River due to the presence of sandy or rocky areas along the edge of the New River.	Low	Low
Abram's Spurge Chamaesyce abramsiana	CRPR 2B.2	Mojavean desert scrub and Sonoran desert scrub within sandy areas. <656 feet (<200 meters)	Not detected. Nearest known location is a historical (1904) CNDDB point approximately 4 miles (6 kilometers) away in Heber, CA (CDFW 2013). Low potential to occur in CUP area 13-0047 and portions of parcels along the New River due to the presence of sandy or rocky areas along the edge of the New River.	Low	Low
Gravel Milk- Vetch Astragalus sabulonum	CRPR 2B.2	Desert dunes, Mojavean desert scrub, Sonoran desert scrub, usually sandy sometimes gravelly, flats, washes, and roadsides.	Not detected. Nearest known location is a historical (1902) CNDDB point approximately 5 miles (8 kilometers) away in Calexico, CA (CDFW 2013). Low potential to occur in CUP area 13-0047 and portions of parcels along the New River due to the presence of sandy or rocky areas along the edge of the New River.	Low	Low
Mud Nama Nama stenocarpum	CRPR 2B.2	Marshes and swamps; riparian, lake-margins, streambanks, edges	Not detected. Nearest known location is a historical (1902) CNDDB point approximately 5 miles (8 kilometers) northwest of the BSA (CDFW 2013). Low potential to occur in CUP area 13-0047 and portions of parcels along the New River due to the presence of sandy or rocky areas along the edge of the New River.	Low	Low
Hairy Stickleaf Mentzelia hirsutissima	CRPR 2B.3	Creosote bush scrub; washes, fans, and slopes; <1,969 feet (<600 meters)	Not detected. Nearest known location is a historical (1961) CNDDB point on the edge of the BSA at the intersection of Brockman Rd and Preston Rd (CDFW 2013). Low potential to occur in CUP area 13-0047 and portions of parcels along the New River due to the presence of sandy or rocky areas along the edge of the New River.	Low	Low
Sand Food Pholisma sonorae	CRPR 1B.2	dunes;<656 feet (<200 meters)	Not detected. Nearest known location is a historical (1915) CNDDB point approximately 10 miles (16 kilometers) northeast of the BSA (CDFW 2013). Low potential to occur in CUP area 13-0047 and portions of parcels along the New River due to the presence of sandy or rocky areas along the edge of the New River.	Low	Low

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500- foot Buffer of the BSA <sup>2</sup>
California Satintail <i>Imperata</i> brevifolia	CRPR 2B.1	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps, riparian scrub.	Not detected. Nearest known location is a historical (1963) CNDDB point approximately 0.25 mile (0.4 kilometer) from east side of the BSA (CDFW 2013). If present, this species would have been observable during vegetation mapping. Suitable habitat for this species occurs within the drains and/or canals that traverse the BSA.	Moderate	Moderate

<sup>1</sup> Sensitivity Status Key

<u>CRPR</u> California Rare Plant Rank:

1B: Considered rare, threatened, or endangered in California and elsewhere

2B: Plants rare, threatened, or endangered in California, but more common elsewhere

3: Plants for which we need more information - review list

4: Plants of limited distribution a watch list

Decimal notations: .1 - Seriously endangered in California, .2 - Fairly endangered in California, .3 - Not very endangered in California

<sup>2</sup> Species Potential for Occurrence

Not Expected – Species not detected during Project surveys and not expected to occur

Low Potential – Species not detected during Project surveys, but has low potential to occur because suitable habitat present, but of marginal quality

Moderate Potential - Species not detected during Project surveys, but has moderate potential to occur because suitable habitat present

High Potential – Species not detected during Project surveys, but has high potential to occur because suitable habitat present, and species known to occur within the vicinity

Present – Species detected during Project surveys

#### 3.4.3 Other Special-Status Plant Species

Other special-status plant species include those species not protected under the ESA or CESA but identified by CNPS's CRPR System. Eight nonlisted special-status plant species were evaluated for potential occurrence within the BSA based on habitat conditions and regional proximity (Table 6).

During field surveys within the BSA, excluding CUP area 13-0047 and portions of parcels along the New River, one species, California satintail, was determined to have potential to occur within the BSA based on regional occurrence data and habitat analysis. This species was not detected during vegetation mapping of the BSA. Rare plant surveys were not conducted for this species because, if present, this conspicuous perennial, rhizomatous grass would have been observed during the rare plant habitat assessment and/or vegetation mapping.

CUP area 13-0047 and portions of parcels along the New River were added to the BSA subsequent to the completion of the field rare plant assessment. Based on desktop analysis, Parish's desert thorn (*Lycium parishii*), chaparral sand verbena (*Abronia villosa var. aurita*), Abram's spurge (*Chamaesyce abramsiana*), gravel milk-vetch (*Astragalus sabulonum*), mud nama (*Nama stenocarpum*), hairy stickleaf (*Mentzelia hirsutissima*), sand food (*Pholisma sonorae*), and California satintail may have some potential to occur in these areas due to the presence of sandy or rocky areas along the edge of the New River. An on-site rare plant habitat assessment would be required to determine if focused rare plant surveys are necessary for these species. Section 5.2.2 describes measures that will be taken to determine and complete focused rare plant survey requirements prior to construction in area with potential habitat.

### 3.5 WILDLIFE SPECIES

This section discusses wildlife species detected, with potential to occur within the BSA, or known from the vicinity of the BSA. A total of 88 wildlife species were detected during the habitat assessment and protocol BUOW surveys (Appendix B). This included five reptile and amphibian species, 72 avian species, and nine mammal species. Commonly observed reptiles included the desert spiny lizard (*Sceloporus magister*) and side-blotched lizard (*Uta stansburiana*). Commonly observed avian species included red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), black phoebe (*Sayornis nigricans*), common yellowthroat (*Geothlypis trichas*), mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferus*), and long-billed curlew (*Numenius americanus*). Commonly observed mammal species included desert cottontail (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), and round-tailed ground squirrel (*Spermophilus tereticaudus*). A complete list of all wildlife species detected during wildlife surveys is included as Appendix F.

Of these species, 10 special-status wildlife species (see Chapter 2) were observed (or definitive sign detected) within the BSA:

- Willow flycatcher (*Empidonax traillii*) CESA: Endangered
- Northern harrier (Circus cyaneus) CDFW: Species of Special Concern
- Western burrowing owl (Athene cunicularia hypugaea) CDFW: Species of Special Concern

- American peregrine falcon (Falco peregrinus anatum) CDFW: Fully Protected Species
- Merlin (Falco columbarius) CDFW: Watch List
- Prairie falcon (Falco mexicanus) CDFW: Watch List
- Yellow-headed blackbird (Xanthocephalus xanthocephalus) CDFW: Species of Special Concern
- Loggerhead shrike (Lanius Iudovicianus) CDFW: Species of Special Concern
- White-faced ibis (*Plegadis chihi*) CDFW: Watch List
- American badger (*Taxidea taxus*) CDFW: Species of Special Concern

Special-status wildlife species evaluated based on the 6-quad CNDDB search and pre-field investigations are summarized in Table 7. A discussion of the special-status wildlife species detected within the BSA or buffer is included the following sections.

With the exception of BUOW, no special-status wildlife species were detected within the Mount Signal Solar gen-tie line corridor (RECON 2011). The Mount Signal Solar Project has completed construction of their gen-tie line. The Mount Signal Solar gen-tie line corridor is disturbed from installation of the gen-tie line and associated access roads. IID canals and/or drains and agriculture fields remain in the areas adjacent to the corridor. In addition, the Mount Signal Solar gen-tie line corridor is nearly completely enclosed by solar panel fields or directly adjacent to solar panel fields operating or under construction. With the exception of BUOW, white-faced ibis (*Plegadis chini*), and American badger (*Taxidea taxus*), none of the above listed special-status wildlife species are expected to breed or winter within the Mount Signal Solar gen-tie line corridor. The season of concern for white-faced ibis is nesting (i.e., breeding season). There is only potential for white-faced ibis to winter in the Mount Signal Solar gen-tie line corridor is discussed further in the text. The potential for BUOW to occur within the Mount Signal Solar gen-tie line corridor is discussed in Section 3.5.3.1. The potential for other special-status species to occur in this corridor is not discussed further in this section.

#### 3.5.1 Federally Listed Wildlife Species

Federally listed wildlife species include those species listed or proposed for listing (including candidate species) as threatened or endangered per Section 4 of the ESA. Based on site-specific surveys conducted by AECOM and literature review, including a CNDDB records search, it was determined that one federally listed wildlife species, the southwestern willow flycatcher (*Empidonax traillii extimus*), has high potential to occur as a migrant within the BSA, but is not expected to breed within the BSA. The Yuma clapper rail (*Rallus longirostris yumanensis*) has potential to occur near mapped open water along the edge of the New River adjacent to the BSA and/or within the BSA. No other federally listed wildlife species are expected to occur within the BSA.

#### 3.5.1.1 Southwestern Willow Flycatcher

#### Species Background

Southwestern willow flycatcher, a subspecies of willow flycatcher (*Empidonax trailli*), was listed as endangered on February 27, 1995 (60 Federal Register [FR] 10695–10715). The southwestern willow flycatcher (one of three subspecies of willow flycatcher occurring in California) is federally listed as endangered under the ESA. Final critical habitat was designated on October 19, 2005 (70 FR 60886–

61009), although revised critical habitat for the species is proposed (76 FR 50542–50629). Critical habitat for this species does not occur within the BSA or immediate vicinity. A recovery plan for southwestern willow flycatcher was published in August 2002 (USFWS 2002).

Southwestern willow flycatcher nests in dense patches of riparian forest interspersed with small open areas and open water. Many plant species are used for nesting, including willow (*Salix* spp.), cottonwood (*Populus* spp.), coyote brush (*Baccharis* spp.), and tamarisk (*Tamarix ramosissima*), but nest sites must have dense canopies reaching all or much of the way to the ground. The majority of nests are in willows with nest height varying from 14 inches to 62 feet (36 centimeters to 19 meters) (Unitt 2004). Southwestern willow flycatchers forage by perching at the top or edge of the canopy and either catching insects in the air or gleaning them from foliage.

Southwestern willow flycatcher winters in South and Central America, arriving in North American breeding grounds as early as May. Depending on individual characteristics of the site, they may not leave breeding sites until September (USFWS 2002). Several subspecies of willow flycatcher migrate through southern California, with the most common migrant being little willow flycatcher (*E. t. brewsteri*) (Unitt 2004). The little willow flycatcher is a state endangered species that breeds in northern California (Zeiner et al. 1990) It is virtually impossible to differentiate between subspecies of willow flycatcher during migration.

In California, southwestern willow flycatchers breed from the U.S./Mexico border north to Independence in the Owens Valley, the South Fork Kern River, and the Santa Ynez River in Santa Barbara County (Craig and Williams 1998). Breeding populations in southern California currently remain small, isolated, and disjunct (Rourke et al. 2004).

#### Habitat and Occurrence in the Biological Study Area and Vicinity

A nonvocal flycatcher exhibiting characteristics consistent with those of willow flycatcher was seen perching and foraging on May 7, 2010, within an IID drain ROW in the BSA, during a focused protocol BUOW survey (Figure 8). It is unknown if this nonvocal flycatcher was a southwestern willow flycatcher. Willow flycatcher subspecies cannot be identified in the field without vocalization. However, all subspecies of willow flycatcher are state-listed as endangered under the CESA. No willow flycatcher breeding habitat occurs within the BSA or the buffer nor and thus the unknown subspecies detected during surveys was likely a migrant passing through the BSA. Additionally, there is no evidence that the southwestern willow flycatcher has ever nested in the Imperial Valley (Patten et al. 2003). Suitable willow flycatcher migration stopover habitat, including drains and canals, arrow weed scrub, and tamarisk scrub, occurs within IID ROWS and along Greeson Wash and the New River.

