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HYDROSTOR, INC. GEM ENERGY STORAGE CENTER APPLICATION FOR CERTIFICATION PROJECT

BIOLOGICAL TECHNICAL REPORT

WILLOW SPRINGS, KERN COUNTY, CALIFORNIA

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REVIEWER'S NOTE:

The following figures have been redacted from the public version of this document

at the request of CEC Staff:

- Figure 7: CNDDB Species
- Figure 8, Special-status plant species
- Figure 9, Special-Status Wildlife
- Figure 2, Suitable Swainson's Hawk Nesting Substrate
- Figure 3, Swainson's Hawk Observations within the Survey Area
- Figure 2, Vegetation and Burrowing Owl Burrow Map
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1.0 SUMMARY

Blackhawk Environmental, Inc. (Blackhawk) was contracted by Golder Associates, Inc. for a proposed Project that seeks to construct up to two energy storage facility sites (collectively known as the Gem Energy Storage Center on approximately 70 acres) and approximately 10.9 miles of 230 kilovolt (kV) single-circuit tie-lines interconnecting to the existing Southern California Edison (SCE) Whirlwind Substation or an approximately 3.5-mile 230 kV single-circuit tie-line interconnecting to the future Los Angeles Department of Water and Power (LADWP) Rosamond Substation. Each tie-line would include a 125-foot-wide corridor on primarily undeveloped land. The proposed energy storage sites and the tie-lines are collectively known as the Hydrostor Gem Energy Storage Center Project (Project). Blackhawk was tasked with: conducting a literature review; conducting an onsite reconnaissance-level biological survey and sensitive species habitat assessment; conducting a jurisdictional delineation survey; conducting focused burrowing owl (*Athene cunicularia;* BUOW), desert tortoise (*Gopherus agassizii*), Swainson's hawk (*Buteo swainsoni*; SWHA) and rare plant surveys; providing a Jurisdictional Delineation Report; providing a Focused Burrowing Owl Survey Report; providing a Focused Swainson's Hawk Survey Report; and providing this Biological Technical Report (BTR). The Project boundary, which includes the energy storage facility parcels plus all proposed alternatives for the tie-lines, covers approximately 977 acres in and near Willow Springs, Kern County, California.

Vegetation mapping was initiated, and a sensitive species habitat assessment was completed within the burrowing owl Survey Area, which includes the Project boundary plus a 150-meter buffer, during the reconnaissance-level biological survey on March 31, 2021. A total of 13 vegetation communities totaling 4,459.74 acres were mapped within the Survey Area, and suitable habitat for sensitive species that include rare plants, burrowing owl, desert tortoise and Swainson's hawk was identified. Additionally, numerous ephemeral drainages were observed within the Survey Area.

Jurisdictional delineation surveys completed on August 16, 17 and 23, 2021 resulted in the mapping of 58 ephemeral drainages within the Survey Area. All 58 features fall under the jurisdiction of the Regional Water Quality Control Board (RWQCB) and the California Department of Fish & Wildlife (CDFW). No wetlands, intermittent drainages, perennial streams or other water bodies were identified.

A review of the California Natural Diversity Database (CNDDB) and the United States Fish & Wildlife Service (USFWS) Environmental Conservation Online System (ECOS) databases indicate that the Project does not fall within USFWS-designated Critical Habitat for any federally listed plant or wildlife species; however, the Project is located within the Desert Tortoise Western Mojave Conservation Unit. Additionally, the Project is located outside of protected lands per the California Protected Areas Database (CPAD) and California Conservation Easement Database (CCED).

To support Project consistency with California Energy Commission (CEC), California Environmental Quality Act (CEQA) and California Department of Fish and Wildlife (CDFW) guidelines, Blackhawk Environmental was contracted to perform focused surveys for burrowing owl, Swainson's hawk, desert tortoise and rare plants. A summary of each survey is described below.

Focused surveys for burrowing owl were completed per the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The initial habitat assessment and total of four focused burrowing owl surveys resulted in the detection and mapping of a total of 65 unoccupied, suitable burrowing owl burrows and 41 unoccupied, suitable burrowing owl burrow complexes within the Survey Area, which includes the Project boundary plus a 150-meter buffer and covers approximately 4,460 acres. Burrowing owl sign was present at one suitable burrow complex within the Project site, and burrowing owl sign was present at one suitable burrow plus one suitable burrow complex within the Survey Area. **One adult burrowing**

owl was observed within the Survey Area during the April 16, 2021 survey; however, the burrowing owl was not detected on subsequent surveys, nor was an occupied burrow identified in the vicinity of the observation.

Focused surveys for desert tortoise were completed per *Chapter 4. General Ecology and Survey Protocol for Determining Presence/Absence and Abundance for the Desert Tortoise - Mojave Population* (USFWS 2009). One focused desert tortoise survey was completed over four separate days between April 12 and May 5, 2021, with the April 12 and April 14, 2021 surveys performed concurrently with focused burrowing owl surveys. **Focused surveys resulted in the detection and mapping of three Class 5 burrows suitable for juvenile desert tortoises within the Survey Area, which includes the entire Project footprint of the proposed energy storage facility parcels, tie-lines and their associated 250-foot-wide right-of-way (ROW; 125 feet to either side of the centerline) and covers approximately 977 acres. No tortoise sign was present in the vicinity of these burrows. Additionally, spider webbing was present at one of the burrow entrances indicating that burrow was not occupied at the time of the surveys, and no juvenile or adult desert tortoises were observed during either the focused surveys or other surveys completed for the Project.**

Focused surveys for nesting Swainson's hawks were completed per the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (CEC and CDFW 2010). A total of nine focused Swainson's hawk surveys occurred between March 31 to July 13, 2021, and resulted in the detection and mapping of the following: one active Swainson's hawk nesting territory occupied by one Swainson's hawk pair, an additional six individual transient/dispersing Swainson's hawks, a total of 433 suitable potential nesting trees, and an additional 56 active competitor nests (i.e. red-tailed hawks [*Buteo jamaicensis*] and common raven [*Corvus corax*] nesting in trees, distribution poles, lattice towers, and other structures) within the Survey Area, which includes the Project boundary plus a half-mile buffer, and covers approximately 14,495 acres. Four of the six individual transient/dispersing Swainson's hawks were incidentally observed during focused burrowing owl surveys, and two were observed during the focused Swainson's hawk surveys detailed herein. **Incubation was confirmed for the one Swainson's hawk pair and their associated active nest/territory within the Survey Area during focused surveys on May 19, 2021, with incubation continuing through subsequent nest checks; however, a nesting failure was determined and confirmed during surveys on June 29 and July 13, 2021, respectively.**

Focused rare plant surveys were completed using methods based on the following resources: 1) *Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities* (CDFW 2009), 2) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996) and 3) *General Rare Plant Survey Guidelines* (Cypher 2002). One focused rare plant survey was conducted across five separate days between April 13 and May 5, 2021 within the Project site, which includes the entire Project footprint of the proposed energy storage facility parcels, tie-lines and their associated ROW, and covers approximately 977 acres. **A total of 1,290 Joshua trees (*Yucca brevifolia*) were documented within the Project site. No other special-status plant species were documented.**

Several special-status plants and wildlife species exist or have the potential to occur within the Project. During the Project design phase, placement of support/ancillary features can be shifted to avoid or minimize removal of vegetation and/or special-status species impacts. Impacts to special-status

wildlife species, though, are not anticipated as avoidance, minimization and mitigation measures will offset permanent and temporary impacts that may result from construction and long-term operations and maintenance (O&M) activities.

With the avoidance and minimization measures, and habitat mitigation proposed herein, no direct or indirect impacts to state or federally listed plant or wildlife species is expected. In addition, direct and indirect impacts to jurisdictional resources and special-status plant species are not expected. Any impacts that may occur will be offset through in-kind and in-place planting or seeding, or restoration of habitat in-place or at a designated location to be determined upon agency consultation. Mitigation would also include the preparation of a Habitat Restoration and Monitoring Plan that would require maintenance, monitoring, and reporting for a period of five years.

2.0 INTRODUCTION

This Biological Technical Report (Report; BTR) was prepared by Blackhawk Environmental, Inc. in accordance with CEC and CDFW guidelines. The studies detailed herein were conducted to identify the locations of sensitive natural resources, identify the Potential for Occurrence (PFO) of special-status plant and wildlife species, and develop mitigation measures to offset potential direct, indirect and cumulative impacts to any such resources on and/or adjacent to the proposed Project alignment. Additionally, this Report serves to illustrate the baseline conditions for which the determination of impacts and mitigation under the California Environmental Quality Act should be analyzed during the environmental review process.

2.1 Project Location

The proposed Project is located on privately-owned lands situated in and around the community of Willow Springs in Kern County (Attachment A, Figure 1). Elevations within the Project's Survey Area range from 2,591 feet above mean sea level (msl) to approximately 2,835 feet above msl, with topography generally sloping toward the southwest. The proposed Project seeks to construct up to two energy storage facility sites (collectively known as the Gem Energy Storage Center on approximately 70 acres) and approximately 10.9 miles of 230 kilovolt (kV) single-circuit tie-lines interconnecting to the existing Southern California Edison (SCE) Whirlwind Substation or an approximately 3.5-mile 230 kV single-circuit tie-line interconnecting to the future Los Angeles Department of Water and Power (LADWP) Rosamond Substation. Each tie-line would include a 125-foot-wide corridor on primarily undeveloped land. The proposed energy storage sites and the tie-lines are collectively known as the Hydrostor Gem Energy Storage Center Project (Project).

The western boundary of the Project Site is located approximately 8 miles west of the unincorporated community of Rosamond, immediately west of Willow Springs Butte, while the southern boundary of the Project Site is approximately 8 miles north of Antelope Acres. A portion of the Pacific Crest Trail (PCT) runs north-south approximately 1.5 miles from the eastern boundary of the Project Site. The Project Site is generally bound by Hamilton Road to the north, Rosamond Boulevard to the south, 172nd St W to the east, and 90th St W to the west (Attachment A, Figure 1).

2.2 Project Description

The proposed Project broadly includes the installation of new energy storage facilities and new single-circuit tie-lines. The Gem Energy Storage Center (GESC or Gem) will be a nominal 500-megawatt (MW) advanced compressed air energy storage (A-CAES) facility deploying Hydrostor Inc. (Hydrostor) proprietary A-CAES technology. The site will be designed to store 500 MW for up to 14 hours and deliver up to 4,000 Megawatt hours (MWh) over an 8-hour period when discharging. The Gem project will consisting consist of the following main elements:

- Approximately 70-acre energy storage site(s) with security fencing and access gate
- Five electric motor-driven air compressors and five 100 MW turbine-generators
- Heat exchangers
- Thermal storage system

- Hydrostatically compensating approximately 500-acre-foot surface water reservoir with floating cover
- Underground compressed air storage cavern
- Related interconnecting conduits and facilities
- Electric fire pump with emergency 250 horsepower (hp) diesel-fired backup engine
- Two 5-MW, 4.16-kV emergency diesel-fired engines to maintain critical loads in the event of a loss of power
- Onsite 230 kV substation
- An approximately 10.9-mile 230 kV single-circuit tie-line interconnecting to the Southern California Edison (SCE) Whirlwind Substation, or an approximately 3.5-mile 230 kV single-circuit tie-line interconnecting to the future Los Angeles Department of Water and Power (LADWP) Rosamond Substation.

Gem does not require combustion of fossil fuel and will not produce combustion-related air emissions during normal operation.

Gem will be an energy storage facility consisting of five, 100-MW (nominal) power blocks. Each power block will contain a motor-driven air compressor drivetrain, heat exchangers, and an air turbine generator and their ancillary equipment. Each power block will share a common set of thermal storage tanks (hot and cold) as well as the air storage cavern.

Hydrostor's proprietary technology is a low-cost, bulk-scale energy storage solution. It provides long-duration, emission-free storage that can be flexibly sited where the electricity grid requires it, providing multi-hundred megawatts of generation capacity and a suite of ancillary services in a fifty (50) year life. This is enabled by combining industry-proven technologies with two key innovations: the use of hydrostatically compensated air storage caverns and a proprietary thermal management system.

The energy storage systems store compressed air in purpose-built underground storage caverns, analogous to those used worldwide for hydrocarbon storage. The storage caverns are flooded with water through a hydraulic conduit from a water storage compensation reservoir at the ground surface level. The weight of the water in this compensation reservoir maintains a near-constant air-pressure in the cavern throughout both the charging and discharging cycles, supporting efficient operation, and significantly reducing the cavern volume requirements.

The thermal management system captures the heat developed during air-compression, stores it, and re-uses it when generating electricity, making the process adiabatic. This increases the system's efficiency and eliminates the need for burning of fossil fuels, as is required for traditional CAES.

When the Hydrostor system is charging (known as "Charge Cycle"), off-peak or surplus electricity from the grid is used to drive air compressors, converting the electrical energy into potential energy in the compressed air and heat energy stored by the thermal energy management system. At multiple points in the compression process, the heat generated during air-compression is transferred to a thermal fluid by a set of heat exchangers and stored separately for later use during the discharge cycle.

The air stream exits the compression process at the same pressure as maintained in the air storage cavern which is governed by the vertical distance between the cavern and the connected hydrostatic compensation reservoir located at the surface. As air is charged into the storage cavern, water is displaced up the hydraulic conduit and into the surface reservoir. This maintains a near-constant pressure of the air within the cavern and stores substantial potential energy in the elevated water. Once in the cavern, the air can be stored until electricity is required.

To generate electricity (known as the "Discharge Cycle"), compressed air is discharged from the cavern, which allows the compensation water to re-flood the cavern. Similar to the charge cycle, the compensation water from the reservoir maintains a near-constant air pressure in the cavern during discharging. The cool high-pressure air exiting the cavern is re-heated using the heat stored by the thermal management system and the same set of heat exchangers that were initially used to extract it. The reheated compressed air is then used to drive air-expansion turbine-generators which efficiently convert the stored potential energy back into electricity for the grid.

3.0 METHODS

3.1 Literature Review

Prior to conducting the biological surveys, the CNDDB and California Native Plant Society (CNPS) Rare and Endangered Plant Inventory were searched to assess the potential for the Project site to support State and/or federally listed threatened, endangered, and/or otherwise special-status plant and wildlife species. The CNDDB review was extended to 10 miles beyond the Project site. Soil type data from the Natural Resources Conservation Service (NRCS) were assessed to assist in identifying suitable habitat and soil types that may support special-status species potentially present within the Project. The USFWS National Wetland Inventory (NWI) and the USGS National Hydrography Dataset (NHD) databases were reviewed for hydrologic features within the Project, as well as 10 miles beyond. Biological resource reports prepared for other projects in the Project vicinity were also reviewed, including the *Big Beau Solar Project, Kern County, California, Biological Technical Report* (ICF 2019) and the *Biological Resources Technical Report, AVEP Solar Project* (Western EcoSystems Technology 2020). Freely available aerial imagery was also reviewed via a desktop analysis for existing conditions and historical land use trends (Google 2021). The results of the literature review were used to focus biological survey efforts for special-status species and sensitive resources perceived to have the potential to occur on and/or adjacent to the Project site.

3.2 Survey Methods

All biological surveys and a general biological resource assessment for the Survey Area were performed according to the latest protocols and guidelines for biological surveys and reporting. In addition, focused surveys for special-status species adhered to the latest State and/or Federal protocols and/or guidelines, including USFWS protocol surveys for desert tortoise; CDFW protocol surveys for burrowing owl and Swainson's hawk; and focused surveys for rare plants. These protocol surveys are described below.

3.2.1 Biological Reconnaissance Survey and Vegetation Mapping – Spring 2021

An initial biological reconnaissance survey and vegetation mapping was conducted to determine the vegetation communities and habitat suitability for special-status and listed species within and near the Project boundary. Field work was conducted by Blackhawk biologists Kris Alberts and Tawni Gotbaum on March 31, 2021 (Table 1).

Vegetation mapping was completed following the *National Vegetation Classification System per the Manual of California Vegetation (MCV), Second Edition* (Sawyer et al. 2009) by driving the entire Project footprint of the proposed energy storage facility parcels, tie-lines and their associated 250-foot-wide ROW and assessing areas, as needed, on foot. ESRI ArcGIS Collector software was used to map various vegetation communities, and all relevant data, including dominant and sub-dominant plant species, were recorded in the field notes of the biologists. For any community that could not be easily classified under the MCV, then a suitable vegetation scheme (e.g., *Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California* [1986]) was used.

Several sub-tasks were accomplished during the biological reconnaissance survey. On-site and adjacent areas were characterized for their existing conditions and current land uses. The PFOs of special-status wildlife species, resulting from the literature review, were assessed in relation to the

existing conditions of the Project site. Representative photographs were collected to document the currently existing conditions, as well as the general surroundings. The Project footprint and its immediately adjacent areas were assessed for the presence/absence of potentially jurisdictional waters of the USACE, RWQCB and/or CDFW, including wetlands, vernal pools, washes, drainages, streams, lakes, ponds and any other water bodies. Table 1 details the personnel, survey date and survey conditions for the initial biological reconnaissance and vegetation mapping survey.

Table 1. Biological Reconnaissance and Vegetation Mapping Survey Date, Personnel and Conditions

Date	Personnel	Start/End	Temperature (F°)	Wind (mph)	Cloud Cover (%)	Precipitation
3/31/21	Kris Alberts Tawni Gotbaum	0805-1745	46/73	0-2/2-8	0/0	0/0

3.2.2 Protocol Swainson's Hawk Surveys - Spring and Summer 2021

During the spring and summer of 2021, surveys were completed to assess the presence/absence of Swainson's hawk. Surveys were conducted by Blackhawk biologists Katie Quint, Tawni Gotbaum and Desiree Johnson (Table 2). The areas surveyed included the Project boundary plus a half-mile buffer. A copy of the report covering the field work is provided in Attachment B.

Table 2. Swainson's Hawk Survey Dates, Personnel and Conditions

Date	Survey #	Survey Period				Personnel	Start/End	Temperature (F°)	Wind (mph)	Cloud Cover (%)	Precipitation
		I	II	III	IV						
3/31/21	1	•				Kris Alberts Tawni Gotbaum	0805-1745	46/73	0-2/2-8	0/0	0/0
4/5/21	2		•			Katie Quint Tawni Gotbaum	0730-1700	62/72	5-8/12-15	0/20	0/0
4/6/21	2		•			Katie Quint Tawni Gotbaum	0700-1100	54/75	7-9/3-5	15/10	0/0
4/28/21	3		•			Katie Quint Tawni Gotbaum	0630-1500	52/80	0-2/4-6	0/0	0/0
4/29/21	3		•			Katie Quint Tawni Gotbaum	0640-1315	52/88	1-2/6-8	0/15	0/0
5/4/21	4			•		Katie Quint Tawni Gotbaum	0545-1515	54/96	0-1/6-8	0/0	0/0
5/5/21	4			•		Katie Quint Tawni Gotbaum	0545-1530	56/93	1-2/5-7	0/10	0/0
5/18/21	5			•		Katie Quint Desiree Johnson	0600-1500	61/87	0-2/10-16	0/0	0/0
5/19/21	5			•		Katie Quint	0610-0800	68/70	15-20/10-15	50/50	0/0
5/25/21	6			•		Hayley Milner Desiree Johnson	1700-1730	83/83	3-5/3-5	25/25	0/0

6/17/21	7				•	Katie Quint	0645-0700	82/82	2-4/2-4	20/20	0/0
6/29/21	8				•	Katie Quint Tawni Gotbaum	0625-0753	71/76	0-2/0-2	80/80	0/0
7/13/21	9				•	Katie Quint Tawni Gotbaum	0510-0830	82/83	2-4/2-4	85/50	0/0

Results of the literature review included 18 records detailing multiyear SWHA nesting activity in two to three different territories within ten miles of the Project site (CNDDB records are from 2009, 2010, 2011, 2012, 2013, 2106, 2017, 2018 and 2020). Notations about Swainson's hawk foraging and wintering in the immediate vicinity of ferruginous hawk (*Buteo regalis*) observations are included in six CNDDB accounts within five miles of the Project site (CDFW 2021).

Before conducting the surveys, the general survey approach was discussed by Blackhawk Environmental principal biologist Kris Alberts and Jaime Marquez of CDFW over the phone on March 29, 2021. During the phone call, it was agreed that the survey approach would include the mapping of all Swainson's hawk-suitable nest trees within one-half mile of the Project, CDFW-protocol level Swainson's hawk surveys catered specifically toward the Antelope Valley region, and the documentation of nest competitors and all Swainson's hawk observations within the Survey Area.

Using the literature review results as background preparation for the focused Swainson's hawk surveys, Blackhawk Environmental principal biologist Kris Alberts and associate biologists Katie Quint, Tawni Gotbaum and Desiree Johnson conducted nine focused Swainson's hawk surveys following CDFW protocol for Kern County over 13 days between March 31 and July 13, 2021. The Survey Area included the entire Project footprint of the proposed energy storage facility parcels, gen-tie lines, and its associated 250-foot-wide ROW plus a half-mile buffer surrounding all proposed Project features.

The survey methods generally followed the latest accepted CDFW SWHA protocol specifically referencing Kern County (CEC and CDFW 2010). CDFW protocol designates ten surveys to be conducted over four Survey Periods aiming to capture progressive nesting behaviors and activity. This includes a preliminary survey of potential nest locations (Survey Period I) followed by surveys targeting initial occupancy of traditional nest territories and nesting behaviors (Survey Period II), direct monitoring of known/identified active nests to confirm incubation (Survey Period III), and direct monitoring of known/identified active nests to confirm young rearing (Survey Period IV).

A total of nine focused SWHA surveys were performed by Blackhawk Environmental in 2021 by vehicle and/or foot with teams of two experienced raptor biologists and the aid of a 60x-power spotting scope and binoculars. An initial biological reconnaissance survey was conducted on March 31, 2021, during CDFW's SWHA Survey Period I, satisfying CDFW recommendations for site familiarization and potential SWHA nest detection (CEC and CDFW 2010). Two focused Swainson's hawk surveys were performed during Survey Period II in order to catalog, revisit, and check all suitable nest trees identified within the Survey Area and continue assessing any additional suitable trees as potential SWHA nesting substrate. Surveyors utilized a mobile aerial map (ESRI ArcGIS Collector) to demarcate trees suitable for potential nesting as well as active competitor nests; fine-scale ground-truthing and refinement of mapped SWHA-suitable Joshua trees occurred during pedestrian Joshua tree inventory surveys. Three surveys were conducted for both Survey Periods III and IV intended for monitoring only known active SWHA nest sites; however, Blackhawk Environmental teams surveyed the entire Survey Area for two of the three Survey Period III surveys which led to the discovery of an active SWHA territory. Additionally, one

final sweep of high-quality nesting substrate identified throughout the Survey Area concluded the final July 13, 2021, nest check and survey. By exceeding the stated CDFW requirements, the confidence level that these surveys accurately captured Swainson's hawk presence/absence and nesting behaviors within the Survey Area is high.

Surveys of the entire Survey Area were conducted from early morning to late afternoon on March 31, April 5-6, April 28-29, May 4-5, and May 18, 2021, by vehicle and/or foot. Biologists drove slowly along existing roads (mostly dirt roads) through SWHA-suitable habitats to gain visual access to all SWHA-suitable trees. Biologists drove 5 miles per hour to the greatest extent feasible to provide 100-percent visual coverage of the Survey Area. Biologists paused to scan SWHA-suitable trees for nests as appropriate and to scan for individual SWHA on the landscape with the aid of binoculars and/or a 60x-power spotting scope. While driving and scanning, biologists specifically searched for Swainson's hawks perching or flying. During the active nest checks on May 19, June 17, June 29 and July 13, 2021, the biologist(s) conducted observations concealed by native vegetation and with the aid of a 60x-power spotting scope from designated observation points 930 and 1,020 feet away from the nest site to minimize the potential for observation-based disturbance. All photography was taken with a 400mm zoom lens or digiscoped via an Apple iPhone camera image captured through the eyepiece of the 60x-power spotting scope used for observations. All SWHA-relevant data and wildlife species were recorded in the field notes of the biologists, and significant observations, including incidentally observed special-status species, were digitally mapped in the ESRI ArcGIS Collector application.