#### 3.5.1.2 Yuma Clapper Rail

#### Species Background

Yuma clapper rail was listed as endangered by the ESA on March 11, 1967 (32 FR 4001). It is also listed as threatened under the CESA, and is fully protected by CDFW. The Yuma clapper rail is one of three clapper rail subspecies listed as endangered by the ESA. No critical habitat is designated for the

Table 7 Special-Status Wildlife Species Potentially Occurring within the Biological Study Area and/or Known from the Vicinity

	T				1
Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings <sup>2</sup>	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500-foot Buffer of the BSA <sup>2</sup>
Amphibians		·			
Lowland Leopard Frog ( <i>Lithobates yavapaiensis</i> )	CDFW: Species of Special Concern	Permanent water associated with small streams and rivers, springs marshes, and shallow ponds. Abundant aquatic vegetation.	Not detected. Nearest known location is a historical (1909) CNDDB point approximately 8 miles (13 kilometers) northwest of the BSA (CDFW 2013). Suitable habitat is present, but it is not expected to occur within the BSA or buffer due to disturbance from agriculture. Currently not known to inhabit the Imperial Valley (CH2MHILL 2002).	Not Expected	Not Expected
Sonoran desert toad (Incilius alvarius)	CDFW: Species of Special Concern	Inhabits grasslands, arid desert lowlands, mountain canyons with oaks and sycamores, and pinyon-oak-juniper mountain forests. Found in washes, river bottoms, springs, reservoirs, canals, irrigation ditches, streams, temporary pools, and away from water.	Not detected. Nearest known location is a historical (1912) CNDDB point approximately 10 miles (16 kilometers) northeast of the BSA near Holtville, CA (CDFW 2013). Formerly found in irrigated lowlands of the southern Imperial Valley, but possibly extirpated (CDFW 2013).	Not Expected	Not Expected
Reptiles					
Flat-Tailed Horned Lizard ( <i>Phrynosoma mcallii</i> )	CDFW: Species of Special Concern	Found in desert habitat, often associated with sand flats and sand dunes, but also found on concreted silt and gravel substrates (Beauchamp et al. 1998; Muth and Fisher 1992).	Not detected. No suitable habitat for this species exists within the BSA or buffer. Historical (1934) CNDDB point approximately 0.7 mile (1.1 kilometers) west of the BSA (CDFW 2013). Point is presumed extirpated, current population exists 4 miles to the west in Yuha desert.	Not Expected	Not Expected
Colorado Desert Fringe-toed Lizard ( <i>Uma notata</i> )	CDFW: Species of Special Concern	Arid habitat with sparse vegetation. A key component of suitable habitat is fine, uncompacted, wind-blown sand. Can occupy barren, shifting dunes but often needs vegetated areas, which are important for forage and escape cover (Rorabaugh 2009).	Not detected. No suitable habitat for this species exists within the BSA or buffer. The nearest known location is a 2004 CNNDB observation approximately 7 miles (11 kilometers) to the west in the Yuha desert (CDFW 2013).	Not Expected	Not Expected
Birds					•
Cooper's Hawk ( <i>Accipiter cooperii</i> )	CDFW: Watch List (nesting)	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas.	Not detected. No known locations in the vicinity of the BSA. Does not nest within the Imperial Valley. Migrant and winter visitor to Imperial Valley (Patten et al. 2003). Margin quality winter forage habitat occurs in Greeson Wash due to sparse vegetation. Winter forage habitat within the New River is more abundant and provides moderate potential for the species to occur.	Low (nonbreeding)	Moderate (nonbreeding)
Sharp-Shinned Hawk (Accipiter striatus)	CDFW: Species of Special Concern (nesting)	Breeds in dense forests preferring closed a closed canopy. Prefers forest habitats but may migrate through open habitats and hunt along forests edges (Stokes and Stokes 2010).	Not detected. Does not nest within the Imperial Valley. High potential to forage in Imperial Valley and BSA during winter or migration due to the presence of agriculture. No known locations in the vicinity of the BSA.	High (nonbreeding)	High (nonbreeding)
Golden Eagle ( <i>Aquila chrysaetos</i> )	CDFW: Species of Special Concern; Fully Protected (nesting and wintering) Bald and Golden Eagle Protection Act	Found in open and semiopen areas with native vegetation. Nests on cliffs and steep areas in grassland, chaparral, shrubland, forest, and other vegetated areas.	Not detected. No cliff nesting habitat within 10 miles (16 kilometers) of the BSA. Nearest known nesting habitat is in the east Coyote Mountains approximately 20 miles northwest of BSA (Ocotillo Express 2012). No known locations in the vicinity of the BSA. It is not expected to forage within the BSA or buffer due to the long distance from nesting habitat.	Not Expected	Not Expected
Short-Eared Owl ( <i>Asio flammeus</i> )	CDFW: Species of Special Concern (nesting)	Prefers open grasslands, agricultural areas, prairie, meadows, tundra, marshes, savanna, and open woodland. Roosts on the ground or in low trees or bushes. Nest is scraped out depression on the ground.	Not detected. Does not typically nest within the Imperial Valley. No known locations in the vicinity of the BSA. Suitable habitat is present, but this species is a rare winter visitor to the Salton Sea region of the Imperial Valley (USFWS 1997; Patten et al. 2003).	Low (nonbreeding)	Low (nonbreeding)
Long-Eared Owl ( <i>Asio otus</i> )	CDFW: Species of Special Concern (nesting)	Roosts in dense vegetation in temperate forests during the day, and hunts in open grassland, shrubland, or open forests during the day. Nests in trees, often coniferous trees.	Not detected. Does not typically nest within the Imperial Valley. Rare winter visitor to the Salton Sea (USFWS 1997; Patten et al. 2003). No known locations in the vicinity of the BSA. Suitable habitat is present and although a rare winter visitor, it has been historically documented along the New River near Westmorland, CA (USFWS 1997; Patten et al. 2003).	Moderate (nonbreeding)	Moderate (nonbreeding)

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings <sup>2</sup>	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500-foot Buffer of the BSA <sup>2</sup>
Western Burrowing Owl ( <i>Athene cunicularia hypugaea</i> )	CDFW: Species of Special Concern (burrow sites and some wintering sites)	BUOWs in California are found in habitat with sparse, low-growing vegetation (Haug et al. 1993) in habitat types such as grassland, desert, agricultural areas, vacant lots, and pastures (Gervais et al. 2008). Existing burrows is a habitat requirement for this species for nesting and for cover in periods outside the nesting season (CDFW 2012).	Approximately 148 occupied burrows were detected within the BSA and buffer. Nesting habitat present along roads, canals, and drains. Agriculture fields provide suitable foraging habitat.	Present (breeding)	Present (breeding)
Swainson's Hawk ( <i>Buteo swainsoni</i> )	CESA: Threatened (Nesting)	Nesting habitat consists of open habitats with trees, either isolated, scattered, or in windrows. Prairies, open land, agricultural fields (Stokes and Stokes 2010).	Not detected. No known locations in the vicinity of the BSA. Does not nest within the Imperial Valley and a rare transient/winter visitor (Patten et al. 2003). It has low potential to forage in BSA and buffer as well as the Imperial Valley during the spring and fall migration.	Low (nonbreeding)	Low (nonbreeding)
Ferruginous Hawk ( <i>Buteo regalis</i> )	CDFW: Watch List (wintering)	Open country, primarily plains, prairies, badlands, sagebrush, shrubland, desert. Also uses agricultural lands in winter for foraging in California (Zeiner et al. 1990).	Not detected. Nearest known location is a 2003 CNDDB occurrence approximately 10 miles (16 kilometers) northeast of the BSA. Low potential to occur in the BSA and buffer as this species is only a rare winter visitor to Imperial Valley (Patten et al. 2003).	Low (nonbreeding)	Low (nonbreeding)
Mountain Plover ( <i>Charadrius montanus</i> )	CDFW: Species of Special Concern (wintering)	Winters in California, but does not breed here. Winters primarily in plowed fields, heavily grazed annual grasslands, or burned fields (Knopf 1996; USFWS 1999).	Not detected. Does not nest within the Imperial Valley. Imperial Valley supports largest wintering population of mountain plover known anywhere (Shuford et al. 1999). Approximately 30–38 percent of the world population of the species winters in the Imperial Valley (Shuford et al. 2000). Flooded agriculture fields within the BSA and buffer provide foraging habitat for this species.	High (nonbreeding)	High (nonbreeding)
Northern Harrier ( <i>Circus cyaneus</i> )	CDFW: Species of Special Concern (nesting)	Open fields, grasslands, prairies, marshes (Stokes and Stokes 2010).	Present. Common winter visitor to Imperial Valley; nonbreeders may remain throughout the summer. Forages and roosts in agricultural areas (Patten et al. 2003). Detected during Project surveys and known to occur in the Imperial Valley in spring and summer (eBird 2014). Fallow fields provide possible breeding habitat for this species.	Present (possible breeding)	Present (possible breeding)
Sonoran Yellow Warbler ( <i>Dendroica petechia</i> <i>sonorana</i> )	CDFW: Species of Special Concern (nesting)	Breeds in riparian woodland, also tamarisk. Some breeding pairs have been observed in native and restored cottonwood and willow habitats and sometimes in tamarisk (Heath 2006).	Not detected. Winters in Imperial Valley, nonbreeding (Small 1994). Recent (2010) known locations occur within mesquite habitat found along Westside Main Canal approximately 2 miles (3 kilometers) west of the BSA (RECON 2011). Historical (1921) CNDDB points are also located approximately 5 miles (8 kilometers) away in Calexico, CA (CDFW 2013). Minimal riparian habitat occurs within the BSA. Winter forage habitat occurs in Greeson Wash and New River. There is a high potential for this species to occur in the New River due to the more abundant winter forage habitat.	Low (nonbreeding)	High (nonbreeding)
Southwestern Willow Flycatcher ( <i>Empidonax trailii extimus</i> )	ESA: Endangered; CESA: Endangered (nesting)	Breeds in dense riparian habitat near surface water or saturated soil. Migration flyways include major river corridors and their tributaries such as the Gila River, Rio Grande River, and the lower Colorado River (USFWS 2005a).	Not detected. No known locations in the vicinity of the BSA. One migrant willow flycatcher (unknown subspecies) was detected during surveys. Considered uncommon spring and common fall migrant in Imperial Valley (USFWS 1997). The presence of migrant willow flycatcher indicate that this species has high potential to stopover in riparian habitat within the BSA and buffer.	High (nonbreeding)	High (nonbreeding)
Merlin ( <i>Falco columbarius</i> )	CDFW: Watch List (wintering)	Breeds in open woodlands wintering in a variety of habitats including more open areas like grasslands and coastlines.	Present. Detected during Project surveys. Rare winter visitor to the Imperial Valley where it is most frequent along the immediate shore of the Salton Sea and along the borders of fallow or weedy fields (Patten et al. 2003). Does not nest in the BSA.	Present (nonbreeding)	Present (nonbreeding)
Prairie Falcon ( <i>Falco mexicanus</i> )	CDFW: Watch List (nesting)	Frequents open arid lands, expanding to agricultural lands in winter. Nests on bare ledges of cliffs.	Present. Detected during Project surveys Rare winter visitor to the Imperial Valley where it is most frequently found foraging in agricultural lands (Patten et al. 2003). Does not nest in the BSA.	Present (nonbreeding)	Present (nonbreeding)
American Peregrine Falcon ( <i>Falco peregrinus anatum</i> )	ESA: Delisted CESA: Delisted CDFW: Fully Protected Species (nesting)	Frequents wetlands, agricultural lands, and other areas that attract large numbers of birds. Nests on bare ledges of cliffs or man-made structures.	Present. Detected during Project surveys. Rare perennial visitor to the Imperial Valley, most frequent along the shore of the Salton Sea in summer and in agricultural lands in winter (Patten et al. 2003). Does not nest in the BSA.	Present (nonbreeding)	Present (nonbreeding)