3.2.3 Protocol Burrowing Owl Surveys – Spring 2021

During the spring and summer of 2021, surveys were completed to assess the presence/absence of burrowing owl. Surveys were conducted by Blackhawk biologists Desiree Johnson, Katie Quint, Hayley Milner, Tawni Gotbaum and Tamara Kramer (Table 3). The areas surveyed included the Project boundary plus a 150-meter buffer. A copy of the focused burrowing owl survey report is provided in Attachment B.

Table 3. Burrowing Owl Survey Dates, Personnel, and Survey Conditions

Date	Pass #	Personnel	Start/End	Temperature (F°)	Wind (mph)	Cloud Cover (%)	Precipitation
4/12/21	1	Desiree Johnson Katie Quint	0700-1530	55-86	0-9	0-25	0/0
4/13/21	1	Desiree Johnson Katie Quint Hayley Milner	0645-1530	55-82	6-16	0-15	0/0
4/14/21	1	Desiree Johnson Katie Quint Hayley Milner Tamara Kramer	0645-1500	47-65	1-12	0-25	0/0
4/15/21	1	Desiree Johnson Katie Quint Hayley Milner Tamara Kramer Tawni Gotbaum	0645-1550	48-71	3-16	2-18	0/0
4/16/21	1	Desiree Johnson Katie Quint Hayley Milner Tamara Kramer Tawni Gotbaum	0645-1600	46-81	1-2	0	0/0

5/3/21	2	Desiree Johnson Hayley Milner	0545-0800	59-76	1-7	5-20	0/0
			1740-1950	79-71	5-6	0	0/0
5/4/21	2	Desiree Johnson Hayley Milner	0540-0755	55-70	1-5	0	0/0
			1735-1920	88-79	8-15	0	0/0
5/5/21	2	Desiree Johnson Hayley Milner	0540-0800	58-71	2-4	0	0/0
5/25/21	3	Desiree Johnson Hayley Milner Tamara Kramer	0525-0800	65-72	2-12	5-10	0/0
			1745-1945	83-72	3-4`	25-65	0/0
5/26/21	3	Desiree Johnson Hayley Milner Tamara Kramer	0535-0745	61-62	4-3	100-10	0/0
6/16/21	4	Desiree Johnson Hayley Milner	0530-0735	71-92	1-8	90-70	0/0
			1800-1930	109-102	8-9	60-60	0/0

Using the literature review results as background preparation for the habitat assessment and focused burrowing owl surveys, Blackhawk Environmental biologists Desiree Johnson, Katie Quint, Tawni Gotbaum, Hayley Milner and Tamara Kramer conducted the four focused burrowing owl surveys following CDFW protocol by July 15, 2021. No surveys were conducted within five days following a rain event. The Survey Area included the entire Project footprint of the proposed energy storage facility parcels, tie-lines and their associated 250-foot-wide ROW, plus a 150-meter buffer surrounding all proposed Project features.

The survey methods followed the latest accepted CDFW burrowing owl protocols (2012) and were performed in the same fashion as other burrowing owl surveys for similar projects in the Antelope Valley/Willow Springs area (ICF 2019, Western EcoSystems Technology 2020). CDFW protocol stipulates that four visits constitute a complete suite of focused burrowing owl surveys, with the first occurring between February 15 and April 15 and the remaining three to occur at least three weeks apart so that the last occurs between June 15 and July 15. The four surveys were conducted accordingly within the peak breeding season, with the first survey conducted after most or all burrowing owl migrants were expected to have moved out of the area, but with any resident burrowing owls present. Therefore, the confidence level that these surveys accurately captured burrowing owl presence/absence is high.

The first portion of the overall survey effort included preliminary vegetation mapping and a biological reconnaissance survey, conducted on March 31, 2021, by Blackhawk Environmental Principal Biologist Kris Alberts and Associate Biologist Tawni Gotbaum. Representative photographs were collected along the Project route to capture current site conditions within and surrounding the Project footprint. Since suitable burrowing owl habitat was observed on site and the species is known to occur in the Project vicinity, a focused burrowing owl survey became required per CDFW guidelines. The first focused BUOW survey was performed during the week of April 12, 2021, by Blackhawk biologists Desiree Johnson, Katie

Quint, Tawni Gotbaum, Hayley Milner and Tamara Kramer using ESRI ArcGIS Collector software to demarcate BUOW-suitable habitats from non-suitable habitats (Attachment B, Figure 2). Following the initial assessment and the first focused survey, three additional BUOW surveys were conducted only in areas of BUOW-suitable habitats with a focus on mapped suitable burrows and burrow complexes.

All burrowing owl surveys were conducted in the early morning or late afternoon hours on April 12-16 (Pass 1), May 3-5 (Pass 2), May 25-26 (Pass 3) and June 16 (pass 4) by walking slowly through BUOW-suitable habitats, particularly focused on BUOW-suitable burrows. Biologists walked a maximum of 30-meter-wide belt transects within the Survey Area to provide 100-percent visual coverage. Transects were spaced as close as 10 meters, depending on vegetative density and topography. While walking the transects, biologists specifically searched for BUOW, BUOW sign (i.e., cough pellets, whitewash, feathers, tracks, nest decorations) and BUOW-suitable burrows, burrow complexes and burrow surrogates. Biologists paused at least every 100 meters, as appropriate, to scan for BUOW using binoculars and/or the naked eye. In addition, the biologists listened for BUOW calls. For habitat where biologists could not safely survey or gain permission to access, such as private property, surveys were conducted by meticulously scanning the area using binoculars. If BUOW were not directly observed at a suitable burrow with BUOW sign, sign was cleared from around the burrow entrances to facilitate detection of fresh sign that would indicate recent occupation in subsequent survey passes. Survey pass 1 included a full sweep of the entire Survey Area, while subsequent survey passes focused only on areas known to have suitable burrows that resulted from survey pass 1. All BUOW-relevant data and wildlife species were recorded in the field notes of the biologists. All observed BUOW-suitable burrows and habitats are shown on Figure 2 in Attachment B.

3.2.4 Rare Plant Surveys – Spring 2021

During the spring of 2021, one rare plant survey was conducted across five separate days by Blackhawk biologists Desiree Johnson and Hayley Milner (Table 4). An inventory of all plant species observed was collected concurrently and is provided in Attachment D. Areas surveyed included the Project boundary and ROW.

Table 4. Rare Plant Survey Dates, Personnel, and Survey Conditions

Date	Personnel	Start/End	Temperature (F°)	Wind (mph)	Cloud Cover (%)	Precipitation
4/13/21	Desiree Johnson Hayley Milner	0645-1520	58-82	6-16	0-15	0/0
4/15/21	Desiree Johnson Hayley Milner	0645-1550	48-71	3-16	2-18	0/0
5/3/21	Desiree Johnson Hayley Milner	0545-0800	59-76	1-7	5-20	0/0
		1740-1950	79-17	5-6	0	0/0
5/4/21	Desiree Johnson Hayley Milner	0540-0755	55-70	1-5	0	0/0
		1735-1920	88-79	8-15	0	0/0

5/5/21	Desiree Johnson Hayley Milner	0545-0800	58-71	2-4	0	0/0

Rare plant survey methods were based on the following resources: 1) *Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities* (CDFW 2009), 2) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996), and 3) *General Rare Plant Survey Guidelines* (Cypher 2002). However, due to certain topographic limitations, not all areas could be observed directly (e.g., steep or treacherous areas, where safety was a concern). Surveying of inaccessible areas occurred to the extent possible from a safe vantage point, using binoculars and other methods/equipment, as appropriate.

Biologists meandered through the Survey Area to obtain as much coverage as possible. As mentioned, due to topographical restrictions, as well as an inability to access fenced and/or private properties, certain sections of the Project were not surveyed on foot; however, a concerted effort was made to survey all accessible areas.

Plant species were identified to species or subspecies level and recorded in the field notes of the biologists. All Joshua trees occurring within the Project footprint of the proposed energy storage facility parcels, tie-lines and their associated 250-foot-wide ROW were mapped in the ESRI ArcGIS Collector application. In some cases, surveyors obtained samples from the site, so that a dissecting microscope could later be used for plant identification. Taxonomy of plant species identified within the Survey Area was based on *The Jepson Manual* (Hickman) and *The Jepson Manual, 2nd Ed.* (Baldwin et al. 2012). In addition to documenting plant species, biologists recorded all incidental wildlife occurrences by sight, sound and/or sign (e.g., tracks, burrows, scat, etc.).

3.2.5 Desert Tortoise Surveys – Spring 2021

During the spring of 2021, a focused desert tortoise survey was completed over four separate days to assess the presence/absence of desert tortoise. Surveys were conducted by Blackhawk tortoise-qualified biologists Katie Quint and Tawni Gotbaum (Table 5). Areas surveyed included the Project boundary and ROW.

Table 5. Desert Tortoise Survey Dates, Personnel, and Survey Conditions

Date	Personnel	Start/End	Temperature (F°)	Wind (mph)	Cloud Cover (%)	Precipitation
4/12/21	Katie Quint	0728-1542	58-86	3-9	0-25	0/0
4/14/21	Katie Quint Tamara Kramer	0645-1500	47-65	1-12	0-25	0/0
5/4/21	Katie Quint Tawni Gotbaum	0545-1515	54-96	0-8	0-10	0/0
5/5/21	Katie Quint Tawni Gotbaum	0545-1530	56-93	1-7	0-10	0/0

The initial literature review indicated that the Project is located within a Desert Tortoise Recovery Unit, and the CNDDB search resulted in three records of desert tortoise observations within five miles of the Project. Further, habitat, topography and soils within the majority of the Survey Area are suitable for desert tortoise. For this effort, surveys were conducted following the protocol set forth in *Chapter 4. General Ecology and Survey Protocol for Determining Presence/Absence and Abundance for the Desert Tortoise - Mojave Population* (USFWS 2009). Desert tortoise surveys were conducted in the morning and afternoon hours of April 12 and 14, and May 4 and 5 by walking 10-meter-wide belt transects to provide 100-percent visual coverage of the Survey Area. With respect to desert tortoise and their sign, any observed burrows, dens, scats and shell remains were to be classified using the following system:

Burrows and Dens:
(1) currently active, with tortoise or recent tortoise sign
(2) good condition, definitely tortoise; no evidence of recent use
(3) deteriorated condition; definitely tortoise
(4) deteriorated condition; possibly tortoise
(5) good condition; possibly tortoise

Scats:
(1) wet (not from rain or dew) or freshly dried; obvious odor
(2) dried with glaze; some odor; dark brown
(3) dried; no glaze or odor; signs of bleaching (light brown) tightly Packed material:
(4) dried; light brown to pale yellow; loose material; scaly appearance
(5) bleached, or consisting of only plant fiber

Shell Remains:
(1) fresh or putrid
(2) normal color; scutes adhere to bone
(3) scutes peeling off bone
(4) shell bone is falling apart; growth rings on scutes are peeling
(5) disarticulated and scattered

Developed areas within the Survey Area were excluded from the survey as unsuitable habitat. For habitat where biologists could not safely survey or gain permission to access, such as private property, surveys were conducted by meticulously scanning the area using binoculars. All desert tortoise-relevant data and wildlife species were recorded in the field notes of the biologists and suitable tortoise burrow locations were recorded using the ESRI ArcGIS Collector application.

3.2.6 Jurisdictional Delineation Survey and Report – Summer 2021

Based on findings during the literature review and biological survey, a jurisdictional delineation was performed on August 16, 17 and 23 2021 by Blackhawk wetland specialist Kris Alberts and Lorena Bernal. The delineation effort followed guidelines set forth by USACE (1987, 2008) and was performed to gather field data at potentially jurisdictional Waters of the U.S. and Waters of the State within the Project site. The delineation focused on analyzing the data revealed by the NWI/NHD dataset and identifying the presence/absence of potentially jurisdictional drainages and/or water bodies within the Project site. To account for all potential Project impact areas to sensitive aquatic resources, all areas within the larger Project ROW were assessed for jurisdictional resources by visual inspection of presence/absence of drainage features and/or water bodies. Where drainage features and/or water bodies were found, each feature was then characterized and delineated based on commonality

among vegetation community characteristics, hydrology and/or three-parameter testing methodology, as applicable.

Each feature was mapped to submeter accuracy as Mr. Alberts walked the lengths of each feature along its jurisdictional limits. Mrs. Bernal photo-documented each mapped drainage feature using the Wildnote application on her smartphone. This combined effort yielded highly accurate maps of each feature along with a complete geo-referenced photo log.

Prior to conducting the field delineation, the following sources were consulted to identify land use history and provide additional context to potentially atypical and problematic jurisdictional wetlands within the Project site, including:

- USGS *Fairmount Butte, Little Buttes, Tylerhorse Canyon* and *Willow Springs California* quadrangle topographic maps (USGS 2012)
- Historical aerial photographs (NETR 2021)
- Current and historical aerial photographs (Google 2021)
- National Wetland Inventory (USFWS 2021)
- National Hydrography Dataset (USGS 2021)
- California Natural Diversity Database (CNDDB) search for sensitive riverine, riparian and/or aquatic species (CDFW 2021)

Once on site, the potential wetland locations, water bodies and/or drainage features were examined to determine the presence of any of the three wetland parameters (i.e., hydrology, hydric soils, hydrophytic vegetation), drainage channels and/or water bodies. Soil type and classification data used in the delineation were provided by the Natural Resource Conservation Service's web soil survey (NRCS 2021) (Attachment A, Figure 2).

Potential wetland locations, water bodies and/or drainage features observed within the Project site were evaluated using the methodology set forth in the USACE Wetland Delineation Manual (USACE 1987) and the Arid West Supplement (USACE 2008). Wetland hydrology indicators may include evidence of inundation, saturation, water marks, drainage patterns, soil cracks, drift lines, sediment deposits, presence of aquatic invertebrates and other variables. Vegetation was analyzed using dominant species wetland indicator status (USDA 2018). Suspected non-wetland jurisdictional areas were evaluated for the presence of definable channels, ordinary high-water mark (OHWM), and connectivity to a Traditional Navigable Water (TNW) or Relatively Permanent Water (RPW).

3.3 Limitations That May Influence Results

Surveys were conducted in 2021, after several years of extended drought, which could have the effect of reducing the detectability of certain species, particularly plants. Therefore, conservative estimates regarding the PFOs of certain special-status plant and wildlife species have been considered with appropriate avoidance, minimization, and mitigation measures proposed herein.

4.0 REGULATORY SETTING

This section is divided into sub-sections that include Federal, State, and local regulations that apply to the Project, as proposed.

4.1 Federal

4.1.1 Federal Endangered Species Act (FESA)

The FESA defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA, it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA as to: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification that result in injury to or death of species as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a Federal agency for an action that could affect a federally listed plant and/or wildlife species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants.

Federally-Designated Special-Status Species

All references to federally protected species in this Report (whether listed, proposed for listing, or candidate) include the most current published status or candidate category to which each species has been assigned by USFWS. Additionally, the USFWS' *Birds of Conservation Concern 2008* report was published to identify the migratory and non-migratory bird species (beyond those already federally listed) that represent the highest conservation priorities for the USFWS.

For this report, the following acronyms are used for Federal special-status species:

- **FE**: Federally listed as Endangered
- **FT**: Federally listed as Threatened
- **FPE**: Federally proposed for listing as Endangered
- **FPT**: Federally proposed for listing as Threatened
- **FC**: Federal Candidate species (Former Category 1 candidates)
- **BCC**: USFWS Birds of Conservation Concern

4.1.2 Federal and State Take Authorizations for Listed Species

Federal or State authorizations of impacts to or incidental take of a listed species by a private individual or other entity can be granted in one of the following ways:

- Section 7 of FESA stipulates that any Federal action that may affect a species listed as threatened or endangered requires a formal consultation with USFWS to ensure that the action is not likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of designated critical habitat. 16 U.S.C. 1536(a)(2).

- In 1982, the FESA was amended to give private landowners the ability to develop Habitat Conservation Plans (HCP) pursuant to Section 10(a) of the FESA. Upon development of an HCP, the USFWS can issue incidental take permits for listed species where the HCP, at a minimum, specifies the following: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require, as being necessary or appropriate for the plan.

- Sections 2090-2097 of the California Endangered Species Act (CESA) require that the State lead agency consult with CDFW on Projects with potential impacts on State-listed species. These provisions also require CDFW to coordinate consultations with USFWS for actions involving federally listed, as well as State- listed species. In certain circumstances, Section 2080.1 of the California Fish and Game Code allows CDFW to adopt the Federal incidental take statement or the 10(a) permit as its own, based on its findings that the Federal permit adequately protects the species under State law.

4.1.3 Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (PL 65-186, as amended; 16 USC §§ 703 et seq.) protects most birds whether or not the species migrate. Birds, their nests, eggs, parts, or products may not be killed or possessed. Game birds are listed and protected except where specific seasons, bag limits, and other features govern their hunting. Exceptions are made for some agricultural pests, which require a USFWS permit (e.g., yellow-headed, red-winged, bi-colored, tri-colored, Rusty and Brewer's Blackbirds, cowbirds, all grackles, crows and magpies). Some other birds that injure crops in California may be taken under the authority of the County Agricultural Commissioner (e.g., meadowlarks, horned larks, golden-crowned sparrows, white- and other crowned sparrows, goldfinches, house finches, acorn woodpeckers, Lewis' woodpeckers and flickers). Permits may be granted for various non-commercial activities involving migratory birds and some commercial activities involving captive-bred migratory birds.

4.1.4 Fish and Wildlife Conservation Act of 1980

The Fish and Wildlife Conservation Act of 1980 (PL 96-366; 16 USC §§2901 et seq.) provides for conservation, protection, restoration, and propagation of certain species, including migratory birds threatened with extinction.

4.1.5 Federal Clean Water Act (CWA) and USACE Jurisdictional Waters

The Clean Water Act (CWA) regulates the discharge of pollutants to waters of the United States to protect water quality and the beneficial uses of these waters. Through a permit application process, the CWA Section 404 regulates dredge and fill discharges to waters of the United States.

USACE Waters of the U.S.
According to the USACE's Wetland Delineation Manual, wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions."

Regulatory Definition
In accordance with Section 404 of the CWA, the USACE regulates the discharge of dredged or fill material into Waters of the United States. The term "Waters of the United States" is defined as:

- All traditional navigable waters (TNW) currently used, or used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation, or destruction of which could affect foreign commerce including any such waters, (1) which could be used by interstate or foreign travelers for recreational or other purposes; or (2) from which fish or shellfish are, or could be, taken and sold in interstate or foreign commerce; or (3) which are used or could be used for industries in interstate commerce;
- All other impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified above;
- The territorial seas; and
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in the paragraphs above (33 Code of Federal Regulations [CFR] Part 328.3[a]).

Non-navigable tributaries that do not constitute relatively permanent waters (RPW; exhibit at least seasonal flow, typically three months) may be considered Waters of the U.S. based on significant nexus standards, which may include assessment of downstream hydrologic and ecological functions of the tributary, as well as connectivity to receiving waters (RPWs and/or TNWs).

Wetland Parameters
Wetlands are delineated using three parameters: hydrophytic vegetation, wetland hydrology and hydric soils. According to USACE, indicators for all three parameters must normally be present to qualify as a wetland. A formal wetland delineation was not conducted as part of the surveys for this proposed Project.

USACE Non-Wetland Waters of the U.S.
The USACE also requires the delineation of non-wetland jurisdictional Waters of the U.S. These waters must have strong hydrology indicators, such as the presence of seasonal flows and an ordinary high watermark (OHWM). An ordinary high watermark is defined as:

> . . . that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of

litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR Part 328.3).

Areas delineated as non-wetland jurisdictional waters may lack wetland vegetation or hydric soil characteristics. Hydric soil indicators may be missing because topographic position precludes ponding and subsequent development of hydric soils. Absence of wetland vegetation can result from frequent scouring due to rapid water flow. These types of jurisdictional waters are delineated by the lateral and upstream/downstream extent of the OHWM of the particular drainage or depression.

Following the Navigable Waters Protection Rule of 2020, ephemeral drainages are no longer considered jurisdictional under USACE. Drainage features must have at least intermittent flow to be considered jurisdictional under USACE.

4.2 State

4.2.1 State of California Endangered Species Act (CESA)

California's Endangered Species Act (CESA) defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that is in danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." The State defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an Endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike FESA, CESA does not list invertebrate species.

Article 3, Sections 2080 through 2085, of the CESA addresses the taking of threatened, endangered, or candidate species by stating "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided." Under the CESA, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require permits or memoranda of understanding and can be authorized for endangered species, threatened species, or candidate species for scientific, educational, or management purposes, and for take incidental to otherwise lawful activities.

State-Designated Special-Status Species

Some mammals and birds are protected by the state as Fully Protected (FP) Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. California Species of Special Concern (SSC) are species designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. This

list is primarily a working document for the CDFW's California Natural Diversity Database (CNDDB) Project. Informally listed taxa are not protected but warrant consideration in the preparation of biological reports. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites.

For this report the following acronyms are used for State special-status species:

- **SE**: State-listed as Endangered
- **ST**: State-listed as Threatened
- **SCE**: State candidate for listing as Endangered
- **SCT**: State candidate for listing as Threatened
- **FP**: State Fully Protected
- **SSC**: Species of Special Concern

California Rare Plant Rank

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of special-status species in California. The group's publication, *California Native Plant Society's Inventory of Rare and Endangered Plants of California* separates plants of interest into five categories, which identify or describe degrees of concern for a species. In the inventory, CNPS has compiled information focusing on geographic distribution and qualitative characterization of Rare, Threatened, or Endangered vascular plant species of California. The inventory serves as the candidate list for potential threatened and endangered species by the CDFW.

4.2.2 California Environmental Quality Act (CEQA)

Shortly after the United States Federal government passed the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA) was passed in 1970 to institute a statewide policy of environmental protection. CEQA does not directly regulate land uses, but instead requires State and local agencies within California to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects to adopt all feasible measures to mitigate those impacts. CEQA makes environmental protection a mandatory part of every California State and local agency's decision-making process.

CEQA Thresholds of Significance

Environmental impacts relative to biological resources are assessed using impact significance threshold criteria, which reflect the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State of California to:

> *"Prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities..."*

Determining whether a project may have a significant effect or impact, plays a critical role in the CEQA process. According to CEQA, Section 15064.7 (Thresholds of Significance), each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the

significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and the CEQA Guidelines, Attachment G, Environmental Checklist Form. Section 15065(a) states that a Project may have a significant effect where:

> *"The Project has the potential to: substantially degrade the quality of the environment, 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 wildlife community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, ..."*

Therefore, for the purpose of this analysis, impacts to biological resources are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following criteria discussed below would result from implementation of the proposed project.

Criteria for Determining Significance Pursuant to CEQA

Attachment G of the 1998 State CEQA guidelines indicate that a project may be deemed to have a significant effect on the environment if the project is likely to:

a) *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 the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*

b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*

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

d) *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.*

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

CEQA Guidelines Section 15380

The CEQA requires evaluation of a project's impacts on biological resources and provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts. Furthermore, pursuant to the CEQA Guidelines Section 15380, CEQA provides protection for non-listed species that could potentially meet the criteria for state listing. CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if the species is not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future. For plants, CDFW assigns California Rare Plant Ranks (CRPR) to species categorized as List 1A, 1B, or 2 from the CNPS's *Inventory of Rare and Endangered Plants in California*, which may meet the criteria for listing and should be considered under CEQA. CDFW also recommends protection of plants, which are regionally important, such as locally rare species, disjunctive populations of more common plants, or plants on the CNPS Lists 3 or 4.

4.2.3 California Energy Commission (CEC) Significance Criteria for Application for Certification

California Energy Commission (CEC) significance criteria for application for certification closely mirrors CEQA significance criteria. Significant biological impacts resulting from the proposed Project were assessed by the following criteria:

a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as endangered, threatened, candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by CDFW or USFWS.*

b) *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.*

c) *Have a substantial adverse effect on federal or state protected waters of the United States (including wetlands) as defined by Sections 404 and 401 of the 1972 Amendments to the Federal Water Pollution Control Act, commonly known as the Clean Water Act, or the Porter-Cologne Act, either through direct removal, filling, hydrological alteration, or other means.*

d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory native wildlife corridors, or impede the use of wildlife nursery sites.*

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

g) *Threaten to eliminate a plant or animal community.*

4.2.4 Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the California Fish and Game Commission to designate plants as rare or endangered. There are 64 species, subspecies, and varieties of plants that are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations, emergencies, and/or with proper notification to the CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

4.2.5 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code §§13000 et seq.) is the State's primary water law. It gives the State Water Resources Control Board (SWRCB) and the nine regional water quality control boards substantial authority to regulate water use of surface and sub-surface waters.

4.2.6 CDFW Jurisdictional Waters

Under Sections 1600–1607 of the Fish and Game Code, CDFW regulates activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. CDFW has jurisdiction over riparian habitats (e.g., riparian woodland) associated with watercourses. CDFW jurisdictional waters extend from the outer edges of riparian vegetation or between the tops of the banks of streams or lakes, whichever is wider. Although CDFW does not regulate vernal pools under Section 1602 of the Fish and Game Code, CDFW will assert jurisdiction over isolated riparian features (including vernal pools) if State threatened and/or endangered species are present, as outlined in the CESA or if resources are provided directly or indirectly to fish and wildlife of the region. CDFW may also assume jurisdiction over modified or man-made waterways; such jurisdiction is generally based on the value of such features to support riparian or aquatic plant or animal species. For clarification of features that may be subject to CDFW jurisdiction, the CDFW Legal Advisor has prepared the following opinion (CDFG 1994):

- Natural waterways that have been subsequently modified and which have the potential to contain fish, aquatic insects, and riparian vegetation will be treated like natural waterways.
- Artificial waterways that have acquired the physical attributes of natural stream courses and which have been viewed by the community as natural stream courses should be treated by [CDFW] as natural waterways.
- Artificial waterways without the attributes of natural waterways should generally not be subject to Fish and Game Code provisions.

CDFW jurisdictional limits may also include artificial stock ponds and irrigation ditches constructed within uplands, and outer drip line limits of adjacent riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status or its location beyond the defined bed, bank or channel.

4.2.7 RWQCB Jurisdictional Waters

RWQCB is the regional agency responsible for protecting water quality in California. The jurisdiction of this agency includes Waters of the State as mandated by the Federal CWA Section 401. When CWA Section 404 jurisdiction is not present for isolated waters, the RWQCB may assert jurisdiction via the California Porter-Cologne Water Quality Control Act. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state". The Porter-Cologne Water Quality Control Act provides a regulatory framework to provide comprehensive protections for surface and groundwater within the State of California. Waters subject to jurisdiction under the Porter-Cologne Water Quality Control Act require that any discharge that may negatively impact or otherwise affect a Water of the State must coordinate with RWQCB. During coordination, RWQCB may require implementation of mitigation measures or other requirements to protect overall water quality.

5.0 RESULTS

This section is divided into sub-sections that include descriptions of the environmental setting, soil types, hydrologic features, vegetation communities, special-status plant species and special-status wildlife species observed within the Project and/or the Survey Area. Attachment C provides representative photographs taken during field surveys in 2021.

5.1 Environmental Setting

The Project site is in Kern County and is not covered under an approved Habitat Conservation Plan (HCP) or any other Natural Communities Conservation Plan (NCCP). Since the Project occurs on privately-owned land and is subject to State review, the Project is required to follow CEC and CEQA biological standards for common and special-status onsite biological resources that are known to be present or that may be present onsite, including burrowing owl, desert tortoise, Swainson's hawk and Joshua trees.

5.1.1 Existing Conditions

Existing conditions within the Survey Area broadly include areas of sparse to moderately high desert vegetation cover, intermixed with disturbed areas. The eastern portion of the Project ranges topographically from gently sloping hills with sparse vegetative cover to relatively steep slopes associated with ephemeral drainages (dry at the time of the surveys) with ample bare ground and sandy to gravelly soils. A mix of rural residential development, agricultural land, and paved and dirt roads intersect the landscape. The majority of the Project ROW is centered on paved and dirt roads, and a large stretch of the ROW parallels an existing transmission/gen-tie line running northeast to southwest. The Gem parcels are located entirely on sparsely vegetated, undeveloped land.

The central portion of the Project consists of generally flat, sparsely vegetated open areas with occasional gentle slopes, as well as scattered residences and dirt roads. The ROW is primarily centered on dirt and paved roads with the remainder of the Survey Area on a mostly undeveloped area. Existing solar arrays occur along the northern and southern boundaries of this portion of the Survey Area.

The western portion of the Project consists of generally flat and gradually sloped land with a range of low to moderate vegetative cover. Dirt and paved roads associated with historical and current rural residential development, as well as access roads to existing solar arrays to the northeast and south, Manzana Wind facilities to the north, and the existing Whirlwind Substation to the southwest, regularly intersect the landscape. An existing transmission/gen-tie line, originating at the Whirlwind Substation, runs northeast to southwest through this portion of the Survey Area. One portion of the proposed tie-line route extends into the existing Whirlwind substation; therefore, part of the Project site and Survey Area were within the developed footprint of the Whirlwind substation. However, the existing Whirlwind substation was excluded from these surveys due to a lack of authorized access and a perceived lack of suitable special-status species habitat. Despite the presence of numerous dirt roads and scattered rural residential development, the western portion of the Survey Area remains mostly undeveloped.

Trees observed within the Survey Area are correlated primarily to rural residential development in the form of ornamental plantings and windbreaks that vary in height from six to 40 feet. Scattered tamarisk, averaging 20 feet in height, also occur throughout the Survey Area. Native Joshua trees also occur as a component of the high desert vegetation communities in the Survey Area. Cover types and

vegetation communities are depicted in Figure 4 of Attachment A and further discussed in Section 5.4.

5.2 Soil Types

According to the Natural Resources Conservation Service (NRCS 2021), a total of 27 soil types are found within the boundaries of the Survey Area (Attachment A, Figure 2):

- AcA Adelanto coarse sandy loam, 2-5% slopes
- AaB Adelanto loamy sand, 2-5% slopes
- AsB Arizo gravely loamy sand, 0-5% slopes
- 104 Arizo gravely loamy sand, 2-9% slopes
- 112 Badland-Orthents complex, 30-75% slopes
- 116 Cajon gravely loamy sand, 0-9% slopes
- CaA Cajon loamy sand, 0-2% slopes
- 114 Cajon loamy sand, 0-5% slopes
- CaC Cajon loamy sand, 2-9% slopes
- 125 DeStazo sandy loam, 0-2% slopes
- 126 DeStazo sandy loam, 5-9% slopes
- HbC Hanford coarse sandy loam, 2-9% slopes
- HkA Hesperia fine sandy loam, 0-2% slopes
- HkB Hesperia fine sandy loam, 2-5% slopes
- HmA Hesperia fine sandy loam, loamy substratum, 0-2% slopes
- HnA Hesperia loam, 0-2% slopes
- HgA Hesperia loamy fine sand, 0-2% slopes
- MzB Mohave coarse sandy loam, 2-5% slopes
- RhF Rock land
- Ro Rosamond fine sandy loam
- Rp Rosamond loam
- Rt Rosamond silty clay loam
- RxF Rough broken land
- Sx Sunrise loam
- Sv Sunrise sandy loam
- Sw Sunrise sandy loam, shallow
- 185 Torriorthents-Rock outcrop complex, very steep

According to the Custom Soil Resource Report (NRCS 2021) generated for the area encompassing the Survey Area, the main mapped soil types that overlap with the proposed Project area include Hesperia fine sandy loam, 2 to 5 percent slopes, Cajon loamy sand 2 to 9 percent slopes, Rosamond loam and DeStazo sandy loam, 0 to 2 percent slopes. None of these soils are considered hydric.

5.3 Hydrologic Features

The NWI/NHD review resulted in numerous drainage features and water bodies (including 21 riverine, one lake and six freshwater ponds) within 250 feet of the Project ROW (USFWS 2021b, USGS 2021) (Attachment A, Figures 3a and 3b). The field-based delineation was focused on determining the current accuracy of the NWI/NHD data and the presence/absence of potentially jurisdictional resources throughout the Project site. It was determined that the Project site did not contain the same drainage features, types and/or locations as the NWI/NHD data revealed. A total of 58 mapped

ephemeral drainages were documented within the Project site, most of which extend upstream and/or downstream within 250 feet of the Project ROW; no wetlands, other drainage feature types or other water bodies were observed. No hydrophytic vegetation of any kind was observed in such concentrations to warrant wetland inspections; the few hydrophytic plant species that were observed occurred as sparse individuals in a non-dominant capacity. All 58 ephemeral drainage features contained the same upland vegetation as their surroundings, but with observable hydrological indicators such as shelving, sedimentation, cracked soil surfaces and/or drainage patterns. Many of the drainage features originated from upland swales, and many dissipated into uplands with no observable downstream connection. All 58 mapped ephemeral drainage features were delineated for their OHWM limits for RWQCB jurisdiction, as well as top-of-bank or OHWM limits, as applicable on a case-by-case basis, for CDFW streambed jurisdiction. Since all features were found to be ephemeral, there is no USACE jurisdiction on the Project site. The total RWQCB jurisdiction within the Project site includes 2.285 acres (23,428 linear feet), and total CDFW jurisdiction includes 5.770 acres (23,428 linear feet).

Hydrological input into the Project site appears to consist of periodic, ephemeral low to high velocity surface water runoff (depending on rainfall amounts and durations) occurring primarily as sheet flow from the surrounding hills to the north and paved surfaces. Runoff within the Survey Area appears to occur almost entirely within upland habitats, dissipating into sheet flow within the Project footprint, with channelized flows directed through the mapped ephemeral drainage features and occasionally, dirt roadways. Flows through the Project site appear to dissipate into uplands downgrade of the Project site, with no direct connectivity to any potentially jurisdictional drainage features or water bodies. There appears to be no connectivity of the drainage features to any Relatively Permanent Waters (RPW) or Traditionally Navigable Waters (TNW).

Vernal pool vegetation or other wetland indicator species were not observed in concentrations to support, and do not occur within soil series typical of, vernal pool formation. As such, there are no drainage features or water bodies (seasonal or permanent) within the Project boundary that would be considered to be jurisdictional vernal pool waters of USACE.

5.4 Vegetation Communities/Other Land Cover Types/Migration Corridors

A total of 13 vegetation communities covering approximately 4,460 acres were observed and mapped by Blackhawk in 2021 within the Survey Area: Creosote-White Bursage Series, Saltbush Scrub, Developed/Disturbed, Creosote-Saltbush Series, Developed, California Matchweed-Rubber Rabbitbrush Series, Agricultural Land, Annual Buckwheat/ Grasses, Creosote-White Bursage Series – Disturbed, Rubber Rabbitbrush Scrub, Saltbush Scrub – Disturbed, Disturbed and Ornamental (Attachment A, Figure 4). Soft intergrades between these vegetation communities were often present, with plant species of the described communities often present to varying degrees in adjoining communities. Vegetation communities were described based on dominant plant(s) species generally characterizing the specific vegetation community. In addition, developed habitat was present within the surrounding Survey Area as compacted dirt and paved roadways, and buildings. Disturbed habitat, agricultural and ornamental landscaping land uses also occurred within the Survey Area. A total of 58 ephemeral drainages are also found within the Project ROW. The drainages, together with the large expanses of undeveloped land that surround the Project site, serve as an effective migration corridor for locally occurring and migratory fauna. Collectively, the vegetation communities/land use cover types and associated acreages that exist within the Survey Area and the Project site are presented in Table 6. A description of each vegetation community/land use cover type found within

the Survey Area is provided in the sub-sections below.

Table 6. Vegetation Community Acreages

Vegetation Community/ Other Cover Types	Survey Area Acreage	Project Site Acreage
Creosote-White Bursage Series	2,516.82	513.26
Saltbush Scrub	1,013.02	215.60
Developed/Disturbed	392.76	140.38
Creosote-Saltbush Series	180.12	44.80
Developed	120.38	12.07
California Matchweed-Rubber Rabbtibrush Series	78.73	18.32
Agricultural Land	64.48	4.49
Annual Buckwheat/Grasses	33.75	10.41
Creosote-White Bursage Series - Disturbed	43.16	9.79
Rubber Rabbitbrush Scrub	7.08	4.37
Saltbush scrub - Disturbed	5.49	0.59
Disturbed	3.11	1.63
Ornamental	0.85	0.85
Total	**4,336.26**	**976.57**

5.4.1 Creosote-White Bursage Series

A total of 2,516.82 acres of Creosote-White Bursage Series habitat was mapped in the Survey Area, including 513.26 acres within the Project site. Creosote-White Bursage Series habitat within the Project is characterized by dominant and co-dominant creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) with sub-dominant species that include Cooper's goldenbush (*Ericameria cooperi*), Joshua tree and Nevada ephedra (*Ephedra nevadensis*). This vegetation community becomes increasingly creosote-bush dominant with reduced white bursage coverage in the central and western portions of the Project site.

5.4.2 Saltbush Scrub

A total of 1,013.02 acres of Saltbush Scrub habitat was mapped in the Survey Area, including 215.60 acres within the Project site. Saltbush Scrub habitat within the Project is characterized by dominant and co-dominant cattle saltbush (*Atriplex polycarpa*), fourwing saltbush (*Atriplex canescens*), shadscale saltbush (*Atriplex confertifolia*), and creosote bush with subdominant species that include shortpod mustard (*Hirschfeldia incana*), doveweed (*Croton setiger*), Nevada ephedra and Joshua tree. Total shrub cover varies throughout the Project with increased cover corresponding with greater dominance by creosote bush.

5.4.3 Developed/Disturbed

A total of 392.76 acres of Developed/Disturbed habitat was mapped in the Survey Area, including 140.38 acres within the Project site. Developed/Disturbed habitat within the Project site broadly includes developed subsets of homes, structures and outbuildings within larger areas of fenced, maintained and/or partially maintained parcels, fields and denuded lots, as well as paved roads, dirt roads, transmission line spur roads, and other anthropogenically altered areas that exhibit obvious signs of disturbance and/or development. Disturbed portions were often composed of areas of bare ground either sparsely or moderately vegetated with a mix of mostly non-native, invasive, annual, weedy plant species with marginal cover of native species. Where vegetative cover exists, dominant plant species included shortpod mustard, brome grasses (*Bromus* spp.), Russian thistle (*Salsola tragus*), bristly fiddleneck (*Amsinckia tessellata*), anglestem buckwheat (*Eriogonum angulosum*) and doveweed. Additional developed/disturbed habitat was mapped as large areas of bare ground supporting little to no vegetation that indicate historical or current anthropogenic use (i.e., dirt roads, staging areas, vacant lots, and margins of developed areas).

5.4.4 Creosote-Saltbush Series

A total of 180.12 acres of Creosote-Saltbush Series habitat was mapped in the Survey Area, including 44.80 acres within the Project site. Creosote-Saltbush Series habitat is characterized by dominant and co-dominant creosote bush, cattle saltbush, fourwing saltbush and shadescale saltbush with sub-dominant species that include white bursage, shortpod mustard and non-native grasses.

5.4.5 Developed

A total of 120.38 acres of Developed areas were mapped in the Survey Area, including 12.07 acres within the Project site. Developed areas primarily included Whirlwind Substation, fenced solar array fields, houses and other structures entirely or largely devoid of vegetation.

5.4.6 California Matchweed-Rubber Rabbitbrush Series

A total of 78.73 acres of California Matchweed-Rubber Rabbitbrush Series habitat was mapped in the Survey Area, including 18.32 acres within the Project site. California Matchweed-Rubber Rabbitbrush Series habitat is characterized by dominant and co-dominant California matchweed (*Gutierrezia californica*), matchweed (*Gutierrezia sarothrae*) and rubber rabbitbrush (*Ericameria nauseosa*) with subdominant species including creosote bush, Joshua tree and non-native grasses. Additionally, this vegetation community exhibits low overall cover and large gaps between shrubs.

5.4.7 Agricultural Land

A total of 64.48 acres of Agricultural Land was mapped in the Survey Area, including 4.49 acres within the Project site. Agricultural Land within the Project is characterized by landscaped and cultivated areas that have historically been or are currently associated with agricultural operations (i.e., cultivated land and vineyards) and livestock pastureland. This vegetation community does not support native species or natural community types and is adjacent to both developed areas and disturbed habitat.

5.4.8 Annual Buckwheat/Grasses

A total of 33.75 acres of Annual Buckwheat/Grasses habitat was mapped in the Survey Area, including 10.41 acres within the Project site. Annual Buckwheat/Grasses habitat is characterized by dominant and co-dominant anglestem buckwheat, annual wild buckwheat (*Eriogonum* spp.), and non-native grasses (*Bromus* spp.). At the time of the surveys, most species within this vegetation community were either senescent or exhibiting signs of stress due to enduring prolonged drought conditions.

5.4.9 Creosote-White Bursage Series - Disturbed

A total of 43.16 acres of Creosote-White Bursage Series – Disturbed habitat was mapped in the Survey Area, including 9.79 acres within the Project site. Similar to Creosote-White Bursage Series, dominant plant species include creosote and white bursage, however, co-dominant species consist of non-native, invasive, annual, weedy plant species characteristic of Disturbed/ Developed habitat. Signs of anthropogenic disturbance (i.e., dirt roads and partially cleared residential lots) are apparent within this vegetation community.

5.4.10 Rubber Rabbitbrush Scrub

A total of 7.08 acres of Rubber Rabbitbrush Scrub habitat was mapped within the Survey Area, including 4.37 acres within the Project site. Rubber Rabbitbrush Series habitat is characterized by dominant rubber rabbitbrush and sub-dominant creosote bush, with low overall shrub cover and gaps between vegetation comprised of non-native grasses or bare ground.

5.4.11 Saltbush Scrub - Disturbed

A total of 5.49 acres of Saltbush Scrub – Disturbed habitat was mapped in the Survey Area, including 0.59 acre within the Project site. Similar to Saltbush Scrub, this habitat is dominated by cattle saltbush, fourwing saltbush, shadscale saltbush and creosote bush with co-dominant species occurring as non-native grasses (*Bromus* spp.) and forbs, including shortpod mustard, in addition to both increased gaps between shrubs and prevalence of bare ground. Saltbush Scrub – Disturbed habitat within the Project occurs predominantly along the margins of roads, within previously developed areas, and adjacent to existing development

5.4.12 Disturbed

A total of 3.11 acres of Disturbed areas were mapped in the Survey Area, including 1.63 acres within the Project site. Disturbed areas primarily included areas lacking any associated development, but that exhibited signs of disturbance, such as grading and other soil irregularities, that now support bare ground and/or non-native plant species as a result.

5.4.13 Ornamental

A total of 0.85 acres of Ornamental habitat was mapped in the Survey Area, all of which was within the Project site. Ornamental habitat occurs in the form of landscaped and planted trees that include cottonwoods (*Populus* spp.), pines (*Pinus* spp.) and tamarisk associated with developed areas or as windbreaks adjacent to dirt and paved roads. Additional Ornamental habitat was mapped as landscaped succulents (e.g., *Opuntia* spp., *Cholla* spp.), turfgrass and oleander (*Nerium* sp.) also associated with developed areas.

5.5 Sensitive and Critical Habitat for Special-Status Species

5.5.1 Desert Tortoise Conservation Unit

A review of CNDDB and USFWS ECOS databases indicate that the Project falls within the Desert Tortoise Western Mojave Conservation Unit (Attachment A, Figure 5). According to the USFWS Revised Recovery Plan for the Mojave Population of the Desert Tortoise (USFWS 2011), this recovery unit is composed of a variety of vegetation communities that include, but are not limited to, saltbush scrub, blackbrush scrub, cheesebush scrub, iodinebush-alkali scrub complex, and desert needlegrass scrub steppe with tortoises typically occurring in valleys, alluvial fans, bajadas, and rolling hills.

5.5.2 California Condor Critical Habitat

A review of CNDDB and USFWS ECOS databases for threatened and endangered species active critical habitat resulted in one Critical Habitat area occurring within 10 miles of the Project: California Condor Critical Habitat (Attachment A, Figure 5). The southeast corner of this Critical Habitat is located approximately 5.3 miles northwest of the Project, associated with the Transverse Ranges and Tehachapi Mountains. This habitat provides California condors with both fall and winter roosting and foraging area, summer habitat for non-breeding individuals, and foraging area for potentially nesting condors in Ventura and Los Angeles counties (Wilbur et al. 1979).

5.6 Protected Lands

Review of the CPAD and CCED resulted in the Project being located outside of protected lands; however, a total of 18 protected areas occur in the vicinity of the Project (Attachment A, Figure 6):

CPAD

- California Department of Parks and Recreation
- California State Land Commission
- Desert and Mountain Conservation Authority
- City of Lancaster Parks, Arts, Recreation and Community Services
- Los Angeles County Parks and Recreation
- Mountains Recreation and Conservation Authority
- Rosamond Community Services District
- United States of Bureau of Land Management
- United States Forest Service

CCED

- Bi-Centennial
- Pacific Crest Trail
- Portal Ridge Conservation Easement
- Sequoia Riverlands Trust Conservation Easement
- TMV-A
- Tri-Centennial

These protected areas have been set aside in perpetuity as preserved habitat for common and special-status species known to occur in and/or near such areas.

5.7 Special-status Species

5.7.1 Literature Review

Following a review of CNDDB records (CDFW 2021), 15 special-status plant species and 20 special-status wildlife species occurrences were found within 10 miles of the Project. These included the following:

Plants

- **Horn's milk-vetch** (*Astragalus hornii* var. *hornii*)
- **Alkali mariposa-lily** (*Calochortus striatus*)
- **Clokey's cryptantha** (*Cryptantha clokeyi*)
- **Recurved larkspur** (*Delphinium recurvatum*)
- **Rosamond eriastrum** (*Eriastrum rosamondense*)
- **Tejon poppy** (*Eschscholzia lemmonii* ssp. *kernensis*)
- **Pale-yellow layia** (*Layia heterotricha*)
- **Madera leptosiphon** (*Leptosiphon serrulatus*)
- **Sagebrush loeflingia** (*Loeflingia squarrosa* var. *artemisiarum*)
- **Tehachapi monardella** (*Monardella linoides* ssp. *oblonga*)
- **Aparejo grass** (*Muhlenbergia utilis*)
- **Spreading navarretia** (*Navarretia fossalis*)
- **Latimer's woodland-gilia** (*Saltugilia latimeri*)
- **Grey-leaved violet** (*Viola pinetorum* ssp. *grisea*)
- **Joshua tree** (*Yucca brevifolia*)

Wildlife

- **Crotch's bumble bee** (*Bombus crotchii*)
- **Northern California legless lizard** (*Anniella pulchra*)
- **Desert tortoise** (*Gopherus agassizii*)
- **Coast horned lizard** (*Phrynosoma blainvilliil*)
- **Tricolored blackbird** (*Agelaius tricolor*)
- **Golden eagle** (*Aquila chrysaetos*)
- **Burrowing owl** (*Athene cunicularia*)
- **Ferruginous hawk** (*Buteo regalis*)
- **Swainson's hawk** (*Buteo swainsoni*)
- **Western snowy plover** (*Charadrius alexandrinus nivosus*)
- **Mountain plover** (*Charadrius montanus*)

- **Prairie falcon** (*Falco mexicanus*)
- **California condor** (*Gymnogyps californianus*)
- **Loggerhead shrike** (*Lanius ludovicianus*)
- **Le Conte's thrasher** (*Toxostoma lecontei*)
- **Townsend's big-eared bat** (*Corynorhinus townsendii*)
- **Tulare grasshopper mouse** (*Onychomys torridus tularensis*)
- **Tehachapi pocket mouse** (*Perognathus alticola inexpectatus*)
- **American badger** (*Taxidea taxus*)
- **Mohave ground squirrel** (*Xerospermophilus mohavensis*)

These results were used during this Project's biological surveys to ascertain presence/absence and PFOs of each species. The habitat requirements, listing status, and PFO for each special-status species are described below in Table 7. Figure 7 in Attachment A displays the results of CNDDB results out to 10 miles from the proposed Project footprint.