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings <sup>2</sup>	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500-foot Buffer of the BSA <sup>2</sup>
Greater Sandhill Crane ( <i>Grus canadensis tabida</i> )	CESA: Threatened, Fully Protected (nesting and wintering)	Prairies, fields, marshes.	Not detected. Regularly winters in the Imperial Valley in small numbers (IID 1994). Most roosting sites are to the southeast of Brawley, where birds return nightly (Patten et al. 2003). No known locations in the vicinity of the BSA. Flooded agriculture fields within the BSA and buffer provide foraging habitat for this species.	High (nonbreeding)	High (nonbreeding)
Yellow-Breasted Chat ( <i>Icteria virens</i> )	CDFW: Species of Special Concern (nesting)	Nests in dense riparian thickets and brushy tangles.	Not detected. Summer resident in the Imperial Valley Rare spring and fall migrant; rare breeder at Salton Sea (Patten et al. 2003). Nearest last known breeding locations are from the 1990s along the New River approximately 4 miles (6 kilometers) northwest of the BSA (Patten et al. 2003). Dense suitable riparian habitat does not occur within the BSA or buffer and it is not expected to occur.	Not Expected	Not Expected
Least Bittern ( <i>Ixobrychus exilis</i> )	CDFW: Species of Special Concern (nesting)	Freshwater and brackish marshes and breeds in low areas associated with large rivers, lakes, and estuaries (Gibbs et al. 1992). Less commonly found along irrigation and runoff ditches from agricultural areas (Corman 2005).	Not detected. Known to occur in the Imperial Valley. Recent (2010) known locations occur within cattail marsh habitat near the Westside Main Canal approximately 2 miles (3 kilometers) west of the BSA (RECON 2011). Moderate potential due to recent location in the vicinity and marginal suitable forage in the drains and canals in BSA. New River provides suitable breeding habitat.	Moderate (nonbreeding)	Moderate (breeding)
Loggerhead Shrike ( <i>Lanius ludovicianus</i> )	CDFW: Species of Special Concern (nesting)	Found in open areas; year-round resident within this area. Nests within dense bushes and trees.	Present. Detected during Project surveys Fairly common breeding resident in Imperial Valley, more numerous in winter. Forages in desert scrub and agricultural fields (Patten et al. 2003). Any trees/shrubs present provide breeding habitat.	Present (breeding)	Present (breeding)
California Black Rail ( <i>Laterallus jamaicensis</i> <i>coturniculus</i> )	CESA: Threatened, Fully Protected	Inhabits tidal marshes and freshwater marshes in the western U.S. and Mexico (Eddleman et al. 1994). Inhabits the drier areas of wetlands (Flores and Eddleman 1991); characterized by shallow and stable water levels along gently sloping shorelines with vegetation dominated by fine-stemmed bulrush ( <i>Scirpus</i> spp.), grasses (Repking and Ohmart 1977), or dense stands of three-square bulrush (Conway et al. 2002).	Not detected. Known to occur in the Imperial Valley. Nearest known location is a 2001 CNDDB occurrence approximately 7.5 miles (12 kilometers) northwest of the BSA along the New River (CDFW 2013). This species is also known to historically occur along the All American Canal near Calexico, CA, approximately 5 miles (8 kilometers) to the east of the BSA (Patten et al. 2003). Suitable marsh habitat was not observed within the BSA. New River contains marginal quality marsh habitat in buffer	Not Expected	Low (breeding)
Gila Woodpecker ( <i>Melanerpes uropygialis</i> )	CESA: Endangered	In Imperial Valley, known to nest in palm (especially Mexican fan palm), eucalyptus, Fremont cottonwoods, figs, Athel tamarisk, sycamores, and mulberry trees in urban areas (Bradley 2005; Rosenberg et al. 1991; Patten et al. 2003).	Not detected. No suitable breeding habitat within the BSA. Buffer contains palms and eucalyptus that are suitable for nesting. This species is known to breed at Sunbeam Lake approximately 5 miles (8 kilometers) north of the BSA. Known to be a locally common breeding resident in the Imperial Valley, particularly at Brawley and El Centro. Sometimes will nest on utility poles (Patten et al. 2003).	Not Expected	Moderate (breeding)
White-Faced Ibis ( <i>Plegadis chihi</i> )	CDFW: Watch List (Nesting Colony)	Nests mainly in tall stands of cattail and emergent snags in wetlands. Forages in agricultural lands, primarily in flooded fields.	Present. Detected during Project surveys Common perennial visitor to the Imperial Valley with largest numbers present in winter. Known to breed locally in the Imperial Valley at Finney and Ramer Lakes and near the shore of the Salton Sea (Patten et al. 2003). Does not nest in the BSA.	Present (Nonbreeding)	Present (Nonbreeding)
Vermilion Flycatcher ( <i>Pyrocephalus rubinus</i> )	CDFW: Species of Special Concern (nesting)	Open farmlands, grasslands with shrubs, often near water (Stokes and Stokes 2010). Will use cottonwood-willow woodland, oaks, mesquites, and sycamores, but will also inhabit golf courses, residential areas, and parks (Garrett and Dunn 1981), with surface water and pastureland frequently nearby (Rosenberg et al. 1991). Also breeds in mesquite bosques where honey mesquite is the dominant tree species.	Not detected. A historical (1909) CNDDB location occurs approximately 3 miles (5 kilometers) to the north of the BSA (CDFW 2013). Although suitable habitat occurs within the BSA and buffer, this species is known to be a rare winter visitor and rare breeder in the Imperial Valley (Patten et al. 2003). Thus, this species has low potential to occur within the BSA and buffer	Low (breeding)	Low (breeding)

					F
Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings <sup>2</sup>	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500-foot Buffer of the BSA <sup>2</sup>
Yuma Clapper Rail ( <i>Rallus longirostris</i> <i>yumanensis</i> )	ESA: Endangered; CESA: Threatened, CDFW: Fully Protected	Found in freshwater marshes habitats dominated by emergent plants, including southern cattail, and bullwhip/California bulrush, three-square bulrush and sedges (Todd 1986) in the southwestern U.S. and northern Mexico (Eddleman and Conway 1998). Also known to breed in willows, arrow weed, and salt cedar-dominated habitat.	Not detected. Marginal marsh habitat in CUP 13-0047, 13-0046, and 13- 0045. Marginal marsh habitat also occurs in the New River in the buffer. The nearest known location is a 2007 CNDDB occurrence approximately 4.5 miles (7 kilometers) northwest of the BSA in Fig Lagoon along the New River (CDFW 2013).Significant populations are found in marshes at the south end of the Salton Sea in the Imperial Valley (Eddleman and Conway 1998; USFWS 2005b).	Moderate (breeding)	Moderate (breeding)
Crissal Thrasher ( <i>Toxostoma crissale</i> )	CDFW: Species of Special Concern	Found in arid areas associated with desert washes, riparian brush, and mesquite thickets (dense, low scrubby vegetation) at lower elevations and dense scrub in arroyos at higher elevations. Prefers desert riparian and wash habitats, typically only if sufficient mesquite and ground cover, sometimes found in ironwood (Patten et al. 2003).	Not detected. The nearest known location is a 2010 occurrence in mesquite habitat found along Westside Main Canal approximately 2 miles (3 kilometers) west of the BSA (RECON 2011). Uncommon breeding resident in Imperial Valley Salton Sink. No suitable habitat is present within the BSA. Suitable habitat is present in the New River within buffer.	Not Expected	Moderate (breeding)
Le Conte's thrasher ( <i>Toxostoma lecontei</i> )	CDFW: Species of Special Concern	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats	Not detected. Nearest known location is a historic (1933) CNDDB point approximately 10 miles (16 kilometers) northwest of the BSA near Plaster City, CA (CDFW 2013). Casual postbreeding visitor to Imperial Valley Salton Sink (Patten et al. 2003). No suitable habitat is present within the BSA or buffer.	Not Expected	Not Expected
Least Bell's Vireo (Vireo bellii pusillus)	ESA: Threatened; CESA: Endangered (nesting)	Found in riparian woodland habitats. Riparian vegetation may include cottonwoods; oak woodlands with a dense understory of species such as willow, mulefat, and California wild rose; and in desert areas with arrow weed and wild grape as dominant species.	Not detected. No suitable habitat is present within the BSA or buffer. This species rarely occurs in the Imperial Valley (Patten et al. 2003). No known locations in the vicinity of the BSA.	Not Expected	Not Expected
Yellow-Headed Blackbird (Xanthocephalus xanthocephalus)	CDFW: Species of Special Concern (nesting)	Requires freshwater marshes or ponds with dense cattail for breeding; generally avoids ditches or plants other than cattail; forages in agricultural fields, often partly flooded ones (Patten et al. 2003).	Present. Detected during Project surveys Suitable foraging habitat present in BSA. Nesting habitat is located in the New River within the buffer. Fairly common breeder in the Salton Sea, confined to marshes of Salton Sink (Patten et al. 2003).	Present (nonbreeding)	Present (breeding)
Mammals					
Pallid Bat ( <i>Antrozous pallidus</i> )	CDFW: Species of Special Concern	Arid and semi-arid locations; roosts in caves, abandoned mines, desert outcrops; gregarious.	Not detected. No suitable roosting or nesting habitat present within the BSA or buffer. No known locations in the vicinity of the BSA.	Not Expected	Not Expected
Western Mastiff Bat ( <i>Eumops perotis californicus</i> )	CDFW: Species of Special Concern	Tends to be colonial; roosts in high cliffs with long drops (at least 20 feet [6 meters] but prefers up to 100 feet [30 meters]); forages long distances from roost site (greater than 60 miles [97 kilometers] is common); low-density populations, locally common; insectivorous; roost sites tend to be on public lands but species can forage in agricultural areas.	Not detected. No suitable roosting or nesting habitat present within the BSA or buffer. Agriculture fields provide moderate quality foraging habitat. The nearest known location is a 1996 CNDDB occurrence located approximately 5 miles (8 kilometers) away in Calexico, CA (CDFW 2013).	Moderate (nonbreeding)	Moderate (nonbreeding)
Western Yellow Bat ( <i>Lasiurus xanthinus</i> )	CDFW: Species of Special Concern	Highly adaptable species that occupies a wide range of habitats from arid areas to tropical forests. This bat can be found in woodlands, pasture or croplands, savannas, and residential areas. Most often found in trees, prefers to roost in thatch of palm trees but can also be found in other trees (such as coconut, mango, banana). Roosting is usually solitary. This bat does not hibernate (Wilson and Ruff 1999).	Not detected. Palm trees within the BSA and buffer provide moderate quality roost sites. The nearest CNDDB occurrence a historical point (1977) located approximately 2 miles (3 kilometers) north of the BSA (CDFW 2013). More recent (1999) locations are known from the vicinity of El Centro, CA, approximately 5 miles (8 kilometers) to the northeast (CDFW 2013).	Moderate (breeding)	Moderate (breeding)