Table 7. Special-Status Species Potentials for Occurrence

PLANTS			
Species Name	**Listing Status [1]**	**Habitat Requirements**	**Potential for Occurrence**
Horn's milk-vetch *Astragalus hornii* var. *hornii*	Federal: None State: None CRPR: 1B.1	Annual herb found in alkali soils along lake margins, meadows and seeps, and playas. Blooms: May-Oct Elevation: 60-300 m	**Presumed absent.** Although a single CNDDB record of this species occurs within the eastern portion of the Survey Area, the record is from 1931. No additional records of this species occur within 10 miles of the Project. Additionally, surveys were conducted during the blooming period of this species and would have been identified on the site if present.
Alkali mariposa-lily *Calochortus striatus*	Federal: None State: None CRPR: 1B.2	Perennial herb that usually occurs in wetlands. Found in meadows within shadscale scrub, chaparral, and wetland-riparian communities. Blooms: April-June Elevation: 800-1,400 m	**Low.** Numerous CNDDB records for this species occur within the eastern portion of the Survey Area; however, surveys were conducted during the blooming period of this species and would have been identified on the site if present under optimal conditions.

			However, drought conditions likely reduced detectability.
Clokey's cryptantha *Cryptantha clokeyi*	Federal: None State: None CRPR: 1B.2	Annual herb that occurs within rocky to gravelly slopes, ridge crests, desert woodland, and creosote bush scrub. Blooms: April-May Elevation: 850-1,650m	**Presumed absent.** Suitable habitat for this species occurs in portions of the Survey Area; however, surveys were conducted during the blooming period of this species and would have been identified on the site if present under optimal conditions. However, drought conditions likely reduced detectability. Additionally, the single CNDDB record of this species occurs approximately 8.5 miles south of the Project.
Recurved larkspur *Delphinium recurvatum*	Federal: None State: None CRPR: 1B.2	Perennial herb that occurs in poorly drained, fine, alkaline soils within shadscale scrub, foothill woodland, and valley grassland communities. Blooms: March-June Elevation: 30-600 m	**Presumed absent.** No suitable habitat for this species occurs in or adjacent to the Survey Area.
Rosamond eriastrum *Eriastrum rosamondense*	Federal: None State: None CRPR: 1B.1	Annual herb that occurs within hard-packed, sandy cryptogamic soil among low hummocks with dry pools. Blooms: May Elevation: <710 m	**Presumed absent.** No suitable habitat for this species occurs in or adjacent to the Survey Area.
Tejon poppy *Eschscholzia lemmonii* ssp. *kernensis*	Federal: None State: None CRPR: 1B.1	Annual herb that occurs in valley and open grassland. Distribution of this species is limited to the southwestern Tehachapi Mountains and Western Transverse Ranges. Blooms: March-April	**Presumed absent.** No suitable habitat occurs in or adjacent to the Survey Area, and the one CNDDB record of this species within 10 miles is occurs in the Tehachapi Mountains.

		Elevation: 200-1,000 m	
Pale-yellow layia *Layia heterotricha*	Federal: None State: None CRPR: 1B.1	Annual herb that occurs in open clayey or sandy soil within foothill woodland, valley grassland, pinyon-juniper woodland, and wetland-riparian communities. Blooms: April-June Elevation: 200-1,800 m	**Presumed absent.** No suitable habitat for this species occurs in or adjacent to the Survey Area.
Madera leptosiphon *Leptosiphon serrulatus*	Federal: None State: None CRPR: 1B.2	Annual herb that occurs in openings within yellow pine forest, foothill woodland, and chaparral communities. Blooms: April-May Elevation: 300-1,300 m	**Presumed absent.** No suitable habitat for this species occurs in or adjacent to the Survey Area.
Sagebrush loeflingia *Loeflingia squarrosa* var. *artemisiarum*	Federal: None State: None CRPR: 2B.2	Annual herb that occurs in sand, gravel of hills, mesas, dunes, and disturbed areas within sagebrush and creosote bush scrub communities. Blooms: April-May Elevation: <1,200 m	**Presumed absent.** Although suitable habitat occurs within the Survey Area, the single CNDDB record of this species within 10 miles of the Project is from 1932. Additionally, surveys were conducted during the blooming period of this species and would have been identified on the site if present.
Tehachapi monardella *Monardella linoides* ssp. *oblonga*	Federal: None State: None CRPR: 1B.3	Perennial herb that occurs in gravelly, dry slopes and flats within yellow pine, red fir, and lodgepole forests. Blooms: June-August Elevation: 1,500-2,600 m	**Presumed absent.** No suitable habitat for this species occurs in or adjacent to the Survey Area.

Aparejo grass *Muhlenbergia utilis*	Federal: None State: None CRPR: 2B.2	Perennial glasslike herb that typically occurs in wet sites along streams and ponds within coastal sage scrub, creosote bush scrub, and wetland-riparian communities. Blooms: October-March Elevation: 250-1,000 m	**Presumed absent.** No suitable habitat for this species occurs in or adjacent to the Survey Area.
Spreading navarretia *Navarretia fossalis*	Federal: **FT** State: None CRPR: 1B.1	Annual herb that occurs in vernal pools and depressions and ditches in areas that once supported vernal pools in saline and alkaline soils. Typically found in chenopod scrub, marshes and swamps (assorted shallow freshwater), and playas. Blooms: April-June Elevation: 30-655 m	**Presumed absent.** No suitable habitat for this species occurs in or adjacent to the Survey Area.
Latimer's woodland-gilia *Saltugilia latimeri*	Federal: None State: None CRPR: 1B.2	Annual herb that occurs along dry desert slopes within coarse sand to rocky soils. Blooms: March-June Elevation: 400-1,900 m	**Presumed absent.** The single CNDDB record of this species occurs approximately 8 miles north of the Project. Additionally, surveys were conducted during the blooming period of this species and would have been identified on the site if present under optimal conditions.
Grey-leaved violet *Viola pinetorum* ssp. *grisea*	Federal: None State: None CRPR: 1B.2	Perennial herb that occurs in alpine zones within red fir, lodgepole, and subalpine forest communities. Blooms: June-July Elevation: 1,980-3,700 m	**Presumed absent.** No suitable habitat for this species occurs in or adjacent to the Survey Area.

Joshua tree *Yucca brevifolia*	Federal: None State: **SCT** CRPR: None	Perennial succulent that occurs in creosote bush scrub and pinyon-juniper woodlands with a low to moderately dense community of shrubs found in desert scrub habitats. Requires well-drained soils. Blooms: April-May Elevation: 400-2,000 m	**Present.** This species was documented throughout the Survey Area with moderate to high concentrations occurring along both the Project ROW and within the proposed energy storage facility parcels. A total of 1,290 individuals were mapped in the Project site.
WILDLIFE			
Insects			
Species Name	**Listing Status [1]**	**Habitat Requirements**	**Potential for Occurrence**
Crotch's bumble bee *Bombus crotchii*	Federal: None State: **SCE**	Inhabits open grassland and scrub habitats. Food plants include *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia,* and *Salvia*. Nests are often located underground in abandoned rodent nests, or above ground in tufts of grass, old bird nests, rock piles, or cavities in dead trees.	**Low.** Suitable habitat is found in portions of the Survey Area; however, only one CNDDB record for this species from 1976 occurs approximately 10 miles southwest of the Project.
Reptiles			
Species Name	**Listing Status [1]**	**Habitat Requirements**	**Potential for Occurrence**
Northern California legless lizard *Anniella pulchra*	Federal: None State: SSC	Occurs in moist warm loose soil with plant cover within vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes and suburban gardens in southern California. Lives mostly underground, burrowing in loose sandy soil. Often can be found under surface objects such	**Presumed Absent.** Due to soil lacking moisture, which is essential for this species, there is no potential for this species to occur within or adjacent to the Survey Area.

		as rocks, boards, driftwood and logs.	
Desert tortoise *Gopherus agassizii*	Federal: **FT** State: **ST, SCE**	Found in canyon lands, sandy flats, desert washes, alluvial fans and rocky foothills of the Sonoran and Mojave Deserts, this long-lived species spends 95% of its time underground in burrows, shelters, and pallets. Peak activity levels occur after seasonal rains when fresh foraging opportunities present themselves. This herbivorous species consumes a wide variety of plant matter.	**Presumed absent.** Suitable habitat is found throughout the Survey Area and there are no barriers to exclude tortoises from the Project. This species is known to occur in the Project vicinity; however, the most recent CNDDB record within 10 miles of the Project is from 2013. Additionally, no tortoises or tortoise sign were found within the Survey Area, indicating it is unlikely the Project or its immediate vicinity is currently occupied by desert tortoise. While three suitable burrows were found within the Survey Area in suitable habitat, the lack of tortoise sign indicated burrow usage by wildlife other than tortoises.
Coast horned lizard *Phrynosoma blainvillii*	Federal: None State: SSC	Occurs widely in sage scrub, woodlands, grasslands, and chaparral communities within microhabitats of loose granitic soils and open areas for sunning and foraging. This species is commonly associated with the presence of native harvester ants.	**Presumed absent.** Due to the absence of suitable habitat, and the location of the Project away from the coastal slope, there is no potential for this species to occur within or adjacent to the Survey Area.

Birds			
Species Name	**Listing Status [1]**	**Habitat Requirements**	**Potential for Occurrence**
Tricolored blackbird *Agelaius tricolor* (nesting colony)	Federal: BCC State: **ST**, SSC	Nests in colonies and prefers freshwater marshes dominated by cattails or bulrushes and occasionally in willows, blackberries, thistles and nettles. Breeding habitat now includes diverse upland and agricultural areas. Small breeding colonies in southern California occur at lakes, reservoirs, and parks surrounded by urban development. Adults from such colonies may forage in nearby undeveloped uplands.	**Presumed absent.** No suitable habitat occurs within or adjacent to the Project. Additionally, the only CNDDB record of a foraging flock was documented five miles southeast of the Project. There are no suitable nesting substrates for this species on the Project site.
Golden eagle *Aquila chrysaetos* (nesting & wintering)	Federal: BCC State: **FP**	In southern California, occupies grasslands, brushlands, deserts, oak savannas, open coniferous forests, and montane valleys. Typically nests on rock outcrops and ledges.	**Moderate (wintering/foraging)/ Presumed absent (nesting).** Suitable foraging habitat occurs throughout the Survey Area; however, no suitable nesting habitat occurs within the Project site. Potentially suitable nesting habitat occurs east of and outside of the Survey Area.
Burrowing owl *Athene cunicularia* (nesting & wintering)	Federal: None State: SSC	Shortgrass prairies, grasslands, lowland scrub, agricultural lands (particularly rangelands), coastal dunes, desert floors, and some artificial, open areas as a year-long resident. Occupies abandoned ground squirrel burrows as well as artificial structures such as culverts and underpasses.	**Present.** This species was observed on April 16, 2021 within the Survey Area, and numerous CNDDB records exist within 10 miles of the Project site. In addition, suitable habitat, with suitable burrows, is found on and adjacent to the Project site. There is **high potential for this species to nest** within the Project.

Ferruginous hawk *Buteo regalis* (wintering)	Federal: BCC State: None	Winters in open grasslands, fields, open desert scrub and savannah habitats. Forages on a variety of mammals.	**High.** Suitable foraging and wintering habitat occurs throughout and adjacent to the Survey Area.
Swainson's hawk *Buteo swainsoni* (nesting)	Federal: BCC State: **ST**	Prefers open habitats including plains, dry grasslands, agricultural fields, and ranchlands with nearby stands of trees for nesting sites.	**Present.** This species was observed on April 5, 14, and 15, and May 18, 2021. A pair was observed nesting within a Joshua tree approximately 810 feet south of the nearest potion of the Project ROW; however, the nest was unsuccessful. Due to a documented nesting attempt, availability of suitable habitat, and numerous CNDDB records within the vicinity, there is **high potential for this species to nest again** in and adjacent to the Project.
Western snowy plover *Charadrius alexandrinus nivosus* (nesting)	Federal: **FT**, BCC State: SSC	Breeds above the high tide line on coastal beaches, sand splits, dune-backed beaches sparsely vegetated dunes, beaches at creek and river mouths and salt pans at lagoons and estuaries.	**Presumed absent.** Due to the absence of suitable habitat, there is no potential for this species to occur within or adjacent to the Survey Area.
Mountain plover *Charadrius montanus* (wintering)	Federal: BCC State: SSC	Wintering habitats include desert flats and fallowed or plowed agricultural fields.	**Low.** No suitable wintering habitat occurs within the Survey Area; however, potentially suitable wintering habitat is present in the vicinity of the Project to the north and south.

Prairie falcon *Falco mexicanus* (nesting)	Federal: BCC State: None	Distributed from annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Requires sheltered cliff ledges for cover. Usually nests in a scrape on a sheltered ledge of a cliff or steep canyon wall overlooking a large, open area. Sometimes nests on old raven or eagle stick nest on cliff, bluff, or rock outcrop.	**Present.** This species was observed on March 31 and April 13 and 14, 2021. Suitable foraging habitat occurs throughout Survey Area; however, no suitable nesting habitat occurs within the Project site. Potentially suitable nesting habitat occurs east of and outside of the Project.
California condor *Gymnogyps californianus*	Federal: **FE** State: **SE**, FP	Permanent resident of semi-arid, rugged mountain ranges that includes the Tehachapi Mountains and southern Sierra Nevada. Forages over rangeland, grassland, and foothill chaparral. Nests in caves, crevices, or large ledges on high sandstone cliffs.	**Low.** Limited foraging habitat is present within the Survey Area and the Tehachapi Mountains occur approximately 8 miles to the northwest, therefore there is low potential for this species to forage in or adjacent to the Project site; however, due to a lack of suitable nesting substrate, there is no potential for this species to nest within the Project.
Loggerhead shrike *Lanius ludovicianus* (nesting)	Federal: BCC State: SSC	Inhabits open country with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns. Frequents agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannas, prairies, golf courses and cemeteries.	**Present.** This species was observed numerous times within the Survey Area. Due to the presence of suitable nesting substrate and an ample availability of prey, there is **high potential for this species to nest** in and adjacent to the Project.

Le Conte's thrasher *Toxostoma lecontei*	Federal: BCC State: SSC	Found in desert scrub with areas of sparse saltbush and/or creosote bush, typically with interspersed mesquite or cholla cactus.	**Present.** This species was observed on April 29 and May 5, 2021. Suitable habitat occurs throughout the Survey Area, and there is a **high potential for this species to nest** in and adjacent to the Project.
Mammals			
Species Name	**Listing Status** [1]	**Habitat Requirements**	**Potential for Occurrence**
Townsend's big-eared bat *Corynorhinus townsendii*	Federal: None State: SSC	Found in a variety of habitats from scrub deserts to pine and piñon-juniper forests, prefers mesic habitats. Roosts in caves, mines, tunnels, flumes, buildings, bridges and large tree cavities. Preferred foraging is among the foliage of trees and shrubs in mosaics of forested and edge habitats, including riparian zones, but tends to avoid open grasslands.	**Low (foraging)/Presumed absent (roosting).** Overall habitat quality for this species is low within the Survey Area, although this species was recorded in the vicinity of the Project. There is no suitable roosting habitat in or immediately adjacent to the Project.
Tulare grasshopper mouse *Onychomys torridus tularensis*	Federal: None State: SSC	Typically inhabits hot, arid grassland and shrubland associations that include blue oak woodlands, upper sonoran scrub, alkali sink and mesquite scrub, and sloping grassland. Prefers compact soils with sparse perennial grass.	**Presumed absent.** No suitable habitat typically associated with this species occurs in or adjacent to the Survey Area. Additionally, CNDDB records indicate that this species is associated with the foothills of the Tehachapi Mountains.

Tehachapi pocket mouse *Perognathus alticola inexpectatus*	Federal: None State: SSC	Historically found in isolated, montane areas in the Tehachapi and San Bernardino Mountains. Scarce resident in ponderosa and Jeffrey pine habitats, and uncommon in mixed chapparal and sagebrush habitats. Burrows constructed in loose sand.	**Presumed absent.** No suitable habitat typically associated with this species occurs in or adjacent to the Survey Area. According to species accounts, this species is isolated to the Tehachapi Mountains northwest of and outside of the Project.
American badger *Taxidea taxus*	Federal: None State: SSC	Prefers open areas, in flat terrain to moderate slopes, in grasslands, alluvial fans, meadows and deserts.	**Moderate.** Suitable habitat occurs throughout the Survey Area and large burrows suitable for this species were documented during the 2021 surveys.
Mohave ground squirrel *Xerospermophilus mohavensis*	Federal: None State: **ST**	Occurs in open desert scrub, alkali desert scrub, Joshua tree, and annual grasslands with preference for sandy to gravelly soils. Uses burrows at the base of shrubs for cover and nests are built within a burrow system.	**Presumed absent.** Suitable habitat and numerous burrows appropriate for this species occur throughout the Survey Area; however, the only CNDDB record within 10 miles of the Project is from 1973.

Plant Species Listing Status Codes: CRPR = California Rare Plant Rank, 1B.1 = Rare, threatened or endangered in California or elsewhere, and seriously threatened in California, 1B.2 = Rare, threatened or endangered in California or elsewhere, and moderately threatened in California, 1B.3 = Rare, threatened or endangered in California or elsewhere, and not very threatened in California, 2B.2 = Rare, threatened or endangered in California but more common elsewhere, and moderately threatened in California, SCT = State Candidate Threatened.

Wildlife Species Listing Status Codes: FE = Federally Endangered, FT = Federally Threatened, BCC = Bird of Conservation Concern, SE = State Endangered, SCT= State Candidate Endangered, ST = State Threatened, FP = State Fully Protected, SSC = Species of Special Concern.

5.8 Special-Status Plant Species

One special-status plant species was documented in the Survey Area: Joshua tree. This species, along with its listing status, relative abundance, habitat associations, and general locations, is described in the following sub-section. All other assessed special-status plant species were presumed absent, except for alkali mariposa lily, which has a low potential to occur in limited areas of the Project ROW. Figure 8 in Attachment A displays special-status plant species observed within the Survey Area.

5.8.1 Joshua Tree

Joshua tree is a State Candidate Threatened species that occurs in well-drained soils within hot, dry sites on flats, mesas, bajadas, and gentle slopes. This species persists in areas with cold winters, hot summers, and nominal precipitation. Joshua trees provide cover for a variety of wildlife and nesting substrate for numerous avian species, including special-status species such as loggerhead shrike and Swainson's hawk. Primary threats to Joshua trees include climate change and habitat loss due to development. This species was found throughout the Project site and within most of the Survey Areas primarily associated with creosote-white bursage scrub, saltbush scrub, and California matchweed-rubber rabbitbrush vegetation communities. A total of 1,290 Joshua tree were documented within the Project site with moderate to high concentrations of this species occurring within both the Project's proposed energy storage facility parcels as well as the ROW, including 112 Joshua trees within the 60-acre Gem parcel at the eastern end of the Project. Therefore, direct impacts to this species are possible but can be avoided by positioning Project components during the design phase such that no Joshua trees are impacted.

5.9 Total Number of Plant Species Observed

A total of 38 plant species were observed on the Project during the field surveys, seven of which were non-natives (Attachment D).

5.10 Special-Status Wildlife Species

A total of eight special-status wildlife species were documented in or adjacent to the Project site, including three species with no documented CNDDB occurrences within 10 miles of the Project: long-eared owl (*Asio otus*), Vaux's swift (*Chaetura vauxi*) and yellow warbler (*Setophaga petechia*). Each of these species, along with their listing status, relative abundance, habitat associations, observation notes, and general locations, are described in the following sub-sections. Figure 9 in Attachment A displays special-status species observed within the Survey Area.

5.10.1 Long-eared Owl

The long-eared owl (*Asio otus*) is a State Species of Special Concern that occurs in riparian habitat, live oak thickets, and dense stands of trees. This species utilizes old corvid, hawk, heron, and squirrel nests in trees with a dense canopy. One adult long-eared owl was observed on April 9, 2021, within a narrow windrow composed of non-native tamarisk west of the intersection of Rosamond Boulevard and 90th Street West, in the Project ROW. Stands of trees offering a dense canopy and unoccupied stick nests suitable for nesting occur irregularly along the southern and eastern portions of the Survey Area; however, these trees are associated with residential development. Additionally, the Survey Area and surrounding areas support a high number of nest competitors such as common ravens, which may also

result in increased rates of predation of long-eared owl young. Potential for long-eared owl to nest within the Survey Area is low, given the likelihood of competition for nesting sites and proximity of available nest trees to development. With the implementation of avoidance and minimization measures, direct impacts to this species are not anticipated during construction.

5.10.2 Burrowing Owl

The burrowing owl is currently a State Species of Special Concern. This species occurs in a variety of habitats that include agricultural land, fallow fields, and sparsely vegetated areas that allow for visibility of both prey and predators. The burrowing owl feeds on arthropods and small mammals, lizards, amphibians, and birds. Mammal burrows or natural cavities are required for nesting and for shelter during variable weather conditions. On April 16, 2021, a single adult burrowing owl was documented within the Survey Area, along the northern portion of the Project, adjacent to the ROW. Although no occupied burrows were found within the vicinity of the detection, numerous suitable, unoccupied burrows were present. Subsequent focused burrowing owl surveys resulted in no additional burrowing owl detections; however, numerous suitable burrows and burrow complexes, as well as three burrows with burrowing owl sign were found throughout the Survey Area. Due to the species' presence in suitable habitat and availability of suitable burrows, the burrowing owl has a moderate potential to nest in the Survey Area. With the implementation of avoidance and minimization measures, direct impacts to this species are not anticipated during construction.

5.10.3 Swainson's Hawk

The Swainson's hawk is a State Threatened species and Federal Bird of Conservation Concern that occurs in open desert, grasslands, agricultural land, and open riparian habitat that contain scattered, large trees or small groves. Nests are constructed using sticks, bark, and leaves, typically placed in trees or large bushes; old stick nests built by ravens and hawks may be utilized by this species, and Swainson's hawks in Antelope Valley have been documented to nest in Joshua trees. A total of eight Swainson's hawks were observed during surveys on April 4, 14, and 15, and May 18 and 19, 2021. Of these observations, two formed a nesting pair and six were individual transients. Incubation was confirmed for one Swainson's hawk pair and their associated active nest/territory within the Survey Area, approximately 810 feet south of the nearest Project ROW, during the May 19, 2021 focused survey. Incubation continued through subsequent nest checks on May 25 and June 16, 2021; however, a nesting failure was determined and confirmed during surveys on June 29 and July 14, 2021. There is potential for this species to re-nest within and/or adjacent to the Project boundary. With the implementation of avoidance and minimization measures, direct impacts to this species may be avoided during construction.

5.10.4 Vaux's Swift

The Vaux's swift (*Chaetura vauxi*) is a State Species of Special Concern that occurs in a wide variety of habitats, but breeds in redwood, Douglas-fir, and other coniferous forests. Nests are generally built within large, hollow trees and snags. One Vaux's swift was observed flying overhead on April 28, 2021 in the western portion of the Survey Area and a second was observed on May 4, 2021 at the far northeast corner of the Survey Area. Due to the Project being located outside of this species' breeding territory and lack of suitable nesting habitat, there is no potential for Vaux's swift to nest in the Survey Area. Direct impacts to this species are not anticipated during construction.