Common Name Scientific Name	Sensitivity Status <sup>1</sup>	Habitat Requirements	Findings <sup>2</sup>	Potential for Occurrence within the BSA <sup>2</sup>	Potential for Occurrence within a 500-foot Buffer of the BSA <sup>2</sup>
Pocketed Free-Tailed Bat (Nyctinomops femorosaccus)	CDFW: Species of Special Concern	Desert habitat; roosts in rock crevices, but may not need high cliffs for roosting; colonial.	Not detected. No suitable roosting habitat within BSA or buffer. Agriculture fields provide moderate quality foraging habitat. The nearest known location is a 1996 CNDDB occurrence located approximately 5 miles (8 kilometers) away in Calexico, CA (CDFW 2013).	Moderate (nonbreeding)	Moderate (nonbreeding)
Big Free-Tailed Bat ( <i>Nyctinomops macrotis</i> )	CDFW: Species of Special Concern	Roosts in rocky tallis slope, cliff-like habitat, railroad tunnels; typically roosts in rocks, sometimes in buildings or holes in trees; gregarious.	Not detected. No suitable habitat occurs within the BSA or buffer. Nearest known location is 1987 CNDDB occurrence from the vicinity of El Centro, CA, approximately 5 miles (8 kilometers) to the northeast (CDFW 2013).	Not expected	Not expected
Townsend's big-eared bat (Corynorhinus townsendii)	CDFW: Species of Special Concern	Occurs throughout California in a wide variety of habitats, most commonly in mesic sites. Extremely sensitive to human disturbance	Not detected. Nearest known locations are along Colorado river and in Jacumba mountains over 30 miles (48 kilometers) away (CDFW 2013; Pierson and Rainey 1994). Suitable foraging habitat occurs within the BSA or buffer; however, this species is sensitive to disturbance from agriculture (Pierson and Rainey1994). Thus, the species is not expected to occur within the BSA or buffer.	Not expected	Not expected
Yuma Mountain Lion ( <i>Puma concolor browni</i> )	CDFW: Species of Special Concern	Uses a variety of habitats including desert scrub, chaparral, swamps, and forests but avoids agricultural areas, flat shrubless deserts, and other areas that lack topographic or vegetative cover (Wilson and Ruff 1999).	Not detected. Surveys for the 8minutenergy projects detected mountain lion scat approximately 6 miles (10 kilometers) northwest of the BSA (RECON 2011). The BSA does not contain suitable habitat and/or cover for this species.	Not expected	Not expected
Yuma Hispid Cotton Rat (Sigmodon hispidus eremicus)	CDFW: Species of Special Concern	Most common in grass-dominated habitat and grass height and density have been documented as important habitat components (Cameron and Spencer 1981). Agricultural crops such as cotton or corn are suitable.	Not detected. Suitable crops may be present depending on crop rotations. The closest known occurrence in the CNDDB is a location from 2008 within the Westside Main Canal approximately 3 miles (5 kilometers) to the west of the BSA (CDFW 2013).	Low	Moderate
American Badger ( <i>Taxidea taxus</i> )	CDFW: Species of Special Concern	Coastal sage scrub, mixed chaparral, grassland, oak woodland, chamise chaparral, mixed conifer, pinyon-juniper, desert scrub, desert wash, montane meadow, open areas, and sandy soils.	A burrow exhibiting signs of predation by a badger was observed adjacent to the BSA within the buffer. The closest known occurrence in the CNDDB is a historical location from 1911 approximately 2.5 miles (4 kilometers) to the north of the BSA (CDFW 2013).	High	Present
Desert Kit Fox ( <i>Vulpes macrotis arsipus</i> )	Calif. Code of Regulations: Protected Furbearing Mammal	Suitable habitat for this fossorial mammal consists of arid open areas, shrub grassland, and desert ecosystems. Desert kit foxes may be found in agricultural areas in Imperial County, with burrows mainly found at the edges of the active agriculture fields.	No desert kit fox or sign (burrows or scat) was observed during surveys. There is suitable habitat for this species within the BSA and buffer, but it is not adjacent to unfragmented desert habitat. The closest known location of this species is approximately 7.5 miles (12 kilometers) to the northwest of the BSA in desert habitat (ISEC West 2010).	Low	Low
Fishes					
Razorback Sucker ( <i>Xyrauchen texanus</i> )	ESA: Endangered; CESA: Endangered	Known to historically occur in the major rivers of the Colorado River Basin (Minckley et al. 1991). Individuals from this species are believed to inhabit the canal system in Imperial County, but the inhabitants are believed to be nonreproductive (Tyus 1991; Minckley et al. 1991) due to no recruitment of wild-spawned fish, likely due to predation by introduced fish (Tyus 1991).	Not detected. Known to occur in the All American Canal, but not believed to be reproductive (CH2MHILL 2002). Not known to occur within the small irrigation drains and canals present within the BSA or buffer.	Not expected (breeding)	Not expected (breeding)
<sup>1</sup> Sensitivity Status Key <u>Federal</u> Endangered Species Act	(ESA)	1		1	

 State
 California Department of Fish and Game (CDFW)

 California Endangered Species Act (CESA)

 <sup>2</sup> Species Potential for Occurrence

Not Expected – Species not detected during Project surveys and not expected to occur Low Potential – Species not detected during Project surveys, but has low potential to occur because suitable habitat present, but of marginal quality Moderate Potential – Species not detected during Project surveys, but has moderate potential to occur because suitable habitat present High Potential – Species not detected during Project surveys, but has high potential to occur because suitable habitat present High Potential – Species not detected during Project surveys, but has high potential to occur because suitable habitat present

Present – Species detected during Project surveys



Project Number: 60250473 Date: 3/12/2014

Project Name: Wistaria Solar Ranch Projection: NAD 83 CA State Plane Zone 6

Species Observations

Yuma clapper rail. A recovery plan for Yuma clapper rail was originally published in 1983 and draft revised version was released in February 2010 (USFWS 2009).

The Yuma clapper rail is unique among the clapper rails in being the only one that occupies freshwater marshes during the breeding seasons yet largely winters in brackish marshes south of the United States (Anderson and Ohmart 1985). In California, Yuma clapper rail is found along the lower Colorado River and at the Salton Sea (Anderson and Ohmart 1985, Bennett and Ohmart 1978). This subspecies breeds in heavily-vegetated fresh-water marshes with cover ranging from moderately dense stands of cattail (*Typha domingensis*) and bulrush (*Scirpus* spp.) with a mix of riparian tree and shrub species (*Salix exigua, S. gooddingii, Tamarix* sp., *Tessaria serica*, and *Baccaris* sp.) to dense, near monotypic stands of *Typha* (Anderson and Ohmart 1985, Bennett and Ohmart 1978, USFWS 2009). This subspecies is partially migratory, with many birds wintering in brackish marshes along the Gulf of California (Banks and Tomlinson 1974). 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).

#### Habitat and Occurrence in the Biological Study Area and Vicinity

This species was not detected during biological surveys; however, focused Yuma clapper rail surveys were not conducted for the Project. The only potentially suitable marsh habitat for Yuma clapper rail within the BSA occurs along the New River in the northeast corner (associated with CUP 13-0047, 13-0046, and 13-0045). This area was assessed via desktop analysis as it was added to the BSA after completion of focused biological surveys. There are no known locations of this species in the BSA and buffer. The nearest known location is a 2007 CNDDB occurrence approximately 4.5 miles (7 kilometers) northwest of the BSA in Fig Lagoon along the New River (CDFW 2013). Significant populations are found in marshes at the south end of the Salton Sea (Eddleman and Conway 1998; USFWS 2005b).

Small stands of cattail within the irrigation drains and canals are not dense enough to support Yuma clapper rail. Additionally, irrigation drains and canals are not protected from frequent human disturbance. Some cattail marsh habitat is present within the arrow weed scrub and tamarisk scrub along the edge of the New River, but it forms a very narrow border to the open water of the New River and is of marginal suitability for Yuma clapper rail. This habitat is generally outside and immediately adjacent to the eastern side of the BSA. Portions of the New River occur in the northeast corner of the BSA and intersect with CUP 13-0047, 13-0046, and 13-0045 (see open water in Figure 5). Given the connectivity to known occurrences in Fig Lagoon along the New River, it is considered to have a moderate potential to occur along the New River adjacent to the BSA and/or within the BSA near mapped open water.

#### 3.5.2 State-listed Wildlife Species

State-listed wildlife species include those species listed or candidates for listing as threatened or endangered under the CESA. One species listed under the CESA was observed within the BSA; the willow flycatcher. As discussed above, the observation was a nonvocal willow flycatcher and thus the subspecies could not be determined in the field. This observed individual was likely a migrant because no suitable breeding habitat occurs within the BSA or buffer.

Three other species listed under the CESA, Yuma clapper rail, Swainson's hawk (*Buteo swainsonii*) and greater sandhill crane (*Grus canadensis tabida*), have potential to occur within the BSA or buffer. Yuma clapper rail is discussed in Section 3.5.1.2 and is not further discussed in this section. Swainson's hawk, a California state threatened species, does not breed in the Imperial Valley and is a rare visitor to the Imperial Valley. There is low potential for this species to occur in the BSA and it is not addressed further in the text. The greater sandhill crane, a California state threatened species, has a high potential to winter in the BSA and is discussed in detail below.

#### 3.5.2.1 Greater Sandhill Crane

#### Species Background

The greater sandhill crane is a CDFW fully protected, state-listed threatened species within its breeding and wintering ranges. It roosts along river channels, on alluvial islands of braided rivers, and in natural basin wetlands, often feeding and resting in fields and agricultural lands. This species breeds in open grasslands, marshes, marshy edges of lakes, and ponds, and along river banks where it nests on open tundra or in the shallow waters of large marshes, bogs, fens, or wet forest meadows. The greater sandhill crane breeds throughout the southern regions of central and western Canada and the northern half of the central and western United States. The Great Lakes population winters in Florida; the rocky mountain population along the Rio Grande in New Mexico and into northern Chihuahua, Mexico; and the westernmost breeding populations in California, including the Central and Imperial Valleys.

#### Habitat and Occurrence in the Biological Study Area and Vicinity

This species was not detected during biological surveys; however, wintering avian surveys were not conducted for the Project. There are no known locations of this species in the vicinity of the BSA. The presence of agriculture fields within the BSA and buffer provide suitable wintering and foraging habitat for this species. This species regularly winters in the Imperial Valley in small numbers (IID 1994). Most roosting sites are to the southeast of Brawley, where birds return nightly (Patten et al. 2003). Given that this species is known to occur within the Imperial Valley, it is considered to have a high potential to occur within the BSA during the winter.

#### 3.5.3 Nonlisted Special-Status Wildlife Species

Nonlisted special-status wildlife species include those species not protected under the ESA or CESA but identified by CDFW as SSC, fully protected, or watch list species or covered as a state protected furbearing mammal. Nine nonlisted special-status wildlife species were detected within the BSA: BUOW, northern harrier, merlin, prairie falcon, peregrine falcon, loggerhead shrike, white-faced ibis, yellow-headed blackbird, and American badger (Figures 7 and 8). No other nonlisted special-status wildlife species were detected.

Sensitive avian species identified by CDFW are also identified by their season of concern (Shuford and Gardali 2008). For resident species, the season of concern is year-round, but for long distance migrants the season of concern is either wintering or nesting ((Shuford and Gardali 2008). During Project surveys, northern harrier, prairie falcon, peregrine falcon, and white-face ibis were detected in the BSA; however, the season of concern for these species is nesting (i.e., breeding) (Table 7). No

suitable breeding habitat occurs within the BSA nor are they known to nest in the Imperial Valley. All other remaining avian species evaluated in Table 7 are not expected to occur in the BSA during their season of concern or have a low potential to occur in their season of concern. These species are not discussed further in the text.

Both merlin and mountain plover (*Charadrius montanus*) have a high potential to occur within the BSA during winter, which is their season of concern (Table 7). In addition, BUOW, loggerhead shrike, and yellow-headed blackbird were detected within the BSA during their season of concern (Table 7), As such, these are the only avian species discussed in further detail in this document.

American badger and bats have moderate potential to occur in the BSA and are also discussed in detail below. Mammals not expected to occur in the BSA or with low potential to occur in the BSA are not discussed further in this document.

#### 3.5.3.1 Western Burrowing Owl

#### Species Background

BUOW is designated as an SSC by CDFW due to habitat loss and degradation from urbanization (Shuford and Gardali 2008). Suitable BUOW habitat consists of annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974; CBOC 1993; Haug et al. 1993). Suitable BUOW habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface (DeSante et al. 1996). Burrows are the essential component of BUOW habitat, and both natural and artificial burrows provide protection, shelter, and nests for BUOW. BUOW typically use burrows made by mammals such as kit foxes, ground squirrels, or badgers, but also may use human-made structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (Collins and Landry 1977; Trulio 1994).