5.10.5 Prairie Falcon

The prairie falcon is a Federal Bird of Conservation Concern that occurs in desert scrub, rangeland, grasslands, savannahs, and agricultural land. Open terrain is used for foraging, though nest sites are usually located on sheltered cliff ledges. This species may utilize old raven or eagle stick nests on cliffs, bluffs, or rock outcrops for nesting. This species was observed during surveys on March 31, April 13 and April 14, 2021 perched on telephone poles and flying overhead. Due to a lack of suitable nesting habitat within the Survey Area, there is no potential for this species to nest in the Survey Area. Direct impacts to this species are not anticipated during construction.

5.10.6 Loggerhead Shrike

The loggerhead shrike is a State Species of Special Concern and USFWS Bird of Conservation Concern that occurs in a variety of open habitats with scattered shrubs and availability of perches, including Joshua tree habitats where high densities of this species are known to thrive. Nests are built in densely foliaged shrubs or trees, typically no higher than 50 feet above the ground. Numerous loggerhead shrikes were observed throughout the Survey Area and were generally seen on each of the 2021 surveys. Due to the species' presence in suitable, connected habitat, the loggerhead shrike has a high potential to nest in the Survey Area. With the implementation of avoidance and minimization measures, direct impacts to this species are not anticipated during construction.

5.10.7 Yellow Warbler

The yellow warbler (*Setophaga petechia*) is a State Species of Special Concern and Federal Bird of Conservation Concern that occurs in shrub, woodland, forest, and riparian woodlands. This species breeds in riparian woodlands as well as montane chaparral, open ponderosa pine, and mixed conifer habitats with a moderate brush understory in which an open cup is typically built in a deciduous sapling or shrub. One yellow warbler was observed on April 28, 2021 foraging among creosote bush along the southcentral edge of the Survey Area and a second was observed on May 5, 2021, also foraging in creosote, in the western portion of the Survey Area. Due to a lack of suitable nesting habitat within the Survey Area, there is no potential for yellow warbler to nest in the Survey Area. Direct impacts to this species are not anticipated during construction.

5.10.8 Le Conte's Thrasher

The Le Conte's thrasher is a State Species of Special Concern and USFWS Bird of Conservation Concern that occurs in open desert wash and desert scrub, as well as open Joshua tree habitat. Preferred habitat includes areas with scattered shrubs that are used for cover and large, open areas that allow for visibility and ease of foraging. Le Conte's thrashers nest in dense, spiny shrubs that include saltbush. Within the Survey Area, multiple detections of this species were found during the 2021 surveys within native saltbush scrub and creosote-white bursage series habitat, including in and adjacent to the ROW. In addition to adult thrashers, at least one fledgling was observed in a foraging family group within a portion of the ROW. Due to the species' presence in suitable habitat, the Le Conte's thrasher has a high potential to nest in the Survey Area. With the implementation of avoidance and minimization measures, direct impacts to this species are not anticipated during construction.

5.11 Total Number of Wildlife Species Observed

A total of 79 wildlife species were observed either on or in the vicinity of the Project (Attachment D). Among vertebrate species, the total includes nine reptilian, 58 avian and 12 mammalian species. Many of these species are common to the region and would be expected in terrestrial habitats present within the Survey Area. In addition, several are State or federally listed species.

6.0 ANTICIPATED PROJECT IMPACTS

The Project design has not been finalized as of the issuance of this Report. Therefore, impact calculations cannot be quantified at this time. However, impacts can be broadly described, and avoidance, minimization and mitigation measures are proposed herein to reduce anticipated impacts to less than significant levels.

Temporary impacts are anticipated due to trenching and temporary staging/access during construction. Permanent impacts are anticipated as a result of the installation of various features related to the Project, including energy storage facilities and transmission line poles. It is not anticipated that directional drilling (if utilized) would have a permanent impact on natural resources.

The proposed Project will be designed to primarily overlap with existing developed or disturbed areas to minimize permanent impacts to natural resources to the maximum extent feasible. Direct impacts to wildlife are not anticipated with the implementation of avoidance and minimization measures, although temporary disturbance to special-status plants and vegetation communities are anticipated. Also, with the inclusion of construction-related measures, in conjunction with subsequent native habitat restoration and/or off-site mitigation, indirect impacts to vegetation communities and special-status wildlife/plants are not expected.

Overall, anticipated impacts to biological resources can be determined using a GIS-based analysis that overlaps the construction footprint with survey data collected in 2021. The collected data can be used to inform Project stakeholders during the design phase to minimize impacts to the greatest extent feasible. Once a design is finalized, impact calculations can be determined, and compensatory mitigation can be quantified. It is assumed that a biological resources impacts analysis will be included as an addendum to this Report. The impact analysis will quantify the anticipated direct impacts to biological resources both in terms of habitat acreages and as special-status plant and wildlife species numbers, depending on how the data were recorded (i.e., points versus polygons). Direct impacts to wildlife are not expected; indirect impacts are expected to be avoided through implementation of avoidance and minimization measures. In addition, direct and indirect impacts to jurisdictional resources are not expected. The following section outlines the extent of temporary direct impacts to vegetation communities and special-status plants and also discusses anticipated adverse edge effects, indirect impacts, introduction of invasive plants and cumulative impacts.

6.1 Anticipated Direct Impacts to Vegetation Communities and Other Land Cover Types

A total of eight (8) native vegetation communities could potentially be directly impacted by Project-related construction; however, as the Project design is not yet finalized, the acreages and locations of the anticipated impacts are unknown as of the issuance of this Report. An addendum with detailed impact calculations will be completed once the Project design is finalized.

6.2 Anticipated Direct Impacts to Special-Status Plant Species

The Project has the potential to permanently impact Joshua trees due to construction of the two proposed Project energy storage facility sites and transmission lines. It is also anticipated that both temporary and permanent impacts due to construction activities (including trenching) would potentially affect Joshua trees situated within the Project's proposed transmission lines and associated ROW. However, since the Project design is not yet finalized, the locations of the anticipated impacts

are unknown as of the issuance of this Report and therefore cannot be cross-referenced with mapped Joshua tree locations to determine the number of impacted individuals. An addendum with detailed impact calculations will be completed once the Project design is finalized.

With Project design avoidance as an alternative, the removal of zero Joshua trees is possible while facilitating Project completion. With regard to special-status plant species in general, work could result in the direct loss of individuals due to surface disturbing activities. However, preconstruction focused rare plant surveys could be reinitiated in final Project footprint locations to ascertain presence/absence at that time, if conditions allow. If special-status plant species are impacted, the impacts could be offset through planting or seeding of the impacted species following project completion. Shrubs and trees should be avoided during construction to the maximum extent possible through complete avoidance or minor trimming.

6.3 Anticipated Direct Impacts to Special-Status Wildlife

With the avoidance and minimization measures outlined in Section 7.0 of this Report (e.g., seasonal restrictions), direct impacts to special-status wildlife species may be avoided during construction. Wildlife movement corridors, particularly that of Swainson's hawk, have the potential to be directly impacted.

6.4 Anticipated Adverse Edge Effects

As the Project alignment is largely within undeveloped lands, edge effects to vegetation communities would likely be discrete and fairly small in extent. Under such circumstances, it would not be expected for the proposed construction to contribute significantly to habitat fragmentation or increase the potential for adverse edge effects over the long-term operations and maintenance of the Project.

6.5 Anticipated Indirect Impacts to Biological Resources and Wetland/Riparian Resources

Although biological resources of concern, as well as potential jurisdictional waters/habitat, lie both adjacent to and within the Project alignment, the Project's design and associated construction methods are expected to offset potential indirect impacts to the environment by avoiding such resources whenever possible. Techniques such as storm water control and prevention, working within existing disturbed and developed areas to the greatest extent feasible, watering for dust control, and seasonal restrictions should be employed to prevent disturbance beyond the Project footprint or over the long-term. As such, no indirect impacts are anticipated with implementation of the proposed work.

6.6 Anticipated Introduction of Invasive Plant Species

With the avoidance and minimization measures outlined in Section 7.0 of this Report (e.g., requiring construction equipment to be clean and free of soil and plant materials before arrival on-site), the introduction of invasive plant species into the Project area should be prevented/minimized.

6.7 Anticipated Cumulative Impacts

The proposed Project is situated in a large expanse of primarily undeveloped high desert land in the Antelope Valley. Although the Project ROW contains approximately 977 acres, only a small fraction of this would be developed for this Project, leaving the vast majority of the Project ROW acreage untouched. Activities that would most likely impact biological resources would be associated with work

within the energy storage sites and the transmission pole locations. Cumulative impacts of this Project must be weighed with pending projects in the Project vicinity; these may include solar developments, wind farms, residential, roadways, and infrastructure, among others. With an abundance of natural land presently in the greater Antelope Valley and only a small portion slated for projects in the near future, vast acreages of natural land will remain following the construction of this Project and other pending projects, reducing cumulative impacts throughout the region.

For the current Project, cumulative effects to existing resources should be relatively minor in extent, with the greatest effects (up to 70 acres) relegated to the Gem parcels. Additionally, most actions reasonably expected to occur within the foreseeable future would need review/approval from the California Energy Commission and other State agencies to ensure compliance with development requirements, regulations and/or resources mandates. Such procedures would serve to reduce habitat loss and species impacts within the Project. Moreover, as part of the Project, avoidance and minimization measures would be implemented (e.g., minor trimming vs. removal of vegetation or complete avoidance of plants) to minimize the extent/level of disturbance near the area of construction. Anticipated permanent and temporary impacts to special-status plants and/or native habitat types would be mitigated in-kind through a revegetation/restoration effort within the Project ROW or at an off-site mitigation bank. Avoidance and minimization measures, along with any required mitigation, would also assist to prevent regional loss of special-status plants and native vegetation communities. For further details regarding conservation measures and proposed mitigation, see Section 7.0 below.

7.0 SIGNIFICANCE OF PROJECT IMPACTS AND PROPOSED MITIGATION

The following section discusses the significance of Project impacts to biological resources, associated avoidance and minimization measures, and proposed mitigation for potential construction-related disturbance.

7.1 Significance of Impacts to Biological Resources

7.1.1 Special-Status Species

Would the Project 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 the CDFW or USFWS?

Less Than Significant Impact with Avoidance and Minimization Measures and Mitigation.
As discussed in Section 6 above, direct and indirect impacts to special-status wildlife are not likely to result from the proposed construction. However, direct impacts to special-status plants are possible due to the fact that 1,290 Joshua trees were mapped within the Project ROW. Overall, one present special-status plant species that may be affected is a State candidate for listing as Threatened (Joshua tree); however, complete avoidance of all mapped Joshua trees may be possible through the Project design phase to avoid all mapped locations of this species. The following avoidance and minimization measures, and proposed mitigation; however, would reduce effects to special-status plant and wildlife species to a level of less than significant impact.

7.1.1.1 Recommended Avoidance, Minimization and Mitigation Measures

MM-BIO 1: Environmental Awareness Training
A qualified biologist shall present an education program on Joshua tree, burrowing owl, Swainson's hawk, and other listed/special-status species found within the Project area to all Project employees prior to the start of construction and before new employees begin work on-site. Materials discussed in the program will include, at a minimum, the following topics: (1) species description, general behavior, and ecology, (2) distribution and occurrence near the Project site, (3) species' sensitivity to human activities, (4) legal protection, (5) penalties for violation of State and Federal laws, (6) reporting requirements, and (7) Project conservation measures. The biological monitor shall document the names, dates, and affiliation of those persons who attend the training.

MM-BIO 2: Biological Monitoring
A biological monitor shall be present on-site during all clearing, grubbing, vegetation removal, leveling, drilling, grading and/or other ground-disturbing activities to monitor work and ensure conservation measures are appropriately implemented. Such activities shall include, but not necessarily be limited to the installation/removal of construction boundary materials, vegetation trimming, vegetation removal, trench excavation/back-fill, and any ground disturbance associated with entry/exit of equipment. In addition, the biological monitor shall, at his/her discretion, continue to survey activities throughout construction to ensure that impacts to natural resources are avoided/minimized.

MM-BIO 3: Construction Fencing/Fueling Zones
Jurisdictional drainages near and within the Project ROW shall be designated Environmentally Sensitive Areas (ESAs) and strictly avoided, unless covered by USACE, RWQCB and/or CDFW permits for

impacted jurisdictional waters pursuant to each agency. No encroachment (i.e., workers, equipment, materials) will be allowed in any non-permitted drainage feature location at any time. Sensitive resources will be marked and protected by temporary fencing (e.g., orange plastic fencing, silt fencing, signage) or other acceptable method. Work limits will be clearly marked in the field and confirmed by the Project biologist/biological monitor prior to the start of operations. All staked/fenced boundaries will be maintained in good repair throughout construction.

BMPs to address erosion and excess sedimentation shall be incorporated into the Project plans. Materials that could be used during construction include burlap fiber rolls, organic erosion control blankets, sandbags, silt fencing and filter fabric. Where applicable, weed-free products shall be used to minimize the accidental spread of exotic plants. At all times, sufficient amounts of erosion control materials shall be available on-site to respond to potential emergencies and any rains forecasted within 24 hours.

Work shall be limited to the construction footprint, as outlined in the Project plans. Access routes, staging areas, and the total footprint of disturbance shall be the minimum number/size necessary to complete the Project and will be selected/placed to avoid impacts to sensitive habitat/resources.

All storage and staging areas should be placed on existing developed or disturbed locations to the greatest extent feasible (e.g., paved or bare ground surfaces) that have been reviewed and approved by the Project biologist and Project archaeologist. All areas used for stockpiling shall be kept free from trash and other waste. No Project-related items shall be stored outside approved staging areas at any time.

Debris or runoff generated as a result of Project activities shall be minimized, whenever possible. If capture is not possible, then it shall be directed away from any drainages and/or culverts to prevent deposition into waterways. The disposal of materials must be performed in a manner that will minimize effects to the environment.

All contractor equipment and vehicles shall be inspected for leaks immediately prior to the start of construction, and regularly thereafter until the equipment and/or vehicles are removed from Project premises. Any leaks shall be properly contained, or the equipment/vehicle(s) repaired, and if failing repair, removed off-site.

All equipment shall be cleaned, fueled and repaired (other than emergency repairs) outside Project boundaries, whenever possible, and greater than 100 feet from jurisdictional waters or potentially jurisdictional waters. Contaminated water, sludge, spill residue, or other hazardous compounds will be disposed of outside Project boundaries at a lawfully authorized destination.

Before the start of construction, specialized temporary fencing shall be installed adjacent/near existing Joshua trees to prevent unintended impacts to the species.

Following construction, all fencing materials shall be collected and transported off-site.

MM-BIO 4: Pre-Construction Surveys
No more than seven (7) days week prior to the onset of work, the Project biologist/qualified biologist shall conduct a pre-construction survey for sensitive biological resources within and near the Project area. Should special-status wildlife or plants be found, then measures recommended by the Project

biologist/qualified biologist shall be incorporated into the Project to reduce the likelihood of species impacts. Should work be suspended or delayed for a period of greater than seven (7) days, then the Project biologist/qualified biologist, at their discretion, shall complete an additional survey to ensure that no other resources of concern exist within or adjacent to the proposed Project footprint.

MM-BIO 5: Nesting Bird and Raptor Avoidance
As the Project supports nesting migratory birds and raptors, the potential exists for avian species to be harmed/harassed during breeding season (February 1 to August 31 for general nesting birds and January 1 to September 15 for raptors). Given these conditions, should work need to occur during nesting seasons, then a nesting bird survey shall be performed by the Project biologist/qualified biologist within/near the Project footprint within seven (7) days of the onset of any activities. Should the Project biologist/qualified avian biologist discover any nesting birds, then appropriate measures, as determined by the Project biologist, will be implemented to minimize impacts. These measures may include but are not limited to: (1) redirecting work to other locations within the Project area, (2) staking/flagging near the nest, (3) establishing a minimum "no work" buffer, and/or (4) installing temporary fencing. No work shall start or resume in the area of concern until the nest has fledged or failed.

Special-Status Wildlife Avoidance

Burrowing Owl
With the implementation of the proposed mitigation measures for potential Project-related impacts to burrowing owl, no negative impacts to the species are anticipated, and the Project will fulfill the requirements related to biological resources pursuant to CEQA and State of California standards.

- **MM-BUOW 1:** Within 14 days of initiating initial ground disturbance and/or construction activities, conduct a pre-construction take avoidance survey for burrowing owl per guidelines specified in the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). In addition, within 24 hours of initiating initial ground disturbance and/or construction activities, conduct a final pre-construction take avoidance survey. Surveys shall include areas within the Project footprint and a surrounding 500-foot (150-meter) buffer. The survey shall consist of walking parallel transects and noting any fresh burrowing owl sign or presence. The results of the take avoidance survey shall be provided to CDFW. If more than 14 days pass between the take avoidance survey and initiation of Project construction, additional take avoidance surveys may be required, depending on what actions have been implemented to deter burrowing owls from moving into the Project footprint and buffer area.

- **MM-BUOW 2:** If burrowing owls are present during construction, adaptive mitigation measures for temporary impacts may include, but not necessarily be limited to: scheduling the construction during non-breeding periods; avoiding proximal areas of occupied burrows during construction; biological monitoring of occupied burrow sites during construction; passive relocation of non-nesting burrows, and; instituting buffer zones and/or "shelter in place" techniques around occupied burrows. If occupied burrows are found during take avoidance surveys or during construction, appropriate construction buffers or setback distances shall be determined by the qualified biologist on a case-by-case basis, depending on the season in which disturbance will occur, the type of disturbance, and other factors that could influence susceptibility to disturbance (e.g., topography, vegetation, existing disturbance levels, etc.). To the extent feasible, buffers of 250 feet (approximately 75 meters)

will be used during the breeding season (February 1 through August 31), and 160 feet (approximately 50 meters) will be used during non-breeding season (September 1 through January 31). "Shelter in place" techniques shall be used if necessary to create a visual and auditory barrier between construction activities and the occupied burrow. Techniques shall include placing hay bales, fencing, or another physical barrier between the occupied burrow and construction activities. The qualified biologist shall determine if and/or when shelter in place is necessary and feasible for implementation. When construction activities commence adjacent to the buffer area, a qualified biologist shall be present on-site full time to monitor the burrowing owl behavior for at least three days. The qualified biologist shall have the authority to increase the setback distance if there are signs of disturbance, such as changes in behavior as a result of construction or other indications of distress by the burrowing owls.

If burrowing owl activity is detected at a burrow within the Project footprint during the non-breeding season (September 1 through January 31), burrowing owls may be excluded from active burrows and encouraged to passively relocate to suitable, unoccupied habitat outside of the exclusion area. Burrowing owls shall be excluded by installing one-way doors in burrow entrances that will allow exit but not re-entry. Although passive relocation does not result in control of the recipient area for burrowing owls, the qualified biologists shall verify that there is an acceptable "recipient" area within a reasonable distance that provides the necessary subsidies to support burrowing owls with the goal to minimize the stress of relocation. Subsidies to be considered include suitable burrows (primary and satellite) and habitat quality (e.g., vegetation cover, diversity) that is equal to or greater than that from which they were relocated. If, during pre-construction surveys, burrowing owl activity is detected at a burrow within the Project footprint during the breeding season (February 1 through August 31), then an appropriate construction buffer or setback distance shall be determined by the qualified biologist on a case-by-case basis. This buffer shall be flagged, and all Project-related activity shall remain outside of the flagged area until a qualified biologist determines the burrow is no longer occupied (e.g., juveniles are foraging independently and are capable of independent survival).

- **MM-BUOW 3:** In the event that burrowing owls will be excluded from the Project footprint and occupied burrows will be impacted, a mitigation site with suitable burrows and habitat shall be secured, and a Burrowing Owl Exclusion Plan shall be developed and approved by CDFW prior to excluding from burrows. Specific objectives for burrowing owl protection addressed by this Burrowing Owl Exclusion Plan shall describe exclusion methodology, burrow excavation procedures, on-site and post-relocation monitoring of occupied burrows, and reporting.

- **MM-BUOW 4:** CDFW may require compensatory mitigation for temporary and/or permanent impacts to burrowing owl-suitable nesting and foraging habitat. If additional mitigation is required, artificial burrowing owl burrows installed onsite at the Project site edges may avoid the need to seek offsite mitigation opportunities while simultaneously incorporating the Project design into enhanced burrowing owl occupancy potential in the immediate area. The energy storage sites may be designed such that artificial burrows may be installed along the borders to any direction, preferably where foraging opportunities would likely be higher. Specifications include: 1) wood construction, 2) at least two L-shaped entrance/exit tunnels

to allow exit points should a predator enter, 3) the nest chamber should have at least 1,700 cm^2 of floor space, 4) the nest chamber should have a hatch in the roof to allow biological monitors to check for owl occupancy (especially nestlings) and other animals (if placed aboveground), or a wide observation pipe (bearing a removable cap) extending from the nest chamber's ceiling to a point approximately one to two feet aboveground, and 5) burrows should be maintained twice per year over time to remain functional for burrowing owls. Maintenance involves simply removing any soil and debris that may have filled vacant burrows due to winds or nearby erosion. In keeping with the locally existing burrow density, artificial burrow sites, at a ratio of 1:1, could be situated on the northern edge of the larger 60-acre Gem parcel, western edge of the smaller 10-acre Gem parcel. oriented towards agricultural and/or undeveloped land. Such placement would ensure that the burrows would be protected from long-term operations and maintenance activities, as the outer edges along a fenced perimeter would not be maintained as functional features of the energy storage sites, while also providing optimal locations for owls to scout for prey and predators over agricultural fields and/or undeveloped areas.

Occupied burrowing owl burrows directly impacted may be replaced by installing artificial burrows on mitigation sites (i.e., conservation easements, in-lieu fee lands, Farm Contract land), or other land as agreed to by CDFW, at a ratio of 1:1. For example, if destruction of two occupied burrows is unavoidable, two artificial burrows should be created in adjacent suitable habitat. If the mitigation sites identified for the Project have at least two suitable burrowing owl burrows for each occupied burrow directly impacted, then artificial burrows may not be installed. Suitable burrows are 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. Burrows shall be scoped to ensure they are of proper depth for burrowing owls.

- **MM-BUOW 5:** A qualified biologist shall be on-site during all ground-disturbing construction activities in potential burrowing owl habitat. The qualified biologist shall be responsible for implementing and overseeing burrowing owl avoidance and minimization measures. The qualified biologist shall have the authority to stop construction if activities are in violation of avoidance and minimization measures. A qualified biologist possesses a bachelor's degree in wildlife biology or a related field and has demonstrated field experience in the identification and life history of burrowing owl.

Swainson's Hawk

MM-SWHA 01 Swainson's Hawk Monitoring and Mitigation Plan

The proposed Project has the potential to adversely affect locally occurring Swainson's hawks, both permanently and temporarily. By preparing a Swainson's Hawk Monitoring and Mitigation Plan as required by CDFW and providing targeted mitigation measures, temporary and permanent SWHA impacts may be adequately mitigated. If direct SWHA impacts cannot be avoided, additional consultation with CDFW may be required to mitigate for Project-related impacts. If proposed Project mitigation includes preserving and maintaining long-term high-quality foraging area(s) with adequate scrub density near known occupied nest sites and/or suitable parcels of native Joshua tree forest habitat, including but not limited re-routing the Project alignment to avoid the half-mile buffer around the nest site to preserve the active SWHA territory identified during these focused surveys, occupancy potential within the Antelope Valley may be significantly enhanced.

Along with an approved Swainson's Hawk Monitoring and Mitigation Plan, additional measures may be required for Project authorization upon finalization of the proposed Project design or as Project construction needs may dictate.

Other Special-Status Wildlife

MM-BIO 6 Other Special-Status Wildlife Species Avoidance
During vegetation clearing, trimming or removal, and/or ground disturbing work, the qualified biologist shall be on-site to monitor for the presence of special-status species. If any wildlife of concern is unearthed during these activities, the qualified biologist shall coordinate with the Project biologist regarding appropriate measures to safeguard the health/life of the individual(s) (e.g., flushing, safely relocating away from the site).