The breeding season for BUOW in California is defined as February 1 through August 31 (Haug et al. 1993, Thomsen 1971). Geographic region and/or annual climatic conditions may cause some variation in the start or length of the breeding season (CDFW 2012). BUOW in California are generally nonmigratory and most abundant in the Central and Imperial Valleys, primarily in agricultural areas (Shuford and Gardali 2008). Although the BUOW population in the southern desert region is primarily resident (i.e., present year-round), some migration from northern populations to this area occurs during winter (Garrett and Dunn 1981). Seasonal population density seems to correlate with prey availability (Klute et al. 2003).

The Imperial Valley has approximately 70 percent of the California BUOW population, which is located primarily in active agricultural areas associated with human activities (Klute et al. 2003). In the Imperial Valley, BUOW have become tolerant of human activity due to the ongoing agricultural activities present within the valley. A large majority of occupied BUOW burrows are located adjacent to permanent water conveyance structures, such as IID canals/drains and private farmer field ditches.

The agroecosystem in the Imperial Valley supports a substantial orthoptera (i.e., grasshoppers and crickets) population on which BUOW forage (Rosenberg and Haley 2004). Male BUOW nocturnally forage primarily within 1,969 feet (600 meters) of their nest in the Imperial Valley (Rosenberg and

2009).

Haley 2004). It is estimated that approximately 40 percent of foraging occurs within 0 to 656 feet (0 to 200 meters), 20 percent of foraging occurs within 656 to 1,312 feet (200 to 400 meters), and 20 percent of foraging occurs within 1,312 to 1,969 feet (400 to 600 meters) of a nest (Rosenberg and Haley 2004). Nocturnal home ranges of male BUOW in the Imperial Valley are approximately 280 acres (113 hectares) around the nest site using a Minimum Convex Polygon estimator, and 111 acres (46 hectares) using a 95 percent Fixed Kernel Home Range estimator (Rosenberg and Haley 2004). Diurnal movements are limited to within 360 feet (110 meters) of the nest site and average diurnal home range size is approximately 0.8 acre (0.3 hectare) in the Imperial Valley (Bloom Biological

#### Habitat and Occurrence in the Biological Study Area and Vicinity

Suitable breeding habitat (i.e., suitable for burrows) is present within the areas adjacent to canals, drains, and dirt roads (Figure 7). Suitable BUOW burrows commonly consisted of round-tailed ground squirrel (*Xerospermophilus tereticaudus*) burrows and/or burrows created by water erosion associated with use of the irrigation canals and drains. The majority of the BSA and buffer contain suitable BUOW foraging habitat, which includes all vegetation types except developed habitat (approximately 3,249 acres [1,315 hectares]). Agricultural areas and the habitat along and within the canals/drains are likely the primary foraging areas. As noted previously, the agroecosystem in the Imperial Valley supports a substantial orthoptera (i.e., grasshoppers and crickets) population on which BUOW forage. Orthoptera remains were noted during examination of several BUOW pellets within the BSA. Additionally, observers noted dead bird, small mammal, and crayfish (*Procambarus clarkii*) remains at the entrances of several burrows.

Each survey provided a snapshot of burrowing owl activity in the BSA for a specific survey number within the approximately 11-week time period when the four surveys were conducted (Table 8). The number of BUOW individuals documented at occupied burrows varied between each survey (Table 9). During the daylight survey periods, most BUOW were present at burrow entrances, on perches adjacent to burrows, or peeking out from within burrows. Upon approach, BUOW would produce alarm calls and would either retreat to burrows, fly to satellite burrows, or fly into agricultural fields and hide within high vegetation. Very rarely was foraging observed and when observed, it was nearly always after sunset when surveys had been discontinued. Additionally, BUOW were sometimes detected at locations other than at burrows and individuals could not be associated with any particular burrow (Table 10). These individuals may have been passing through the BSA or were out foraging in areas far from their burrow.

Survey four coincided with the time period when hatchlings were large enough to explore outside the nest burrow and, consequently, many more juveniles were detected during this period. Additionally, the highest number of occupied burrows and adult BUOW were also detected in survey four (Tables 8 and 9). It is unclear if this was a result of more individuals standing outside the burrow since the incubation period was over or if the vehicle surveys allowed biologists to get closer to the burrows before individuals retreated to the burrow.

The final status in survey four, as described in Section 2.1.5, was used to determine the final number of occupied and active burrows present in the BSA (Table 11). A total of 148 burrows (or burrow clusters) were documented as occupied within the BSA at some point during the course of the four surveys (Table 11 and Figure 7). An additional 20 burrows were documented as active within the BSA during at least one of four surveys (Table 11 and Figure 7). Biologists also recorded 208 inactive suitable burrows within the BSA over the course of the four surveys (Table 11). Detailed data for burrows recorded during the four surveys are summarized in Appendix G.

## Table 8 Survey Status of Burrows Detected in the Biological Study Area and 500-foot Buffer of the BSA<sup>1</sup>

Survey Number	Occupied	Active	Inactive	Total <sup>2</sup>
1	79	39	101	219
2	94	53	168	325
3	83	43	236	362
4	106	37	233	376

Survey status refers to burrows that were classified as follows during a given survey visit:

Occupied – presence of owls directly at the burrow

Active – presence of fresh or recent sign

 Inactive – absence of fresh or recent sign or a burrow previously documented as suitable was documented as no longer suitable during a subsequent protocol survey due to erosion, a natural burrow collapse, or inadvertent damage from anthropogenic activities

<sup>2</sup> Ten burrows recorded during survey one could not be found during survey two; however, the status of these burrows was determined to be inactive during survey three.

## Table 9 Burrowing Owl Observations at Burrows in the Biological Study Area and 500-foot Buffer of the BSA

		Adul	ts				
Survey Number	Number of Singles	Number of Pairs	Number of Adult (pairs and individuals) <sup>1</sup>	Number of Juveniles	Number of Unknown Age	Total <sup>2</sup>	
1	29	50	129	0	0	129	
2	75	19	113	0	0	113	
3	61	22	105	1	0	106	
4	51	55	161	52	1	214	

<sup>1</sup> The number of adult owls is equal to the number of pairs of owls observed multiplied by two plus the number of single adult owls.

<sup>2</sup> The total is the number of adult owls, juveniles, and unknown summed together

Table 10
Number of Burrowing Owl Observations Not at Burrows in the
Biological Study Area and 500-foot Buffer of the BSA <sup>1</sup>

Survey Number	Number of Adults	Number of Juveniles
1	9	0
2	22	0
3	21	0
4	14	1

<sup>1</sup> BUOW observations not at burrows are detections of individual owls that could not be associated with a burrow.

## Table 11 Final Status of Burrows Detected in the Biological Study Area and 500-foot Buffer of the BSA<sup>1</sup>

Survey Number	Occupied	Active	Inactive	Total
1	81	37	101	219
2	127	35	163	325
3	138	27	197	362
4	148	20	208	376

<sup>1</sup> Final status refers to burrows that were classified as follows:

• Occupied – presence of owls directly at the burrow during any survey (i.e., 1, 2, 3, or 4)

- Active presence of fresh or recent sign during either the habitat assessment or any survey (i.e., 1, 2, 3, or 4) (no owls observed at the burrows)
- Inactive absence of fresh or recent sign during either the habitat assessment or Surveys 1 through 4 or a burrow previously documented as suitable during at least one of the four protocol surveys that was later documented as no longer suitable during a subsequent protocol survey due to erosion, a natural burrow collapse, or inadvertent damage from anthropogenic activities

The final status is a useful metric for counting the number of occupied burrows within the BSA for two reasons. First, during some surveys biologists may not have seen BUOW at burrows because BUOW were not outside their burrows or may have flushed before observers detected them and it may have taken multiple surveys to confirm a burrow was indeed occupied. Second, adult and young BUOW may occupy several non-nest (satellite) burrows (Desmond and Savidge 1999) and multiple surveys are sometimes necessary to document these additional burrows. The final status likely provides a conservative estimate of the number of occupied burrows because some previously occupied burrows may become unoccupied if nests were abandoned or if BUOW were predated.

In general, the areas with the highest BUOW densities consisted of multiple ditches and/or canals and dirt roads. Linear areas that consisted of a dirt road and a small earthen berm generally had low to no BUOW present. The number of BUOW territories in a given area has been shown to be influenced by the availability of burrows (Bloom Biological 2009; Bartok and Conway 2010). Higher BUOW density in some locations of the BSA versus others may be due to greater burrow availability in areas consisting of more complex habitat (i.e., multiple canals/drains/berms present) or a high density of burrowing mammals present. Additionally, IID management and maintenance practices avoid known

BUOW locations and reduce vegetation along canals and drains (CH2M HILL 2002), which may allow for greater burrow availability. Of the 148 burrows (or burrow clusters) documented as occupied within the BSA at some point during the course of the four surveys, approximately 84 (57 percent) were documented within IID ROWs (Figure 7).

As discussed in the methods (Section 2.1.5), no transect surveys were completed within CUP area 13-0047 due to the area being added to the proposed project after completion of surveys. A portion of the area was scanned for BUOW using binoculars, but none were detected. This area has a high potential for BUOW due to the presence of canals, drains, and dirt roads that could contain suitable burrows for nesting. Surveys would be required prior to the construction of facilities in this area.

Approximately 16 occupied burrows were detected by RECON and Barrett Biological during surveys conducted in 2010 and 2011 (RECON 2011) within portions of the Project's gen-tie facilities that would be shared with the Mount Signal Solar Project's existing structures. These areas are now developed but occupied burrows may be present along disturbed habitat or IID canals and/or drains that remain in these areas. It is unknown if the number of occupied burrows within the Mount Signal Solar Project's gen-tie corridor has changed during construction of the Mount Signal Solar gen-tie line and associated Mount Signal Solar Project.

#### 3.5.3.2 Loggerhead Shrike

#### Species Background

The loggerhead shrike is a CDFW SSC. This species inhabits open habitat types such as grasslands, fallow fields, pastures, farmland, and desert scrub. For foraging, it requires perches of tall enough stature to overlook hunting areas, such as tree snags, stumps, and fence posts. It also requires vegetation with thorns (or barbed-wire fences) for impaling prey. Prey includes invertebrates and small vertebrates, including small mammals, birds, and reptiles. While this species has been in steady decline throughout much of its range, beginning in the northeast in the 1930s and in the southeast and midwest by the 1960s, it was still fairly common in California as late as 1970. It showed declines in most of California beginning around 1968 (Sauer et al. 2005); however, in the southern California deserts, it has shown no marked decline (Shuford and Gardali 2008). Loggerhead shrikes remain on permanent territories throughout the year. Outside of the breeding season, males and females defend neighboring territories, which coalesce at the beginning of the nesting period.

#### Habitat and Occurrence in the Biological Study Area and Vicinity

Loggerhead shrike was observed twice during BUOW surveys. It was observed perching and foraging along the New River at the north end of the BSA and in Greeson Wash in the center of the BSA (Figure 8). Both of these areas contain suitable breeding habitat, but breeding was not observed in the BSA. Loggerhead shrike is a fairly common breeding resident of the Imperial Valley, becoming more common in winter. During the breeding season, this species is scarce in agricultural areas, but fairly common in desert scrub.

#### 3.5.3.3 Yellow-Headed Blackbird

#### Species Background

Yellow-headed blackbird is a CDFW SSC. This species inhabits freshwater marshes and ponds with dense cattail. It nests colonially and is more particular in its habitat requirements than the red-winged blackbird, generally avoiding ditches or plants other than cattail for nesting. It forages in agricultural areas, and is often found in flooded fields and at cattle feed lots. The yellow-headed blackbird once bred throughout most of California, but its numbers and range have been greatly reduced with the loss of marsh breeding habitat to drainage and conversion to agriculture. It currently occurs in California primarily as a migrant and summer resident with small numbers wintering in the Central Valley and Imperial and Colorado River Valleys.

#### Habitat and Occurrence in the Biological Study Area and Vicinity

Yellow-headed blackbird was observed on several occasions near the southern portion of the BSA during BUOW surveys (Figure 8). All observations were of flying individuals. Suitable foraging habitat exists throughout the BSA in agricultural fields and at cattle feed lots. Potential breeding habitat exists just outside the BSA in a stockyard pond west of Greeson Wash and south of SR 98. The yellow-headed blackbird is a fairly common breeder in the Imperial Valley with the largest concentration of breeding birds currently found at Finney and Ramer Lakes. Winter abundance is variable with larger numbers being found in milder years (Patten et al. 2003).