MM-BIO 7: Special-Status Plant Spedies Avoidance
Prior to surface-disturbing activities, a survey for special-status plants will be conducted within and near the Project footprint boundaries to assess the presence/absence of rare plants potentially not detected during the 2021 rare plant surveys. Joshua trees occur throughout the Project, but should any additional special-status plants be found (either individuals or populations), then measures shall be incorporated into operations to prevent/reduce disturbance. At a minimum, temporary fencing or flagging shall be placed around/near the plant(s) to provide a conspicuous, visual barrier. Any other measures deemed necessary by the Project biologist shall also be implemented to prevent disturbance to the species. Regular updates shall be provided during construction meetings or the environmental awareness training to inform staff of areas supporting special-status plants and measures needed to avoid/minimize potential impacts.

MM-BIO 8: Invasive Plant Species
All construction equipment used for the Project shall be clean and free of soil and plant material before arrival on- site and before leaving the work area to prevent the spread of invasive plants.

MM-BIO 9: Dust Suppression/Sediment Transport
Dust impacts shall be minimized by implementing appropriate measures that will reduce/control emissions generated by the Project. Water shall be applied (e.g., using a water truck) at sufficient quantities to prevent airborne dust from leaving the Project area. Increased watering frequency shall be required whenever dry, dusty conditions exist on-site. Watering shall be conducted in a manner that prevents any runoff into adjacent habitat, drain age features and/or Environmentally Sensitive Areas. Best Management Practices (BMPs) to address erosion and excess sedimentation shall also be incorporated into the Project operations. Weed-free products shall be used to minimize the spread of exotic plants. During construction, the biological monitor/Project biologist will periodically inspect the work area to ensure that activities do not generate excessive amounts of dust or cause other disturbances.

MM-BIO 10: Open Trenches and Holes
Any areas of excavation (e.g., pits, trenches, drilling holes) shall be covered overnight or during periods of inactivity. Routes of escape from excavated pits and trenches shall also be installed for wildlife that could potentially become entrapped (e.g., wood planks, sticks, or equivalent with dimensions of roughly 2-inch-thick by 6-inch-wide, and earthen ramps/slopes). These locations will be regularly inspected over the course of the Project and immediately prior to filling. Should any entrapped wildlife

be discovered, then work shall be suspended at the excavation site until the animal can be safely relocated by the biological monitor or Project biologist.

MM-BIO 11: Food and Trash
Food-related items shall never be left within the construction corridor. The Project area shall also be kept clear of work-related trash. All garbage shall be placed in sealed containers and regularly removed from the site. Following construction, any trash, debris, or rubbish remaining within the work limits shall be collected and hauled off to an appropriate facility.

MM-BIO 12: Pets
Pets belonging to Project personnel shall not be permitted within the construction boundaries at any time.

7.1.2 Sensitive Natural Communities

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS?

Less Than Significant Impact with Avoidance and Minimization Measures and Mitigation.
Jurisdictional drainage features (ephemeral washes) occur within the Project ROW. However, it is anticipated that during the Project design phase, all mapped drainage features will be avoided. Therefore, no jurisdictional drainage features are expected to be impacted either during or following construction. No other CDFW-sensitive natural communities are within the Project ROW. As a means of offsetting habitat loss of native vegetation communities, compensation in the form of onsite or offsite restoration/revegetation would be employed at a minimum 1:1 ratio. With incorporation of the Project's avoidance and minimization measures, and implementation of proposed mitigation, it is expected that impacts to natural communities would be reduced to a less than significant level.

7.1.2.1 Recommended Avoidance, Minimization and Mitigation Measures

For sensitive natural communities, MM-BIO 3 and MM-BIO 7 (as described in Section 7.1.1) would be used to avoid and minimize habitat impacts from the proposed construction.

MM-BIO 13: Habitat Restoration Monitoring Plan
Mitigation for Project-related impacts to natural communities would be compensated through onsite or offsite habitat restoration/revegetation at a proposed 1:1 ratio for directly impacted natural vegetation community types, including disturbed variants of natural vegetation communities. No mitigation is proposed for developed and disturbed habitat, agricultural land, or ornamental vegetation. The proposed mitigation would be outlined in a Habitat Restoration Monitoring Plan (HRMP) that would include details on the restoration area(s), site preparations, planting plan, plant/seed materials, planting methods, maintenance program, monitoring plan, reporting procedures, and adaptive management strategies.

7.1.3 Wetlands

Would the Project have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the federal Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means?

No Impact.
A total of 58 jurisdictional drainage features under the purview of RWQCB and CDSFW were mapped within the Project ROW. No wetlands were found. It is anticipated that all these jurisdictional drainage features will be avoided during the Project design phase, with no impacts during construction, operations and maintenance phases.

7.1.4 Wildlife Movement and Nursery Sites

Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?

No Impact.
The proposed Project would not significantly impede any existing corridors or wildlife movement areas, as most of the Project includes transmission lines with small, impacted footprints relative to the amount of undeveloped land that would remain following construction. The Project vicinity currently features numerous transmission lines in largely undeveloped surroundings that facilitate wildlife movement. The Project would avoid of all ephemeral drainages as well as the vast majority of currently undeveloped land situated within the Project ROW studied for this Report, In addition, there are no know nursery sites in the Project site. Therefore, the Project does not have the potential to adversely affect wildlife movement, corridor usage or nursery sites.

7.1.5 Local Policies and Ordinance

Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact.
The Proposed Project would not conflict with any local policies or ordinances protecting biological resources.

7.1.6 Adopted Conservation Plans

Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact.
The Project site is in Kern County and is not covered under an approved Habitat Conservation Plan (HCP) or any other Natural Communities Conservation Plan (NCCP).

8.0 CONCLUSION

The anticipated direct impacts resulting from Project construction are expected to be less than significant when avoidance, minimization and mitigation measures are implemented. To the maximum extent practicable, avoidance of impacts to native vegetation communities, special-status plant and wildlife species, and nesting birds/raptors will be achieved per the MBTA, FESA, CESA and all other applicable State and Federal regulations and laws. Indirect effects to biological resources during and following construction are not anticipated. Cumulative impacts are anticipated to be less than significant due to the limited extent of disturbance in relation to the larger undeveloped region and proposed mitigation to address effects upon sensitive natural communities.

Proposed mitigation will include preparation of a Habitat Restoration Monitoring Plan and likely between three to five years of maintenance, monitoring, and reporting. The overarching goal is to avoid all impacts to special-status plants and natural vegetation communities that overlap with the construction footprint through complete avoidance or minimization and minimizing disturbance to existing vegetation with the use of selective trimming versus potential removal. In addition, biological monitoring is proposed so that natural resources will have increased protection during the construction process.

I hereby certify that the statements furnished above present the data and information required for this biological survey results report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Kris Alberts
Principal Biologist

9.0 REFERENCES

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors
2012 The Jepson Manual: Vascular Plants of California, Second Edition. University of California Press, Berkeley, California.

California Department of Fish and Game (CDFG)
1994 Environmental Services Division (ESD). A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code.

California Department of Fish and Wildlife (CDFW)
2008 CEQA Guidelines. Statutes and Guidelines for Implementation of the California Environmental Quality Act as amended.

2009 Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities. Sacramento, CA: California Department of Fish and Game, November 24, 2009.

2012 Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency. March 7, 2012.

2021 California Natural Diversity Database (CNDDB). RareFind Version 3.1.0. Database Query for the 7.5-minute Willow Springs, Little Buttes, Tylerhorse Canyon, and Fairmont Butte quadrangles. Wildlife and Habitat Data Analysis Branch. Version dated April 13, 2017.

2021 Life History Accounts and Range Maps. California Department of Fish and Wildlfie. Available at https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

California Energy Commission and California Department of Fish & Wildlife (CEC & CDFW)
2010 Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California. June 2, 2010.

California Native Plant Society (CNPS)
2021 Rare Plant Program. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Available at http://www.rareplants.cnps.org.

2021 Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, California. Available at http://www.cnps.org/inventory.

California Protected Areas
2021 California Protected Areas Database. Available at https://www.calands.org.

California State Assembly
2018 California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000 – 15387. Available at http://ccr.oal.ca.gov/.

California State Water Resources Control Board
2018 Porter-Cologne Water Quality Control Act, Water Code Division 7 and Related Sections (As amended, including Statutes 2017). California State Water Resources Control Board. Sacramento, California. Available at https://www.waterboards.ca.gov/laws_regulations/docs/portercologne.pdf.

Cypher, E.A.
2002 General Rare Plant Survey Guidelines. California State University, Stanislaus. Endangered Species Recovery Program, Revised July 2002.

Google
2021 Google Earth. US Department of State Geographer. Data SIO, U.S. Navy, NGA, GEBCO. *earth.google.com/*.

Hickman, J.C. (Ed.).
1993 The Jepson Manual, Higher Plants of California. University of California Press, Berkeley and Los Angeles, California.

Holland, Robert F.
1986 Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, the Resources Agency. Department of Fish and Game.

ICF
2019 Big Beau Solar Project, Kern County, California. Biological Technical Report. July 2019.

Jepson Flora Project (eds.)
2021 Jepson eFlora. http://ucjeps.berkeley.edu/eflora/.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin
2016 *The National Wetland Plant List: 2016 wetland ratings.* Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

Natural Resources Conservation Service (NRCS).
2021 Web Soil Survey. Available at: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed August 2021.

NETR Online (NETR)
2021 Historic Aerials by NETR Online. https://historicaerials.com/?layer=1947&zoom=17&lat=34.16269704189095&lon=-118.48667979240416

Sawyer, J.O., T. Keeler-Wolf, J.M. Evens
2009 A Manual of California Vegetation, Second Edition. California Native Plant Society. Sacramento, California.

Sproul, F., T. Keeler-Wolf, P. Gordon-Reedy, J. Dunn, A. Klein, K. Harper
2011 Vegetation Classification Manual for Western San Diego County (VCMWSDC), First Edition. AECOM, California Department of Fish and Game, Vegetation Classification and Mapping Program, Conservation Biology Institute. February 2011.

United States
1972 Federal Water Pollution Control Act Amendments of 1972 (U.S.C. 1251 et seq.)

U.S. Army Corps of Engineers (USACE)
1987 Corps of Engineers Wetlands Delineation Manual. Environmental Laboratory U.S. Army Corps of Engineers, Waterways Experiment Station, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi.

2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

United States Department of Agriculture Natural Resources Conservation Service (NRCS)
2010 Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. http://soils.usda.gov/technical/classification/osd/index.html.

2021 Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/.

2018 Natural Resources Conservation Service. Wetland Indicator Status Plants Database. https://plants.usda.gov/wetinfo.html.

United States Fish and Wildlife Service (USFWS)
1996 Guidelines for conducting and reporting botanical inventories for federally listed, proposed, and candidate plants. Sacramento, California.

2008 Birds of Conservation Concern.

2009 *General Ecology and Survey Protocol for Determining Presence/Absence and Abundance for the Desert Tortoise - Mojave Population.*

2011 Revised Recovery Plan for the Mojave Population of the Desert Tortoise. Available at https://www.fws.gov/nevada/desert_tortoise/documents/recovery_plan/RRP_Mojave_Desert_TortoiseMay2011.pdf.

2021 U.S. FWS Threatened & Endangered Species Active Critical Habitat Report. https://ecos.fws.gov/ecp/report/table/critical-habitat.html.

2021b National Wetlands Inventory (NWI). https://www.fws.gov/wetlands/.

United States Geological Survey (USGS)
2012 7.5-minute topographic quadrangle maps for Willow Springs, Little Buttes, Tylerhorse Canyon, Fairmont Butte, Bissell, Burnt Peak, Cummings Mtn., Del Sur, Lake Hughes, Lancaster West, Liebre Twins, Mojave, Monolith, Neenach School, Rosamond, Rosamond Lake, Soledad Mtn. and Tehachapi South.

2021 National Hydrography Dataset. https://www.usgs.gov/core-science-systems/ngp/national-hydrography

Western EcoSystems Technologies, Inc.
2020 Biological Resources Technical Report. AVEP Solar Project. Kern County, California. August 26, 2019. Revised November 1, 2020.

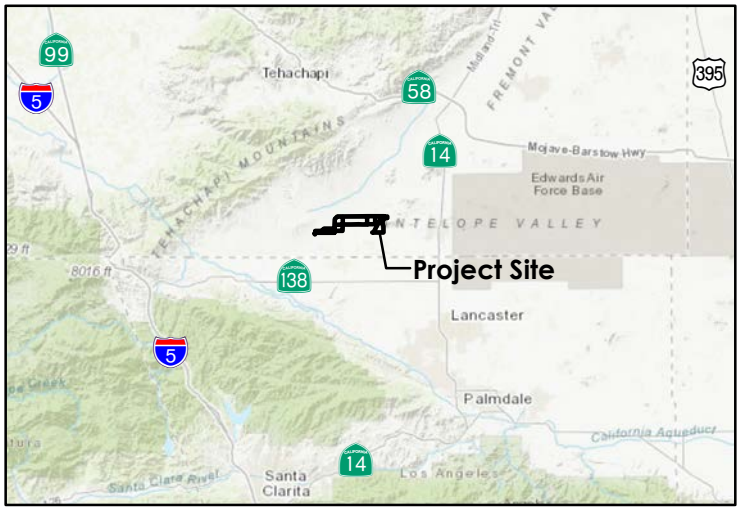
Wilbur, S., Esplin, D., Mallette, R., Borneman, J., and Radtkey, W.
1979 California Condor Recovery Plan. Available at https://www.fws.gov/cno/es/CalCondor/PDF_files/USFWS-1980-Recovery-Plan.pdf.

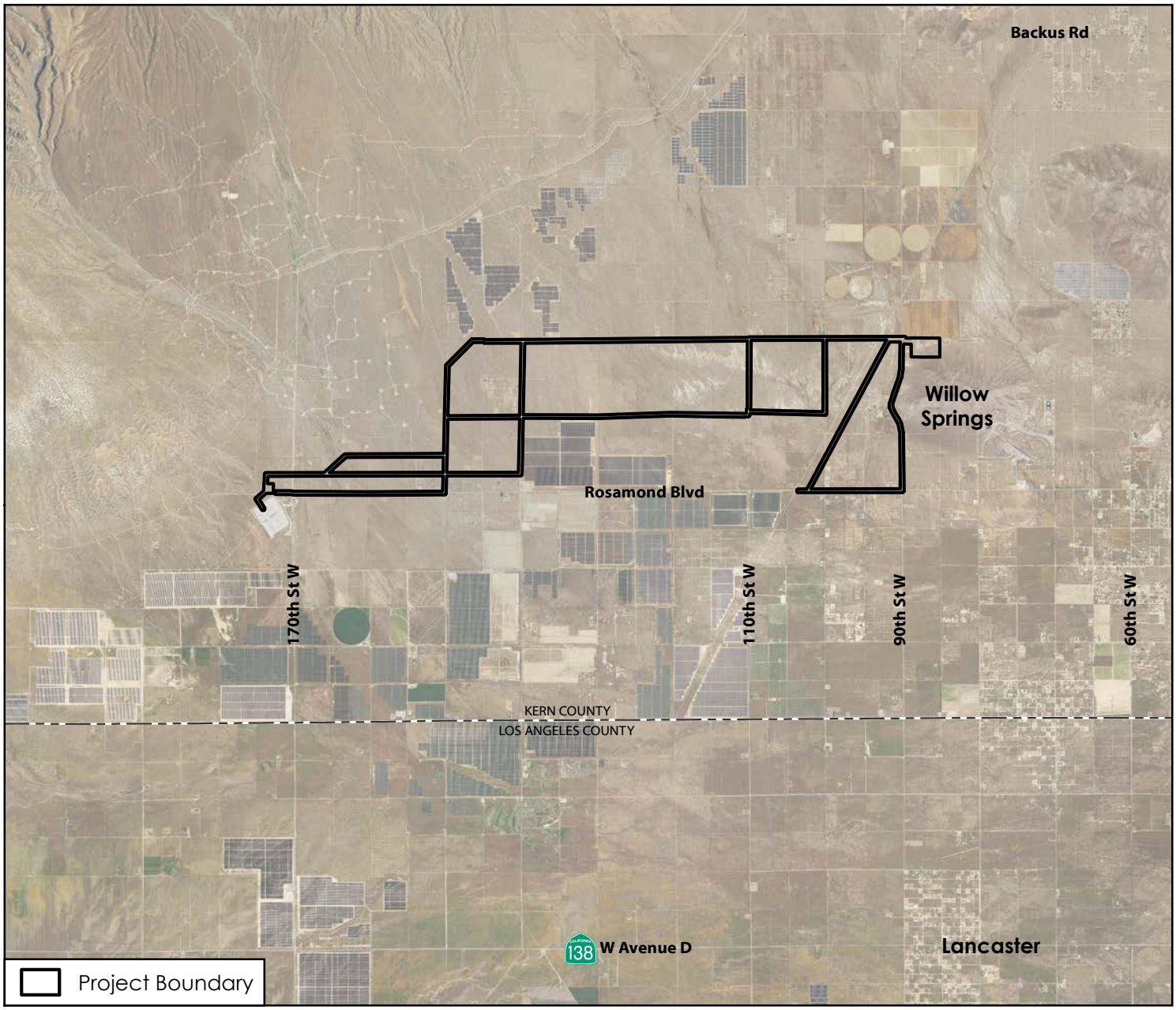
Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.)
1988 California's Wildlife. Vol. I-III. California Department of Fish and Game, Sacramento, California. Available online at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2077&inline=1.

ATTACHMENT A

Figures

Blackhawk Environmental





Aerial Photo: USDA NAIP 2020

Figure 1

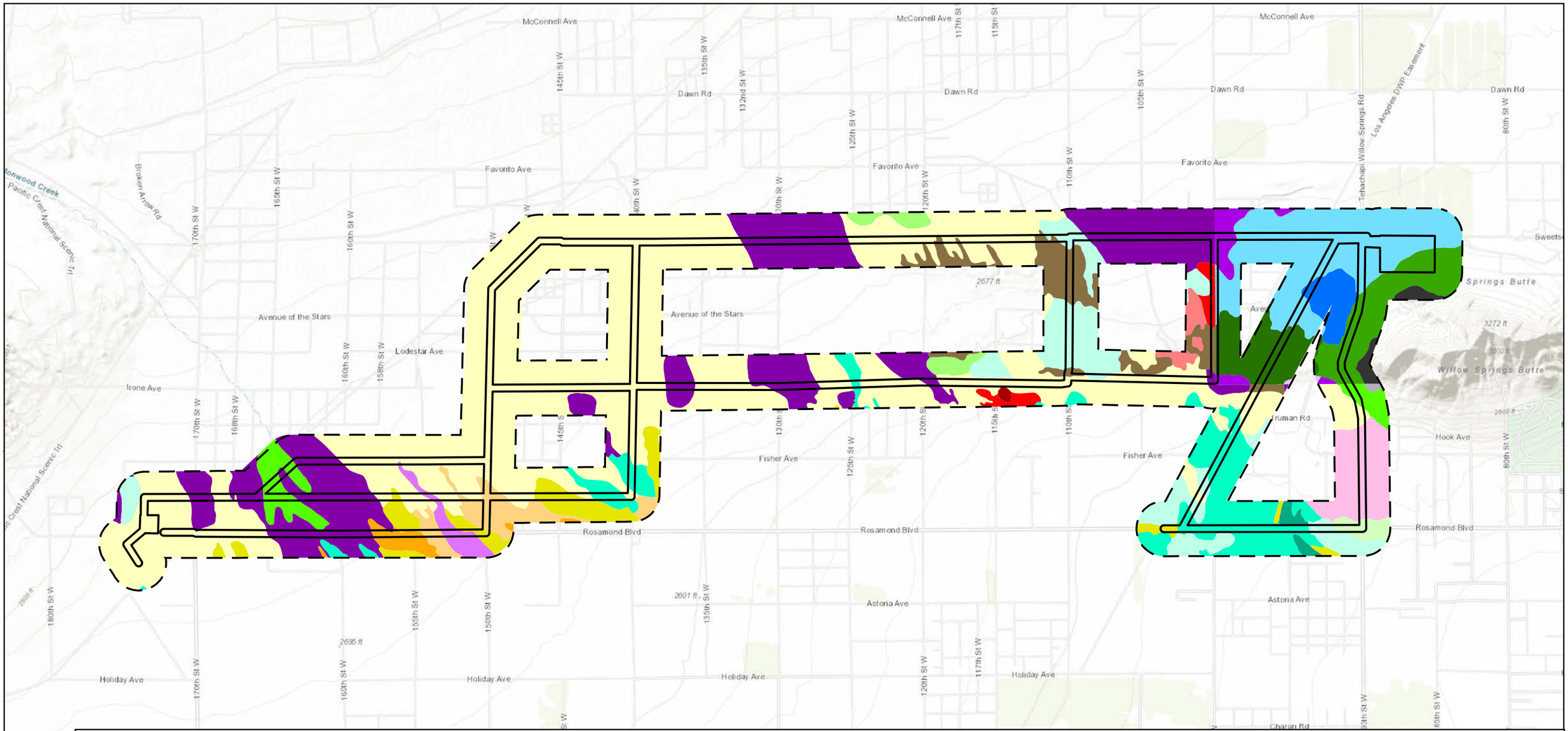
Project Vicinity and Location

Hydrostor Gem Energy Storage Center Project

BLACKHAWK Environmental

N

0 2 Miles



Source: USDA NRCS

Figure 2

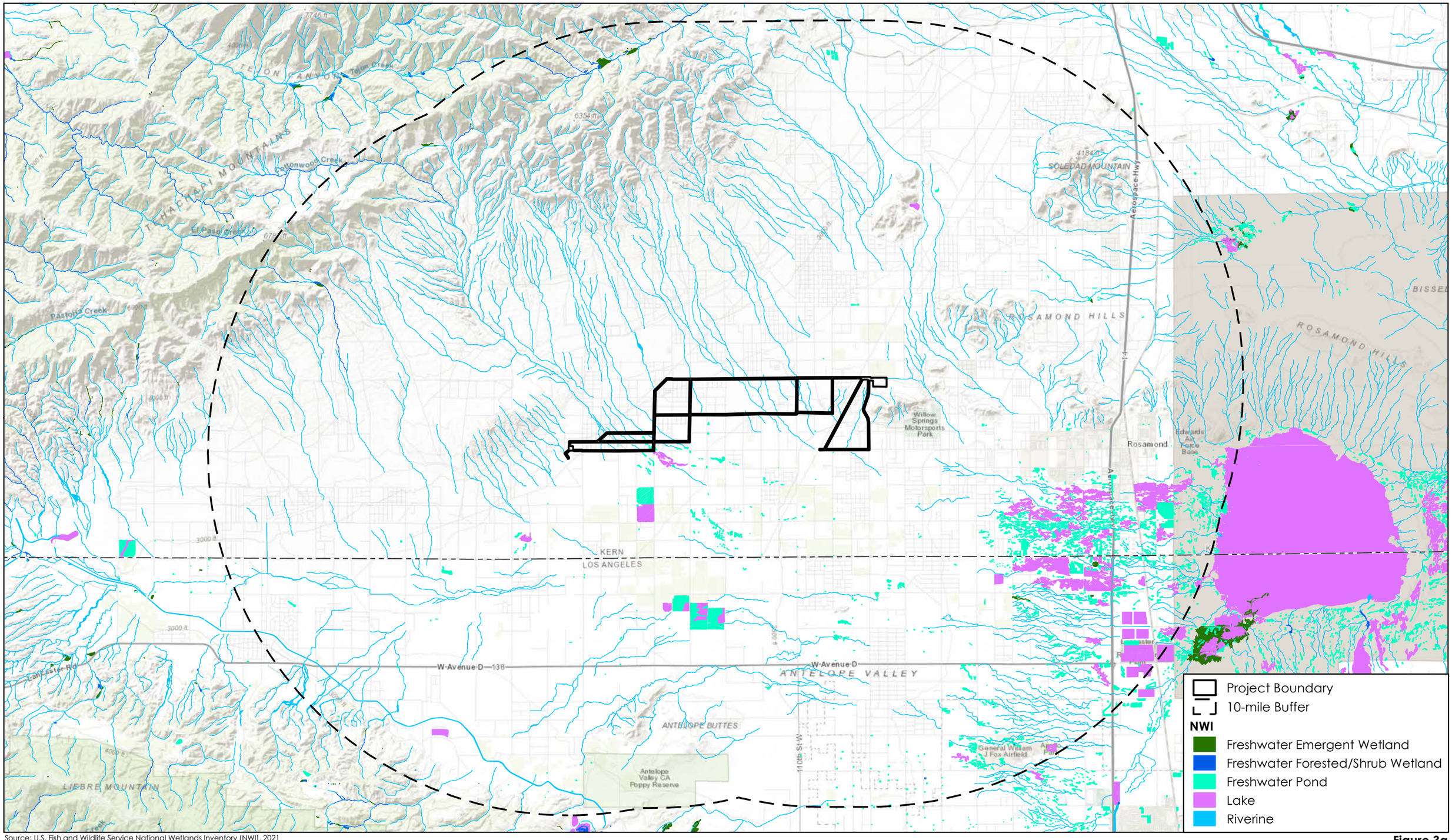
Soils

Hydrostor Gem Energy Storage Center Project

Blackhawk Environmental

N

0 3,500 Feet



Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), 2021
The standards used for the wetlands data can be found at: https://www.fws.gov/wetlands/Data/Data-Standards.html

Figure 3a

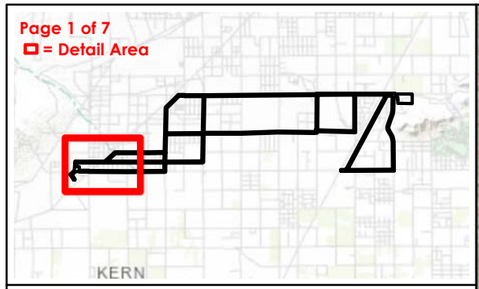
NWI

BLACKHAWK Environmental

N

0 2.5 Miles

Hydrostor Gem Energy Storage Center Project

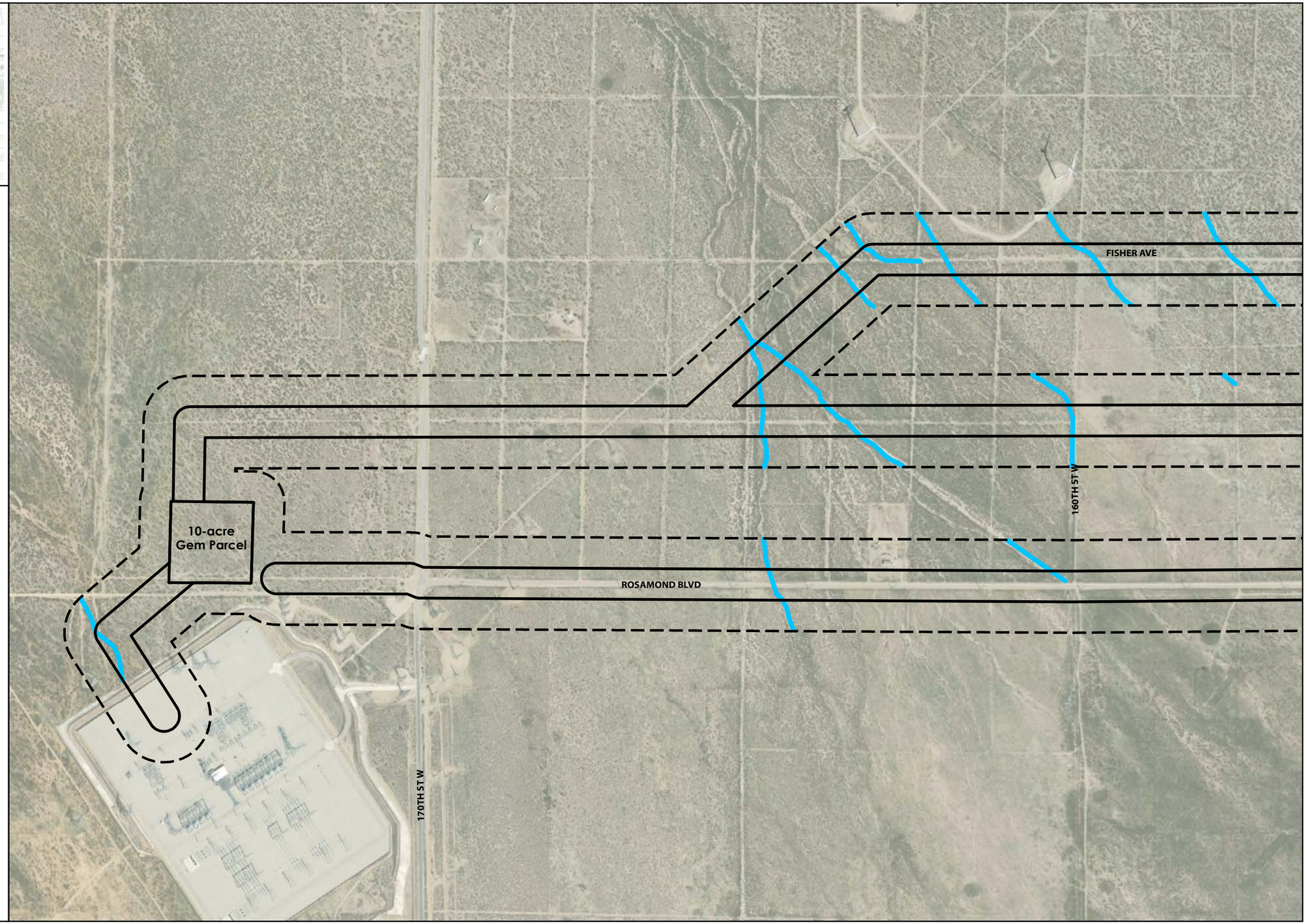


Project Boundary

250-foot NWI Data Buffer

NWI

Riverine



Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), 2021
The standards used for the wetlands data can be found at: https://www.fws.gov/wetlands/Data/Data-Standards.html
Aerial Photo Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

N

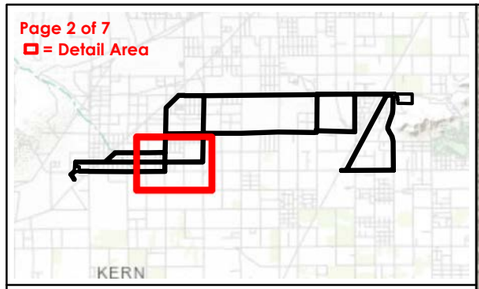
0 800 Feet

Figure 3b - Page 1 of 7

NWI Data Buffer

Hydrostor Gem Energy Storage Center Project

Page 2 of 7
= Detail Area



Project Boundary
250-foot NWI Data Buffer

NWI

Freshwater Pond
Lake
Riverine

FISHER AVE
150TH ST W
140TH ST W
ROSAMOND BLVD

Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), 2021
The standards used for the wetlands data can be found at: https://www.fws.gov/wetlands/Data/Data-Standards.html
Aerial Photo Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

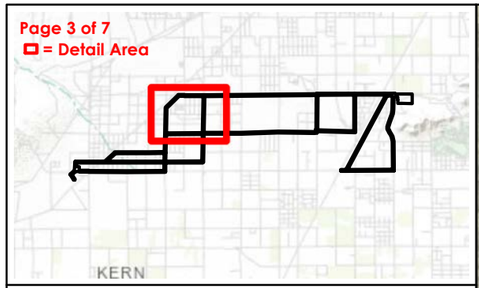
N
0 800 Feet

Figure 3b - Page 2 of 7

NWI Data Buffer

Hydrostor Gem Energy Storage Center Project

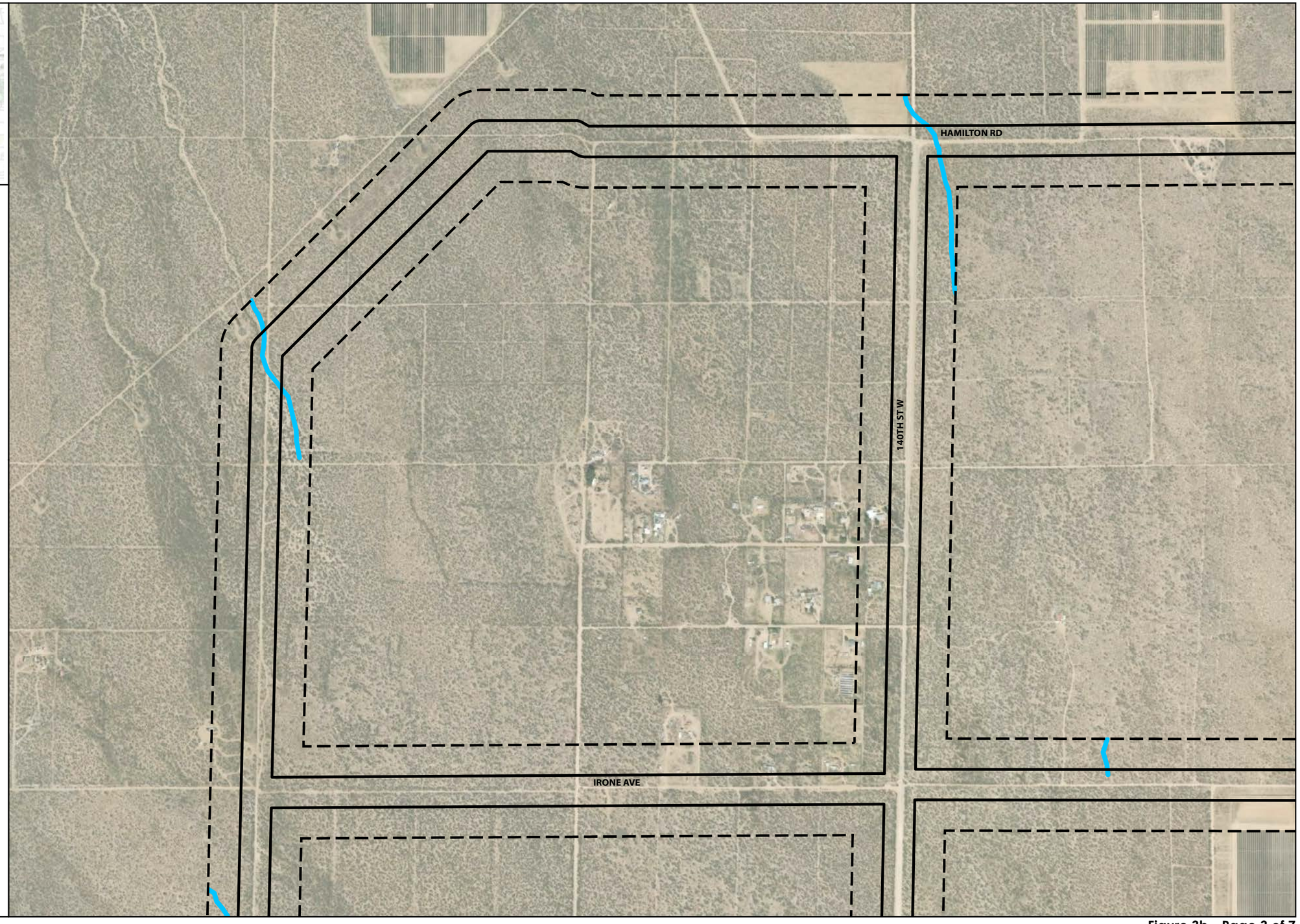
Page 3 of 7
= Detail Area



Project Boundary
250-foot NWI Data Buffer

NWI

Riverine



Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), 2021
The standards used for the wetlands data can be found at: https://www.fws.gov/wetlands/Data/Data-Standards.html
Aerial Photo Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

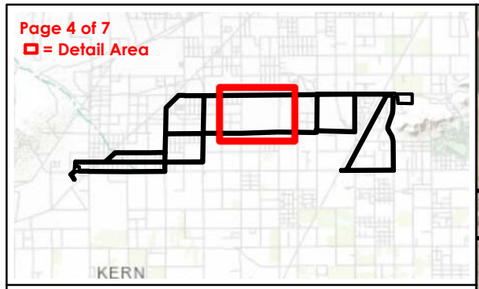
N

0 800 Feet

Figure 3b - Page 3 of 7

NWI Data Buffer

Hydrostor Gem Energy Storage Center Project



Page 4 of 7
= Detail Area

Project Boundary
250-foot NWI Data Buffer

NWI

Riverine

130TH ST W

IRONE AVE

Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), 2021
The standards used for the wetlands data can be found at: https://www.fws.gov/wetlands/Data/Data-Standards.html
Aerial Photo Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

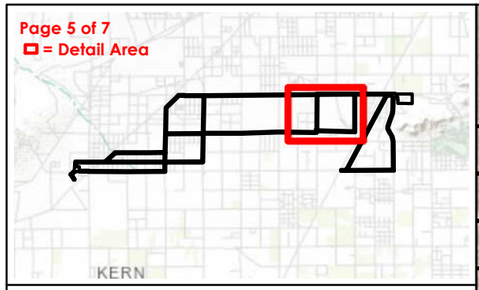
N

0 800 Feet

Figure 3b - Page 4 of 7

NWI Data Buffer

Hydrostor Gem Energy Storage Center Project



Project Boundary

250-foot NWI Data Buffer

NWI

Riverine

HAMILTON RD

110TH ST W

100TH ST W

IRONE AVE

Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), 2021
The standards used for the wetlands data can be found at: https://www.fws.gov/wetlands/Data/Data-Standards.html
Aerial Photo Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

N

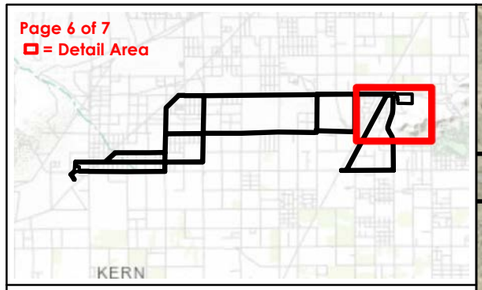
0 800 Feet

Figure 3b - Page 5 of 7

NWI Data Buffer

Hydrostor Gem Energy Storage Center Project

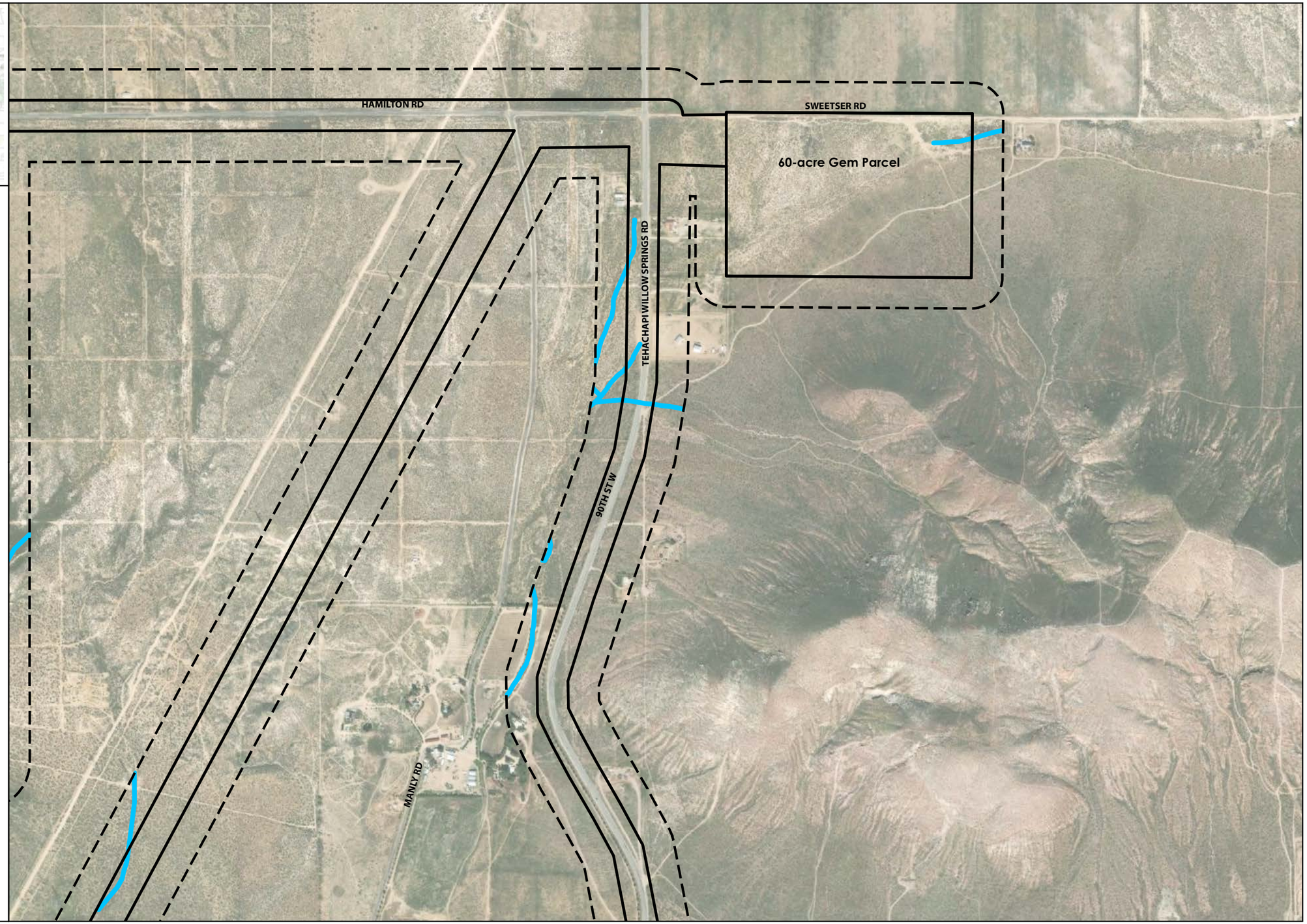
Page 6 of 7
= Detail Area



Project Boundary
250-foot NWI Data Buffer

NWI

Riverine



Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), 2021
The standards used for the wetlands data can be found at: https://www.fws.gov/wetlands/Data/Data-Standards.html
Aerial Photo Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

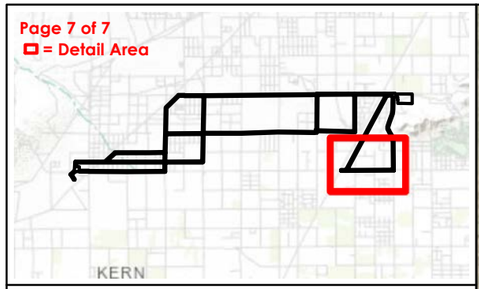
N
0 800 Feet

Figure 3b - Page 6 of 7

NWI Data Buffer

Hydrostor Gem Energy Storage Center Project

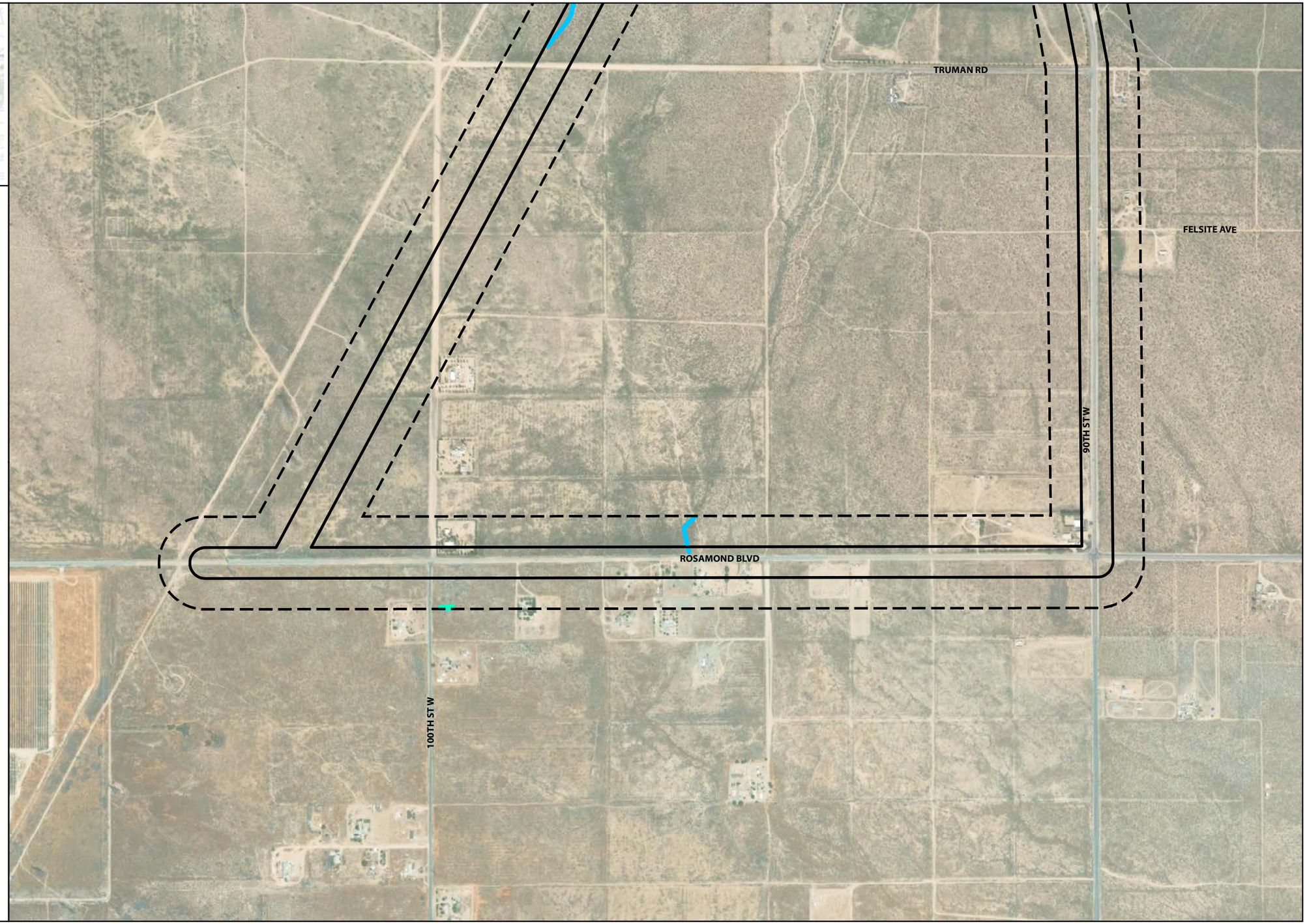
Page 7 of 7
= Detail Area



Project Boundary
250-foot NWI Data Buffer

NWI

Freshwater Pond
Riverine



Source: U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), 2021
The standards used for the wetlands data can be found at: https://www.fws.gov/wetlands/Data/Data-Standards.html
Aerial Photo Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

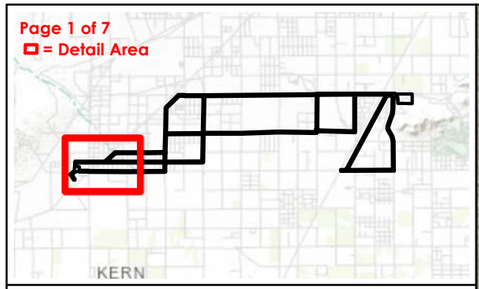
N
0 800 Feet

Figure 3b - Page 7 of 7

NWI Data Buffer

Hydrostor Gem Energy Storage Center Project

Page 1 of 7
= Detail Area



Project Boundary
150-meter Survey Buffer

Vegetation

- Creosote-white bursage series
- Creosote-saltbush series
- Saltbush scrub
- Developed
- Developed/Disturbed