#### 3.5.3.4 Merlin

#### Species Background

Merlin is a CDFW Watch List species. This species frequents coastlines, open grasslands, savannahs, woodlands, lakes, wetlands, edges, and early successional stages. It breeds in open woodlands and winters in a variety of habitats including more open areas like grasslands and coastlines. This species breeds in Alaska, Canada, northeast US, and northwestern central US (Warkentin et al 2005; Zeiner et al. 1990).

#### Habitat and Occurrence in the Biological Study Area and Vicinity

Merlin was observed on one occasion in early April near the central portion of the BSA during BUOW surveys (Figure 8). Suitable foraging habitat exists throughout the BSA in agricultural fields. No potential breeding habitat exists in the BSA. This species is considered a rare winter visitor (mid-September to mid-April) to the Imperial Valley (Patten et al. 2003).

#### 3.5.3.5 Mountain Plover

#### Species Background

Mountain Plover is a CDFW SSC. Mountain plover does not breed in California; however, they winter in central and southern California, southern Arizona, southern Texas, and northern Mexico; primary wintering areas are the Central and Imperial valleys of California (Knopf 1996). In California, mountain plover primarily occur from September to mid-March, with peak numbers from December through February (Garrett and Dunn 1981; Knopf and Rupert 1995; Knopf 1996). Currently, the largest wintering numbers occur in the Imperial Valley and the portion of the Central Valley from southern Colusa County south to Kern County (Knopf and Rupert 1995, Edson and Hunting 1999; Edson 2001; Hunting et al. 2001; USFWS 2003; Shuford et al. 2004). The species winters primarily in plowed fields, heavily grazed annual grasslands, or burned fields (Knopf 1996; USFWS 1999).

#### Habitat and Occurrence in the Biological Study Area and Vicinity

This species was not detected during biological surveys; however, wintering avian surveys were not conducted for the Project. There are no known locations of this species in the vicinity of the BSA. The presence of agriculture fields within the BSA and buffer provide suitable wintering and foraging habitat for this species. The Imperial Valley supports the largest wintering population of mountain plover known anywhere in the world (Shuford et al. 1999). Given that this species is known to occur within the Imperial Valley, it is considered to have a high potential to occur within the BSA during the winter.

#### 3.5.3.6 Bats

#### Species Background

Several bat species, including western mastiff bat (*Eumops perotis californicus*), western yellow bat (*Lasiurus xanthinus*), and pocketed free-tailed bat (*Nyctinomops femorosaccus*), are CDFW SSC. These species forage in open areas, including agriculture fields. Western mastiff bat tends to be colonial and roosts in high cliffs. Western yellow bat is most often found in trees, but prefers to roost in thatch of palm tree. Pocketed free-tailed bat roosts in rock crevices.

#### Habitat and Occurrence in the Biological Study Area and Vicinity

No bat species were detected during biological surveys; however, bat surveys were not conducted for the Project. The site contains suitable foraging habitat for western mastiff bat, western yellow bat, and pocketed free-tailed bat. In addition, palm trees within the BSA and buffer could serve as roost sites for the western yellow bat. No roosting habitat occurs for the other two species. The nearest known western mastiff bat location is a 1996 CNDDB occurrence located approximately 5 miles (8 kilometers) away in Calexico, CA (CDFW 2013). The most recent (1999) western yellow bat locations are known from the vicinity of El Centro, CA, approximately 5 miles (8 kilometers) to the northeast (CDFW 2013). The nearest known pocketed free-tailed bat location is a 1996 CNDDB occurrence located approximately 5 miles (8 kilometers) away in Calexico, CA (CDFW 2013). Given the proximity to known locations and suitable foraging habitat present, these species are considered to have moderate potential to occur within the BSA.

#### 3.5.3.7 American Badger

#### Species Background

The American badger, a CDFW SSC, is a resident of level, open areas in grasslands, agricultural areas, and open shrub habitats. It digs large burrows in dry, friable soils and feeds mainly on fossorial mammals: ground squirrels, gophers, rats, mice, etc. Badgers are primarily active during the day but may become more nocturnal in proximity to humans. The home range of badgers has been measured to be 1,327 to 1,549 acres (537 to 627 hectares) for males and 338 to 751 acres (137 to 304 hectares) for females in Utah (Lindzey 1978) and 400 to 600 acres in Idaho (Messick and Hornocker

1981). Mating occurs in late summer or early fall, and two to three young are born 183 to 265 days later in March or April (Long 1973). Badgers are known to live up to 11 to 15 years (Messick and Hornocker 1981).

#### Habitat and Occurrence in the Biological Study Area and Vicinity

No American badgers were observed in the BSA, but a burrow exhibiting signs of predation by an American badger was detected in the buffer at the north end of the BSA along the New River (Figure 8). Suitable foraging habitat exists throughout the BSA along the borders of agricultural fields, irrigation ditches, in Greeson Wash, and along the New River. Active agriculture fields within the BSA is regularly disturbed and, therefore, does not provide suitable denning or burrowing habitat for the badger and its prey base (i.e., fossorial animals). Burrowing and/or denning habitat occurs within the undisturbed areas along Greeson Wash and the New River. The closest known occurrence is a historical CNDDB location from 1911 approximately 2.5 miles (4 kilometers) to the north of the BSA (CDFW 2013).

#### 3.5.4 Migratory Birds

Native avian species present within the BSA are protected under the conventions implemented by the MBTA (see Section 1.3.2.2). Of the 72 avian species detected within the BSA, 70 are protected under the MBTA. The special-status avian species discussed in the sections above are also protected under the MBTA. Not all migratory birds have special status in the sense that they are considered rare, threatened, or endangered by local, state, or federal LORS and in need of conservation, but they are protected under the MBTA and CFGC Sections 3503, 3503.5, and/or 3513.

The diversity of bird species within a geographic area varies with respect to the character, quality, and diversity of vegetation communities. Due to the seasonal homogeneity of low habitat structure within the majority of the BSA, bird diversity was expectedly low. Diversity was highest near the riparian habitat along Greeson Wash and the New River and riparian vegetation near the canal/drains. Avian species use the BSA for nesting, foraging, wintering, and movement purposes (see Section 3.6). Species that breed within the BSA use the nonagricultural habitat (e.g., canals/drains) for nesting and forage within the agricultural fields. During biological surveys, in addition to BUOW, nests of blacknecked stilt (*Himantopus mexicanus*), and killdeer (*Charadrius vociferus*) were also documented within the BSA. The agricultural fields within the BSA also provide foraging habitat for many nonbreeding avian species, including those species that winter in the Imperial Valley. Biological surveys were not conducted in the winter but the Imperial Valley is known to have a high abundance and diversity of birds in the winter and is considered one of the premier winter birding spots in the country (Audubon 2014). Agricultural fields in the Imperial Valley support thousands of wintering waterbirds, shorebirds, and waterfowl (Audubon 2014).

#### 3.6 WILDLIFE CORRIDORS

Connectivity, or the ability of organisms to move through a landscape, is essential in heterogeneous landscapes for the persistence of healthy and genetically diverse animal communities (Crooks and Sanjayan 2006). Corridors are linear landscape features that allow for species movement over time between two areas of habitat that would otherwise be disconnected (Beier and Noss 1998; Beier et al.

2008; Lidicker and Peterson 1999). Regional corridors link two or more large areas of natural open space and local corridors allow resident animals to access critical resources (food, water, and cover) in areas that might otherwise be isolated. Corridors may be species-specific, as many wildlife species have specific habitat requirements for survival and dispersal. At a minimum, corridors promote local

have specific habitat requirements for survival and dispersal. At a minimum, corridors promote local colonization or recolonization of distinct habitats, and potentially increase genetic variability within and between populations. Wildlife movement activities typically fall into one of three movement categories: local and regional dispersal (e.g., juvenile animals from natal areas or individuals extending range distributions), regional seasonal migration, and local movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). The BSA is likely used by a variety of wildlife species for several movement purposes.

At the local level, most terrestrial wildlife species are likely to use the BSA for movements related to dispersal and home range activities. Terrestrial species with small home ranges likely rely on the earthen drains for movement while those species with larger home ranges may traverse the agriculture fields. Avian species are generally capable of using both agriculture and nonagriculture habitat within the BSA for dispersal and home range activities. The larger riparian areas, such as the New River and Greeson Wash likely support the most local movement for wildlife species since they provide additional cover compared to the narrow, and often unvegetated, drains and canals and adjacent agricultural areas.

At the regional level, the BSA is not part of a regional corridor for terrestrial species. The agricultural matrix likely inhibits regional movements for most terrestrial species. The Yuha Basin approximately 4 miles (6 kilometers) to the west of the BSA, an Area of Critical Environmental Concern (ACEC), provides open space for terrestrial wildlife species to move with minimal barriers. It is likely that most regional movements occur within this designated open space as opposed Imperial Valley agriculture matrix which is a possible barrier to many terrestrial species.

The BSA is part of the Pacific Flyway, a major north-south migration route for birds that travel between North and South America. Hundreds of species use this migratory route each year. The Imperial Valley is a designated Audubon State Important Bird Area (IBA) due to the wetland habitat and agriculture fields that provide migration stopover and wintering habitat for avian species (Audubon 2014). Most wetland habitat is contained within the Sonny Bono Salton Sea National Wildlife Refuge and the Imperial State Wildlife Area (including Finney-Ramer Lakes) (Audubon 2014). The Salton Sea, a 367-square-mile lake approximately 25 miles to the north of the BSA, is a well-studied migrant stopover site (Flannery et al. 2004; USFWS 2008). Other habitat in the Imperial Valley is dependent upon water levels, water delivery infrastructure, marshes, and flooded agricultural fields (Audubon 2014). Many avian species likely pass through the BSA during migration and/or use the various drains, canals, and/or flooded agriculture fields as migratory stopover habitat.

## 4.0 Impacts

Impacts to biological resources may occur as a result of full implementation of the Project. Biological resources may be either directly or indirectly impacted by activities associated with construction, operation, and decommissioning of the Project. Furthermore, direct and indirect impacts may be either permanent or temporary in nature. These various types of impacts are defined below.

<u>Direct</u>: Direct impacts are caused by a project and occur at the same time and place as the project. Any alteration, disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact.

<u>Indirect</u>: As a result of project-related activities, biological resources may also be affected in a manner that is not direct. Indirect impacts may occur later in time or at a place that is farther removed in distance from the project than direct impacts, but indirect impacts are still reasonably foreseeable and attributable to project-related activities.

<u>Permanent</u>: All impacts that result in the irreversible removal or loss of biological resources are considered permanent.

<u>Temporary</u>: Any impacts considered to have reversible effects on biological resources can be viewed as temporary.

Permanent direct impacts to biological resources would occur from construction and would include direct losses to potential jurisdictional waters, wetlands, and special-status species; and diverting natural surface water flows. Direct impacts could include injury, death, and/or harassment of listed and/or special-status species. Direct impacts could also include the destruction of habitats necessary for species breeding, feeding, or sheltering. Direct impacts to plants can include crushing of adult plants, bulbs, or seeds. Temporary direct impacts would result from temporary work areas required during construction. Potential permanent direct impacts to special-status wildlife and migratory birds include mortality of individuals by vehicle collisions during O&M activities. Potential permanent direct impacts to avian species during O&M activities include collisions and/or electrocutions with overhead gen-tie wires, gen-tie tower guy wires, and PV panels. Additionally, large areas of solar PV or CPV panels in the desert environment may mimic water bodies and inadvertently attract migrating or dispersing wetland bird species.

Temporary and permanent indirect impacts would occur during construction and O&M activities, respectively. The extent of indirect impacts varies by species and biological resource. Potential indirect impacts include the following.

Habitat fragmentation: Fragmented, smaller areas of habitat usually contain fewer species, have proportionally larger perimeters (making them more vulnerable to edge effects), are more likely to be biologically isolated from other habitat areas, and tend to be more vulnerable to adverse stochastic (random) events.

4-2

*Noise:* Higher ambient noise levels can result from development (construction and O&M), which can impact species that rely on sound to communicate (e.g., birds). Higher ambient noise levels can disturb species and/or cause direct habitat avoidance. The impact of noise on wildlife differs from species to species, and is dependent on the source of the noise (e.g., vehicle traffic versus blasting) and the decibel level, duration, and timing.

*Changes in hydrology:* Changes in hydrology, runoff, and sedimentation could indirectly impact surface-water-dependent species. Increased runoff into habitat could result in increased erosion and rates of scouring, which could result in downstream habitat loss for some species. Runoff, sedimentation, and erosion can adversely impact plant populations by damaging individuals or by altering site conditions sufficiently to favor other species (native and exotic nonnatives) that would competitively displace the special-status species.

*Exotic and Predator species:* Nonnative plant and animal species have few natural predators or other ecological controls on their population sizes, and they often thrive in disturbed habitats. Nonnative species may aggressively outcompete native species or otherwise harm sensitive species. Additionally, developed areas can harbor human commensal species, such as ravens, which may increase predation rates of native species.

*Lighting:* Artificial night lighting could impact habitat value for some species, particularly for nocturnal species, through potential modification of predation rates, obscuring of lunar cycles, and/or causing direct habitat avoidance. Nighttime lighting could also disturb diurnal species roosting in adjacent habitat.

*Fugitive dust:* Construction and O&M-generated fugitive dust can adversely impact plants by reducing the rates of metabolic processes such as photosynthesis and respiration.

For the purpose of impact analysis in the chapter, the following applicable thresholds of significance are used to determine whether implementing the Project would result in a significant impact. These thresholds of significance are based on Appendix G of the CEQA Guidelines. A biological resources impact is considered significant if implementation of the project alternatives would do any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS;
- Have a substantial adverse effect on federal protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marshes, vernal pools, and coastal areas) or any stateprotected jurisdictional areas not subject to regulation under Section 404 of the CWA through direct removal, filling, hydrological interruption, or other means;

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy, or ordinance;
- Conflict with the provisions of an adopted habitat conservation plan; natural community conservation plan; or other approved local, regional, or state habitat conservation plan; or
- Substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

The discussion of impacts to biological resources below includes subsections identifying the significance of impacts resulting from construction and operation of the Project. Significance determinations are based on the thresholds outlined above.

### 4.1 DESIGN IMPACTS

The following sections summarize the Project elements as they are used in the biological resources impacts discussion below. WRS is proposing to develop up to 2,793 acres (1130 hectares) of solar fields within 17 CUP areas and the addition of the collector line corridor and the transmission interconnection line within the Mount Signal Solar gen-tie corridor that compose the Project footprint.

#### 4.1.1 Solar Energy Center Facilities

The Project may be constructed at one time over an 18-month period, or it may be developed within the 17 individual CUP areas over a 10-year period. As such, impacts were quantified for each CUP area and for development of all 17 CUP areas. Construction of the Project's photovoltaic solar arrays; O&M buildings; raw water/fire water storage; treated water storage; water filtration buildings and equipment; and equipment control buildings, septic system(s), parking, and access roads would be permanent and direct impacts to biological resources. With the exception of IID canals and drains, all irrigation canals and drains would be removed from the Project boundary. Construction of new vehicular crossings and/or upgrades to vehicular crossings across IID canals and drains would be permanent and direct impacts to biological resources.

Aside from new or upgraded vehicular crossings, no direct impacts would occur within IID ROW easements and their associated canals and drains. No permanent direct impacts would occur as a result of use of existing IID vehicular crossings that are of adequate size (i.e., at least 50 feet [15 meter] wide) for Project equipment.

#### 4.1.2 Electric Collector Line Corridor

The Project may be constructed at one time over an 18-month period, or it may be developed within the 17 individual CUP areas over a 10-year period. As such, impacts for the electric collector line

corridor were quantified for each CUP area and for development of all 17 CUP areas. Regardless of whether the Project is built as 17 individual solar projects within 17 CUP areas or at one time, electric collector lines would be used to collect electricity from the array fields to the Project substation that ultimately connects to the Mount Signal Solar gen-tie. Approximately one pole structure would be required every 300 feet (91 meters). The pole structure temporary work areas would be 100 feet (30 meters) by 100 feet (30 meters) (i.e., 10,000 square feet [929 square meters] or approximately 0.23 acre [0.09 hectare]). Each pole structure would have a foundation at ground level of approximately 10 feet (3 meters) in diameter. The area of permanent impacts resulting from installation of each pole structure would be approximately 78 square feet (7.2 square meters).

At full buildout, all pole structures, with the exception of 18, would be within the impact footprint of the 17 CUP areas. Of these 18 pole structures outside of the CUP areas, nine would be within off-site easements along the electric collector line corridor between CUP 13-0037 and CUP 130038 and nine would be within off-site easements along the electric collector line corridor between CUP 13-0037 and CUP 13-0036 and CUP 13-0050 (Figure 3). To quantify pole structure worst-case scenario impacts for each CUP area, the number of pole structures was estimated for each CUP area (i.e., individual solar project) assuming no other CUP areas were developed (see Table 14). As additional CUP areas are developed, electric collector line pole structures would be within the given CUP's impact footprint. Collector line pole structures would not be located within IID ROWs or jurisdictional waters and would occur within agriculture fields.

#### 4.1.3 Mount Signal Solar Gen-tie Line

The Project may be constructed at one time over an 18-month period, or it may be developed within the 17 individual CUP areas over a 10-year period. Regardless of whether the Project is built as 17 individual solar projects within 17 CUP areas or at one time, the Mount Signal Solar gen-tie structures would be used for the Project's gen-tie to conduct electricity. Mount Signal Solar constructed a 230-kV single-circuit gen-tie line designed to be expanded to carry a second circuit in the future. The Project would be using the second (future) circuit.

Up to eight double dead-end structures would require new construction and 19 existing tangent structures would be upgraded to carry the Project's circuit. The existing tangent structures temporary work areas would be 100 feet (30 meters) by 100 feet (30 meters) (i.e., 10,000 square feet [929 square meters] or approximately 0.23 acre [0.09 hectare]) and the double dead-end structure temporary work areas would be 140 feet (42 meters) by 140 feet (42 meters) (i.e. 19,600 square feet [1,820 square meters] or approximately 0.45 acre [0.18 hectare]) (Table 12). An additional 2 acres (0.81 hectare) of temporary impacts was assumed as contingency in the event that more temporary workspace is required than anticipated. Each double dead-end structure is estimated to have a foundation at ground level of approximately 10 feet (3 meters) in diameter. The area of permanent impacts resulting from installation of each double dead-end structure would be approximately 78 square feet (7.2 square meters) (Table 12).

Impacts associated with upgrading the Mount Signal Solar gen-tie line would occur in disturbed and/or developed habitat. These impacts would occur when solar facilities within the first CUP area are constructed. No additional impacts would occur during construction of solar facilities within

subsequent CUP areas. The portions of the Mount Signal Solar gen-tie line that would be impacted are disturbed from installation of the Mount Signal gen-tie line and associated access roads. IID canals and/or drains and agriculture fields remain in the areas adjacent to the corridor.

Structure	Disturbed Habitat						
Siluciule	Temporary	Permanent					
Dead-end Structures (8)	3.6	<1					
Tangent Structures (19)	4.4	0.0					
Subtotal	8.0	<1					
Contingency	2.0	0.0					
Grand Total with Contingency	10.0	<1					

 Table 12

 Mount Signal Solar Gen-tie Disturbance Acreage

## 4.2 CONSTRUCTION IMPACTS

This section identifies impacts to the biological resources occurring within the BSA that would result from construction-related activities. Direct impacts are divided into discussions of solar facilities within each CUP area, the electric collector lines, and Mount Signal Solar gen-tie line upgrades. Potential indirect impacts are grouped into one discussion because indirect impacts are expected to be similar for construction of within each CUP area, the electric collector lines, and Mount Signal Solar gen-tie line. Potential indirect impacts, discussed in the introduction to Chapter 4, that are applicable to each biological resource are listed within each of their respective sections.

#### 4.2.1 Vegetation Communities

Nine vegetation communities were mapped within the BSA, with agriculture being the most common community (Table 4). All potential jurisdictional waters, including arrow weed scrub, drains and canals, open water, and tamarisk scrub, are considered sensitive vegetation communities. In addition, mesquite bosque is considered sensitive by CNDDB (CDFW 2010). Agriculture fields and other upland habitat (i.e., salt bush scrub) are not considered sensitive.

This subsection describes potential direct and indirect impacts to vegetation communities resulting from construction of the Project and is applicable to all CUP areas. Permanent and temporary removal of vegetation communities within each CUP area is quantified in tables referenced in the text.

#### 4.2.1.1 Direct Impacts (All CUP Areas)

#### Solar Energy Center Facilities

Construction-related activities within each CUP area would result in permanent removal of vegetation communities. Solar facilities within each CUP area would result in varying levels of permanent impacts to each vegetation community (Table 13 and Figure 9). Permanent removal of vegetation would result from grading and installation of the solar facility. Construction impacts would be greatest to agriculture land cover, the most abundant land cover type mapped within the BSA.

#### Electric Collector Line Corridor

Installation of pole structures associated with the electric collector line for solar facilities within each CUP area would result in permanent and temporary removal of agriculture (Table 14). Permanent impacts would result from pole foundation installation. Temporary impacts would result from access and staging areas required for pole installation. As noted in Section 4.1.2, impacts were quantified independently for each CUP area and assume that no other CUP areas would be developed. However, pole structures would be located within the permanent impact footprint of other CUP areas. At full buildout, the impact acreage of nearly all pole installations, with the exception of 18 poles, is included in impact acreage estimates for the CUP areas (Table 13). Approximately 18 poles would be located within off-site easements (i.e., outside of CUP areas) at full buildout (Table 14). Of these 18 pole structures outside of the CUP areas, nine would be within agriculture along the electric collector line corridor between CUP 13-0037 and CUP 130038 and nine would be within off-site easements along the electric collector line corridor between CUP 13-0036 and CUP 13-0050. These off-site easement areas are/were active agriculture fields that either were permitted for solar or are in the process of being permitted for solar energy generation, which is considered a disturbed land use.

#### Mount Signal Solar Gen-tie Line

The Mount Signal Solar Project has already constructed a 230-kV single-circuit gen-tie line designed to be expanded to carry a second circuit. The Project would be using the second circuit and would share 230-kV gen-tie structures with the Mount Signal Solar Project to connect to the ISECS switchyard. Impacts from installation of new double dead-end structures and upgrading the existing structure would occur within compacted earthen roads and/or disturbed habitat (Table 12). Impacts associated with installation of these structures and upgrades would occur at the time of construction of the first CUP.

#### 4.2.1.2 Indirect Impacts (All CUP Areas)

Potential indirect impacts to vegetation communities are expected to be similar for construction of the solar facilities within each CUP area, the electric collector lines, and Mount Signal Solar gen-tie line upgrades. Construction activities have the potential to introduce nonnative plants by carrying seeds from outside sources on vehicles, people, and equipment. Ground disturbance can promote the establishment and spread of opportunistic nonnative plants. The potential spread of nonnative species into the surrounding vegetation communities would be considered a permanent indirect impact.

Grading and other construction activities associated with construction of the solar facility have the potential to introduce nonnative plant species and create airborne dust, sedimentation, and erosion. Herbicide used during control of nonnative plant species has potential to be inadvertently applied to adjacent native plants; however, herbicides are regularly used during agriculture activities and herbicide use within each CUP area would decrease when agriculture activities cease. Airborne dust may result from construction vehicle travel on dirt access roads, grading, trenching, and other ground-disturbing activities. Construction activities, including grading and vegetation clearing, may result in increased erosion and sedimentation. Construction impacts from dust, sedimentation, and erosion would be considered a temporary indirect impact.

Table 13 Anticipated Permanent Direct Impacts to Vegetation Communities and Cover for Project Solar Facilities (acres)<sup>1,2</sup>

									CUP Area									
Vegetation Community	CUP 13-0036	CUP 13-0037	CUP 13-0038	CUP 13-0039	CUP 13-0040	CUP 13-0041	CUP 13-0042	CUP 13-0043	CUP 13-0044	CUP 13-0045	CUP 13-0046	CUP 13-0047	CUP 13-0048	CUP 13-0049	CUP 13-0050	CUP 13-0051	CUP 13-0052	Full Buildout <sup>3</sup>
Riparian and Wetlands														-				
Arrow Weed Scrub	-	2.97	-	-	-	-	-	-	-	-	-	7.72	-	-	-	-	-	10.69
Drains and Canals	-	0.46	0.03	0.01	0.01	-	0.62	-	-	-	0.75	0.15	-	0.02	-	-	-	2.06
Open Water	-	-	-	-	-	-	-	-	-	-	-	1.26	-	-	-	-	-	1.26
Tamarisk Scrub	-	0.03	-	-	-	-	-	-	-	0.15	2.9	42.13	-	-	-	-	-	45.21
Subtotal Riparian and Wetlands	-	3.45	0.03	0.01	0.01	-	0.62	-	-	0.15	3.65	51.26	-	0.02	-	-	-	59.19
Uplands			-		-	-	_		_		_	_					-	_
Badlands/Mudhills	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mesquite Bosque	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salt Bush Scrub	-	-	-	-	-	-	-	-	-	0.44	0.21	7.58	-	-	-	-	-	8.23
Subtotal Uplands	-	-	-	-	-	-	-	-	-	0.44	0.21	7.58	-	-	-	-	-	8.23
Other Cover Types		r	1		1	1	1		1		1	1					1	1
Agriculture	177.24	160.87	145.27	148.2	127.95	136.97	189.75	133.47	76.13	43.01	171.93	36.87	146.9	136.85	114.84	202.78	171.79	2,318.31
Developed	7.84	8.78	11.15	6.13	4.32	3.79	14.42	8.31	2.51	4.92	9.75	21.42	8.58	4.85	9.7	17.67	11.30	155.43
Disturbed Habitat	0.51	12.26	-	-	-	-	-	-	-	-	-	7.73	-	-	-	-	-	22.91
Subtotal Other Cover Types	185.59	181.92	156.42	154.33	132.27	140.76	206.56	141.78	76.13	47.93	181.68	66.02	155.48	141.69	124.54	220.45	183.09	2,496.64
Totals	185.59	185.37	156.46	154.34	132.28	140.76	207.19	141.78	76.13	48.51	185.54	124.86	155.48	141.71	124.54	220.45	183.09	2,564.06

<sup>1</sup> Values may not sum due to rounding after summation. <sup>2</sup> No temporary impact would occur within the CUP areas. <sup>3</sup> Sum of all CUP areas.

Table 14 Anticipated Permanent and Temporary Direct Impacts to Agriculture Fields for the Project Electric Collector Line Corridor

									CUP Area <sup>1</sup>									Full
	CUP 13-0036	CUP 13-0037	CUP 13-0038	CUP 13-0039	CUP 13-0040	CUP 13-0041	CUP 13-0042	CUP 13-0043	CUP 13-0044	CUP 13-0045	CUP 13-0046	CUP 13-0047	CUP 13-0048	CUP 13-0049	CUP 13-0050	CUP 13-0051	CUP 13-0052	Buildout <sup>2</sup>
Linear Feet of Electric Lines Outside of CUP area	-	2,709	10,488	10,646	13,406	16,043	18,862	15,816	18,010	17,530	18,707	23,948	21,444	23,999	2,584	5,230	9,261	5,400
Number of Pole Structures <sup>3</sup>	-	9	35	35	45	53	63	53	60	58	62	80	71	80	9	17	31	18
Permanent Impacts (acres)	-	0.02	0.06	0.06	0.08	0.09	0.11	0.09	0.11	0.10	0.11	0.14	0.13	0.14	0.02	0.03	0.06	0.03
Temporary Impacts (acres)	-	2.07	8.05	8.05	10.35	12.19	14.49	12.19	13.80	13.34	14.26	18.40	16.33	18.40	2.07	3.91	7.13	4.14

<sup>1</sup> Electric collector line corridor impacts for each CUP area assume only that CUP area would be developed as a worst-case scenario. As additional CUP areas are developed, electric collector line pole structures would be within the given CUP's impact footprint. <sup>2</sup> At full buildout, all but 18 pole structures would be within the impact footprint of the 17 CUPs quantified in Table 13. The 18 pole structures outside of the CUP areas would be within off-site easements. <sup>3</sup> Approximately one pole structure would be required every 300 feet



#### 4.2.1.3 Significance Determination

The majority of impacts to vegetation communities and land cover types would occur to agriculture fields, which are not considered a sensitive vegetation community. Sensitive vegetation communities impacted include potential jurisdictional waters, such as arrow weed scrub, drains and canals, open water, and tamarisk scrub. The permanent removal and indirect impacts to these sensitive vegetation communities would be considered a significant impact,

Potential construction-related direct and indirect impacts to sensitive riparian communities would be reduced to less than significant within each CUP area (see Section 4.2.2), through implementation of the avoidance, minimization, and mitigation measures described in Chapter 5. Measures include minimizing the footprint to the maximum extent possible, and implementing a Storm Water Pollution Prevention Plan (SWPPP), Weed Management Plan, and best management practices (BMPs) such as watering construction areas to prevent airborne dust.

#### 4.2.2 Jurisdictional Waters and Wetlands

This subsection describes potential direct and indirect impacts to jurisdictional waters and wetlands mapped within the BSA. Direct impacts described in this subsection are applicable to CUP areas 13-0037, 13-0038, 13-0039, 13-0040, 13-0042, 13-0043, 13-0046, 13-0047, and 13-0051. Indirect impact impacts described in this subsection are applicable to all CUP areas.

# 4.2.2.1 Direct Impacts (CUP Areas 13-0037, 13-0038, 13-0039, 13-0040, 13-0042, 13-0043, 13-0046, 13-0047, and 13-0051)

#### Solar Energy Center Facilities

Construction associated with each CUP area would result in varying levels of permanent impacts to potential jurisdictional waters of the U.S. and state under the purview of USACE, RWQCB, and CDFW(Table 15 and Figure 10). Construction associated with each CUP area would also result in varying levels of permanent impacts to potential jurisdictional waters exclusively under the purview of CDFW (Table 15 and Figure 10). Permanent impacts to jurisdictional waters and wetlands would result from upgrading vehicular crossings across jurisdictional features to adequate size for equipment access. Permanent impacts would result from installation of new crossings over jurisdictional features. Additionally, grading and installation of the solar facilities within CUP 13-0047 would result in permanent impacts to jurisdictional waters and wetlands (Table 15).

#### Electric Collector Line Corridor

Electric collector line pole structures would not be located within jurisdictional waters and wetlands; therefore, no direct impacts to jurisdictional waters and wetlands would result from installation of pole structures.

#### Mount Signal Solar Gen-tie Line

The Mount Signal Solar gen-tie line pole structures that would be upgraded or installed are not located within jurisdictional waters and wetlands; therefore, no direct impacts to jurisdictional waters and wetlands would result from construction work within the Mount Signal Solar gen-tie line corridor.

#### 4.2.2.2 Indirect Impacts (All CUP Areas)

Potential indirect impacts to jurisdictional waters and wetlands are expected to be similar for construction of the solar facilities within each CUP area, the electric collector lines, and Mount Signal Solar gen-tie line upgrades. Off-site erosion and sedimentation resulting from grading activities associated with construction of the solar facility have the potential to result in temporary indirect impacts to jurisdictional waters and wetlands. Airborne dust may result from construction vehicle travel on dirt access roads, grading, trenching, and other ground-disturbing activities and has the potential to result in temporary indirect impacts to jurisdictional waters to jurisdictional waters and wetlands. Herbicide used during control of nonnative plant species has potential to inadvertently enter jurisdictional waters and wetlands; however, herbicides are regularly used during agriculture activities and herbicide use within each CUP area would decrease when agriculture activities cease.

Extending the duration of construction activities to develop the 17 individual CUPs over a 10-year period as opposed to at one time are assumed to have a similar level of indirect impacts given that impacts (e.g., dust, nonnative species introduction) would be extended over a greater period of time; however, if the project were built all at once, the impacts would be more intense but shorter in duration. Thus, we assume either approach would result in a comparable indirect impact.

#### 4.2.2.3 Significance Determination

The permanent removal and adverse indirect impacts to federally protected wetlands or to any stateprotected jurisdictional wetlands or waters not subject to federal regulation through direct removal, filling, hydrological interruption, or other means would be considered a significant impact. Potential construction-related direct and indirect impacts to jurisdictional waters and wetlands would be reduced to less than significant within the CUP areas through implementation of the avoidance, minimization, and mitigation measures described in Chapter 5. Measures include minimizing the footprint to the maximum extent possible, implementing a SWPPP and BMPs, and obtaining a Section 404 permit and a CDFW Streambed Alteration Agreement. In addition to avoiding impacts to jurisdictional waters to the maximum extent feasible, the measure that would reduce impacts to these resources to a level less than significant is the preparation and implementation of a detailed mitigation plan approved by the resource agencies and designed to offset the project's unavoidable temporary and permanent impacts to jurisdictional waters through on-site restoration for temporary impacts and off-site mitigation for permanent impacts.

#### 4.2.3 Flora – Federally and State-listed Species

No federally listed or state-listed plants are expected to occur within each CUP area, the electric collector lines, or Mount Signal Solar gen-tie line corridor; therefore, no impacts to federally or state-listed plant species would result from construction of the Project. CUP area 13-0047 was added to the Project subsequent to the completion of the field rare plant assessment. A desktop analysis revealed that no federally or state-listed plant species have potential to occur within CUP area 13-0047 due to the lack suitable habitat, geography, and known species' ranges based on reference populations and historical surveys conducted in the region. Thus, no impacts are expected within this CUP area.

Table 15 Anticipated Permanent Direct Impacts to Potential Jurisdictional Waters of the U.S. and State for the Project (acres)<sup>1</sup>

Tana at																		
I ype of Jurisdictional	CLIP	CLIP	CLIP	CUP	CLIP	CUP	CLIP	CLIP		CLIP	CUP	CLIP	CUP	CUP	CUP	CLIP	CLIP	Full
Waters	13-0036	13-0037	13-0038	13-0039	13-0040	13-0041	13-0042	13-0043	13-0044	13-0045	13-0046	13-0047	13-0048	13-0049	13-0050	13-0051	13-0052	Buildout
Jurisdictional Waters of the U.S. and State																		
Wetland	-	0.024	0.039	0.014	0.009	-	<0.001	-	-	-	-	27.640	-	-	-	-	-	27.725
Non-wetland Waters	-	-	0.014	<0.001	-	-	0.010	0.014	-	-	0.006	0.008	-	-	-	0.001	-	0.054
Subtotal of Jurisdictional Waters of the U.S. and State	-	0.024	0.053	0.014	0.009	-	0.010	0.014	-	-	0.006	27.648	-	-	-	0.001	-	27.779
Jurisdictional Waters Excl	lusively CDI	-w																
Riparian	-	0.046	-	-	0.011	-	-	-	-	-	-	19.772	-	-	-	-	-	19.829
Other Waters	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Jurisdictional Waters of the State	-	0.046	-	-	0.011	-	-	-	-	-	-	19.772	-	-	-	-	-	19.829
Total Jurisdictional Waters	-	0.070	0.053	0.014	0.020	-	0.010	0.014	-	-	0.006	47.420	-	-	-	0.001	-	47.608

<sup>1</sup>Values may not sum due to rounding after summation.









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