10-acre Gem Parcel

FISHER AVE
ROSAMOND BLVD
160TH ST W
170TH ST W

Aerial Photo: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

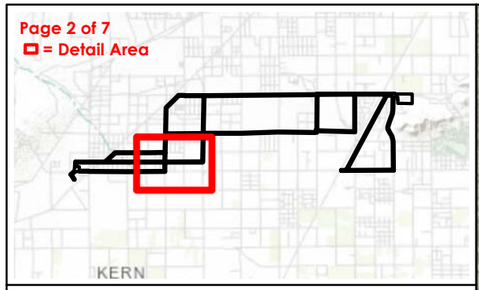
N
0 800 Feet

Figure 4 - Page 1 of 7

Vegetation

Hydrostor Gem Energy Storage Center Project

Page 2 of 7
= Detail Area



Project Boundary
150-meter Survey Buffer

Vegetation

- Creosote-white bursage series
- Saltbush scrub
- Developed
- Developed/Disturbed

FISHER AVE
150TH ST W
140TH ST W
ROSAMOND BLVD

Aerial Photo: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

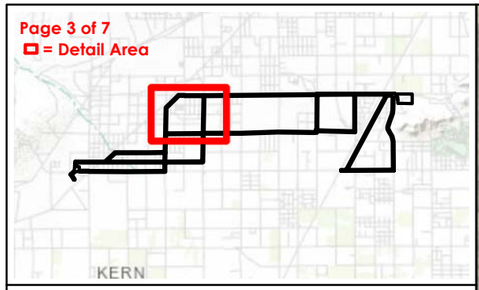
N
0 800 Feet

Figure 4 - Page 2 of 7

Vegetation

Hydrostor Gem Energy Storage Center Project

Page 3 of 7
= Detail Area



Project Boundary
150-meter Survey Buffer

Vegetation

- Creosote-white bursage series
- Creosote-white bursage series disturbed
- Rubber rabbitbrush scrub
- Disturbed
- Developed
- Developed/Disturbed

Aerial Photo: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

N

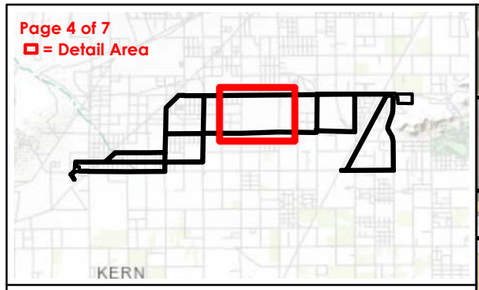
0 800 Feet

Figure 4 - Page 3 of 7

Vegetation

Hydrostor Gem Energy Storage Center Project

Page 4 of 7
▭ = Detail Area



Project Boundary
150-meter Survey Buffer

Vegetation

- Creosote-white bursage series
- Saltbush scrub
- Rubber rabbitbrush scrub
- Disturbed
- Developed
- Developed/Disturbed

130TH ST W

IRONE AVE

Aerial Photo: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

N

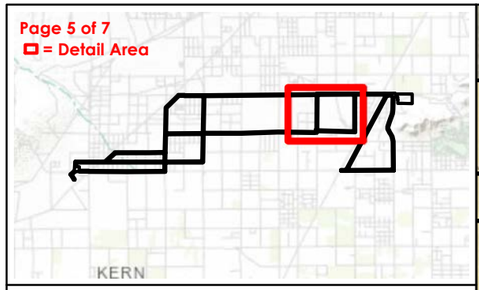
0 800 Feet

Figure 4 - Page 4 of 7

Vegetation

Hydrostor Gem Energy Storage Center Project

Page 5 of 7
= Detail Area



Project Boundary
150-meter Survey Buffer

Vegetation

- Creosote-white bursage series
- Creosote-white bursage series disturbed
- Saltbush scrub
- Annual buckwheat/grasses
- Developed
- Developed/Disturbed

HAMILTON RD
110TH ST W
100TH ST W
IRONE AVE

Aerial Photo: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

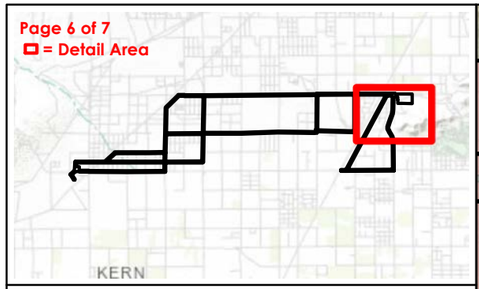
N
0 800 Feet

Figure 4 - Page 5 of 7

Vegetation

Hydrostor Gem Energy Storage Center Project

Page 6 of 7
▭ = Detail Area



Project Boundary
150-meter Survey Buffer

Vegetation

- Creosote-white bursage series
- Creosote-saltbush series
- Saltbush scrub
- Saltbush scrub disturbed
- Annual buckwheat/grasses
- Agricultural land
- Disturbed
- Developed
- Developed/Disturbed

HAMILTON RD
SWEETSER RD
60-acre Gem Parcel
TEHACHAPI WILLOW SPRINGS RD
90TH ST W
MANLY RD

Aerial Photo: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

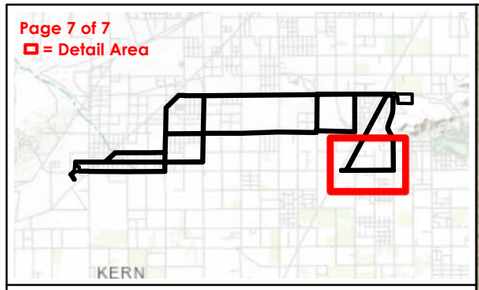
N
0 800 Feet

Figure 4 - Page 6 of 7

Vegetation

Hydrostor Gem Energy Storage Center Project

Page 7 of 7
= Detail Area



Project Boundary
150-meter Survey Buffer

Vegetation

- Creosote-white bursage series
- Saltbush scrub
- California matchweed-rubber rabbitbrush series
- Ornamental
- Agricultural land
- Developed/Disturbed

Aerial Photo: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BLACKHAWK Environmental

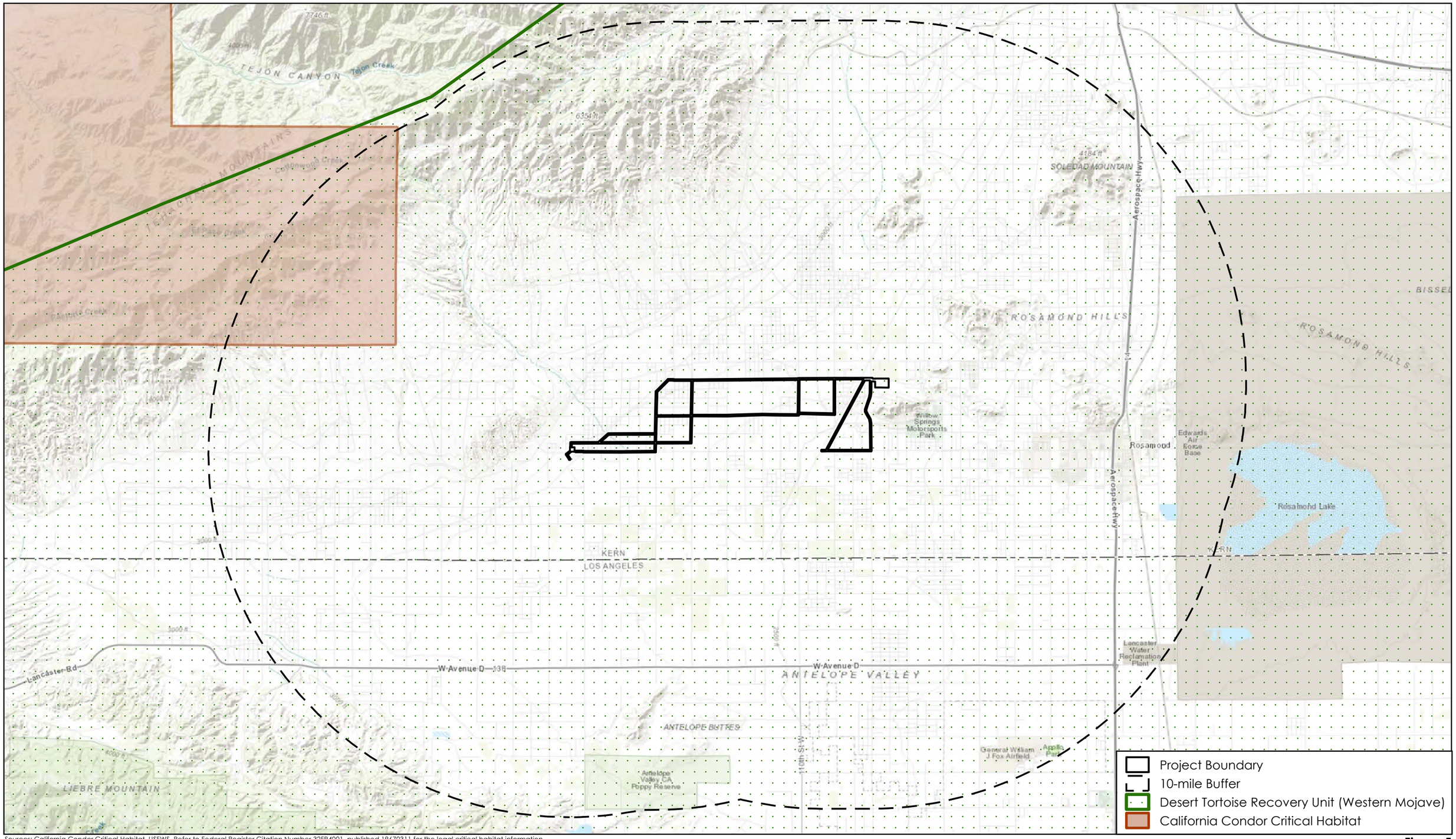
N

0 800 Feet

Figure 4 - Page 7 of 7

Vegetation

Hydrostor Gem Energy Storage Center Project



Sources: California Condor Critical Habitat, USFWS, Refer to Federal Register Citation Number 32FR4001, published 19670311 for the legal critical habitat information.
Desert Tortoise Recovery Unit, U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 2011. Revised recovery plan for the Mojave population of the desert tortoise (Gopherus agassizii).

Figure 5

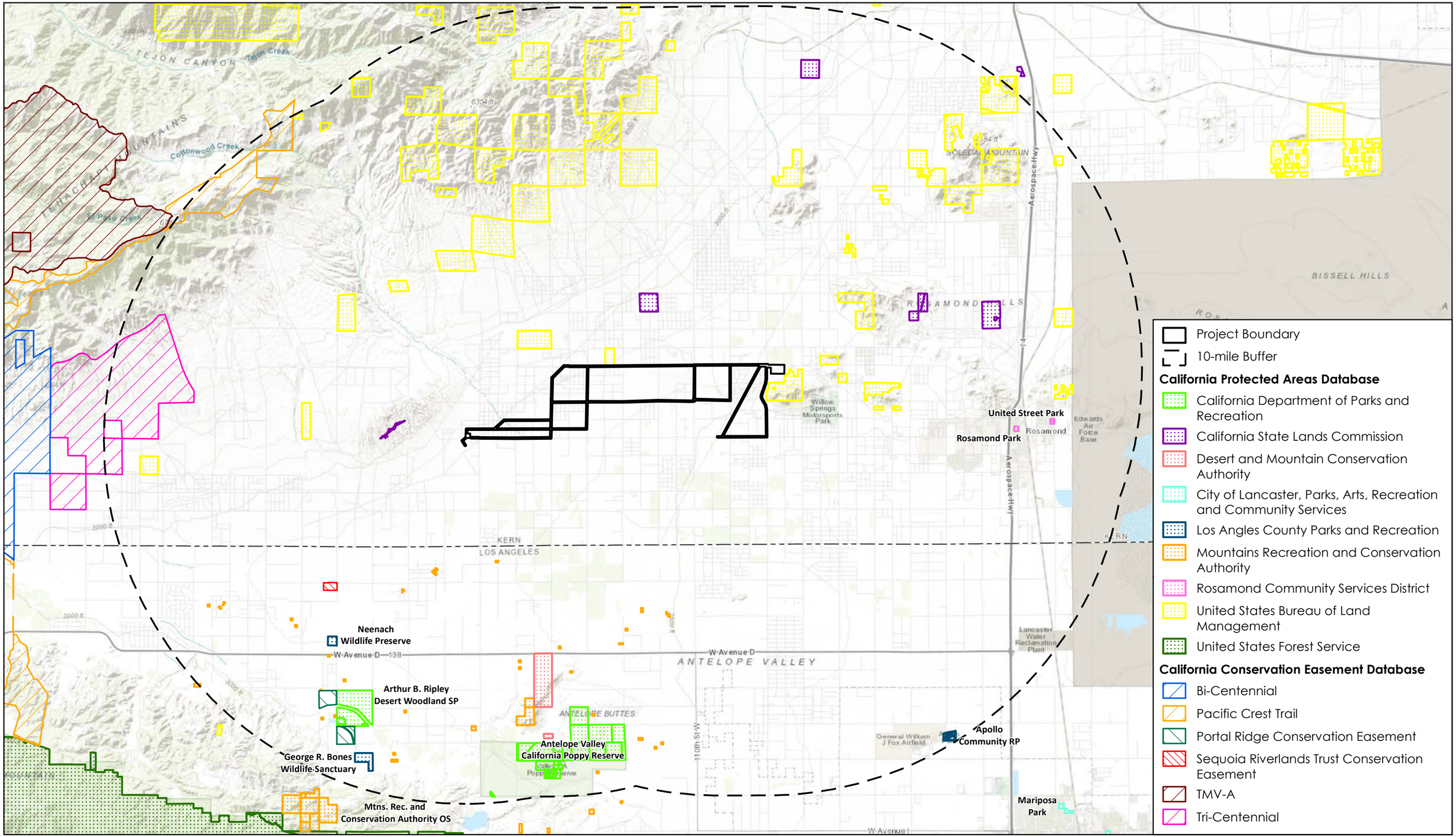
Critical Habitat

Hydrostor Gem Energy Storage Center Project

BLACKHAWK Environmental

N

0 2.5 Miles



Source: California Protected Areas Database (CPAD - www.calands.org) July 2021.
California Conservation Easement Database (CCED - www.calands.org/CCED) 2021a.

BLACKHAWK Environmental

N 0 2.5 Miles

Figure 6

Lands

Hydrostor Gem Energy Storage Center Project

ATTACHMENT B

Focused Swainson's Hawk and Burrowing Owl Survey Reports

Blackhawk Environmental

Blackhawk Environmental, Inc.
1720 Midvale Drive
San Diego, CA 92105
Phone: 619.972.7932
Phone: 619.972.8714
www.blackhawkenv.com

HYDROSTOR, INC. GEM ENERGY STORAGE CENTER APPLICATION FOR CERTIFICATION PROJECT

FOCUSED SWAINSON'S HAWK SURVEY REPORT

WILLOW SPRINGS, KERN COUNTY, CALIFORNIA

Prepared for:

Golder Associates, Inc.
Attn.: Peter Masson
1575 Treat Blvd., #201
Walnut Creek, CA 94598

Prepared by:

Blackhawk Environmental, Inc.
1720 Midvale Drive
San Diego, CA 92105
Contact: Kris Alberts
619-972-8714
kris@blackhawkenv.com

September 2, 2021

TABLE OF CONTENTS

ATTACHMENTS

EXECUTIVE SUMMARY

Blackhawk Environmental (Blackhawk) was contracted by Golder Associates, Inc. for a proposed project that seeks to construct up to two energy storage facility sites (collectively known as the Gem Energy Storage Center on approximately 70 acres) and approximately 10.9 miles of 230 kilovolt (kV) single-circuit tie-lines interconnecting to the existing Southern California Edison (SCE) Whirlwind Substation or an approximately 3.5-mile 230 kV single-circuit tie-line interconnecting to the future Los Angeles Department of Water and Power (LADWP) Rosamond Substation. Each tie-line would include a 125-foot-wide corridor on primarily undeveloped land. The proposed energy storage sites and the tie-lines are collectively known as the Hydrostor Gem Energy Storage Center Project (Project). Blackhawk was tasked with conducting a literature review followed by focused Swainson's hawk (*Buteo swainsoni*; SWHA) surveys and producing this Focused Swainson's Hawk Survey Report. The Project site, 250-ft right-of-way (ROW, 125 feet to either side of the proposed gen-tie centerlines plus all Project features), and half-mile buffer constitute the Survey Area, which covers approximately 14,495 acres, including privately-owned land proposed for this energy storage and gen-tie line development in and near Willow Springs, Kern County, California.

To support Project consistency with California Environmental Quality Act (CEQA) and California Department of Fish and Wildlife (CDFW) guidelines, Blackhawk Environmental was contracted to perform surveys for nesting Swainson's hawks per the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (CEC and CDFW 2010). Swainson's hawks are listed as State Threatened by the California Department of Fish and Wildlife (CDFW, the Department) and are on the Audubon watch list (Bechard et al. 2010). The historical range and distribution of Swainson's hawks in California included the Central Coast and southern regions that have not been reoccupied, while the Central Valley and Great Basin continue to provide core habitat for the species in California. Antelope Valley is an area considered to be re-occupied by a small population of SWHA, probably as a result of irrigated agriculture (CDFW 2016).

A total of nine focused Swainson's hawk surveys occurred between March 31 to July 13, 2021, and resulted in the detection and mapping of the following: one active SWHA nesting territory occupied by one SWHA pair, an additional six individual transient/dispersing SWHA, a total of 433 suitable potential nesting trees, and an additional 56 active competitor nests (i.e. red-tailed hawks [*Buteo jamaicensis*] and common raven [*Corvus corax*] nesting in trees, distribution poles, lattice towers, and other structures) within the Survey Area as displayed in Attachment A, Figures 2 and 3. Four of the six individual transient/dispersing Swainson's hawks were incidentally observed during focused burrowing owl (*Athene cunicularia*; BUOW) surveys and two were observed during the focused SWHA surveys detailed herein. **Incubation was confirmed for the one Swainson's hawk pair and their associated active nest/territory within the Survey Area during focused surveys on May 19, 2021, with incubation continuing through subsequent nest checks; however, a nesting failure was determined and confirmed during surveys on June 29 and July 13, 2021, respectively.** No leg bands were confirmed by Blackhawk Environmental on any of the eight total SWHA observed, however Bloom Research, Inc. has indicated that one of the adults of the active SWHA pair may have a currently unidentified coded leg band issued by USGS Bird Banding Laboratory as observed during their independent observations of this pair (Dr. Peter Bloom, PhD, pers. comm. 2021). One adult SWHA feather was found below the nest site on July 13, 2021, and was sent to Dr. Peter Bloom, PhD of Bloom Research, Inc. for genetic testing and inclusion in his monitoring and analysis of the long-term pedigree and gene flow of SWHA in the greater Antelope Valley area.

These focused SWHA surveys are intended to support environmental impact analyses prior to Project approval and will be provided to CDFW and the appropriate lead agency as close to 30 days following survey completion as feasible, per the reporting recommendations included in the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (CEC and CDFW 2010). Any listed, fully protected, or species of special concern encountered during the focused Swainson's hawk surveys must be submitted to the CDFW California Natural Diversity Database (CNDDB). Additionally, because an active Swainson's hawk territory was identified during the focused Swainson's hawk surveys, **a Swainson's Hawk Monitoring and Mitigation Plan must be prepared** in consultation with the Department and the lead agency, including detailed measures to avoid and minimize impacts to Swainson's hawks in and near the construction areas.

1.0 INTRODUCTION

Blackhawk Environmental (Blackhawk) was contracted by Golder Associates, Inc. for a proposed Project that seeks to construct up to two energy storage facility sites (collectively known as the Gem Energy Storage Center on approximately 70 acres) and approximately 10.9 miles of 230 kilovolt (kV) single-circuit tie-lines interconnecting to the existing Southern California Edison (SCE) Whirlwind Substation or an approximately 3.5-mile 230 kV single-circuit tie-line interconnecting to the future Los Angeles Department of Water and Power (LADWP) Rosamond Substation. Each tie-line would include a 125-foot-wide corridor on primarily undeveloped land. The proposed energy storage sites and the tie-lines are collectively known as the Hydrostor Gem Energy Storage Center Project (Project). Blackhawk was tasked with: conducting a literature review; conducting an onsite reconnaissance-level biological survey and sensitive species habitat assessment; conducting a jurisdictional delineation survey; conducting focused burrowing owl, desert tortoise (*Gopherus agassizii*), Swainson's hawk and rare plant surveys; providing a Focused Burrowing Owl Survey Report; providing a Jurisdictional Delineation Report; providing a Biological Technical Report (BTR) and; providing this Focused Swainson's Hawk Survey Report.

The Project covers approximately 977 acres in and around the community of Willow Springs, immediately west of Willow Springs Butte, and is generally bound by Hamilton Road to the north and Rosamond Boulevard to the south (Attachment A, Figure 1). The Project site is in Kern County and is not covered under an approved Habitat Conservation Plan (HCP) or any other Natural Communities Conservation Plan (NCCP). Since the Project occurs primarily on privately-owned land and is subject to State review, the Project is required to follow CEQA biological standards for common and sensitive onsite biological resources that are known to be present or that may be present onsite, including the Swainson's hawk.

The purpose of the focused SWHA surveys and report is to identify and document the presence/absence of Swainson's hawk nesting territories and/or Swainson's hawk foraging areas potentially occurring within the Project site and surrounding areas up to one half mile from the Project site boundary and to detail SWHA-related requirements associated with the survey results. The Survey Area is located within fragmented natural habitat that is intersected by dirt and paved roads, scattered rural residential development, electrical infrastructure and existing solar arrays. The Survey Area covers approximately 14,495 acres, including a subset of privately-owned land proposed for energy storage and associated gen-tie line development associated with this Project.

The initial survey effort took place on March 31, 2021, during the onsite reconnaissance-level biological survey and sensitive species habitat assessment, fulfilling the criteria and intent of the recommended Survey Period I surveys to identify potential nest sites and become familiar with the Project area (CEC and CDFW 2010). The remaining focused SWHA survey efforts occurred between April 4 to July 13, 2021, and included focused surveys for SWHA individuals, nests, and suitable nesting substrate within the Project site and the Survey Area. Overall, one survey occurred within Survey Period I (January-March 31), two surveys occurred within Survey Period II (April 1- April 30), three within Survey Period III (May 1- May 30), and three within Survey Period IV (June 1- July 15), totaling nine focused SWHA surveys that followed the criteria recommended by CDFW (CEC and CDFW 2010). This report describes the results of the focused Swainson's hawk survey effort conducted for the Project.

1.1 Project Description

The proposed Project broadly includes the installation of new energy storage facilities and new single-circuit tie-lines. The Gem Energy Storage Center (GESC or Gem) will be a nominal 500-megawatt (MW) advanced compressed air energy storage (A-CAES) facility deploying Hydrostor Inc. (Hydrostor) proprietary A-CAES technology. The site will be designed to store 500 MW for up to 14 hours and deliver up to 4,000 Megawatt hours (MWh) over an 8-hour period when discharging. The Gem project will consisting consist of the following main elements:

- Approximately 70-acre energy storage site(s) with security fencing and access gate
- Five electric motor-driven air compressors and five 100 MW turbine-generators
- Heat exchangers
- Thermal storage system
- Hydrostatically compensating approximately 500-acre-foot surface water reservoir with floating cover
- Underground compressed air storage cavern
- Related interconnecting conduits and facilities
- Electric fire pump with emergency 250 horsepower (hp) diesel-fired backup engine
- Two 5-MW, 4.16-kV emergency diesel-fired engines to maintain critical loads in the event of a loss of power
- Onsite 230 kV substation
- An approximately 10.9-mile 230 kV single-circuit tie-line interconnecting to the Southern California Edison (SCE) Whirlwind Substation, or an approximately 3.5-mile 230 kV single-circuit tie-line interconnecting to the future Los Angeles Department of Water and Power (LADWP) Rosamond Substation.

Gem does not require combustion of fossil fuel and will not produce combustion-related air emissions during normal operation.

Gem will be an energy storage facility consisting of five, 100-MW (nominal) power blocks. Each power block will contain a motor-driven air compressor drivetrain, heat exchangers, and an air turbine generator and their ancillary equipment. Each power block will share a common set of thermal storage tanks (hot and cold) as well as the air storage cavern.

Hydrostor's proprietary technology is a low-cost, bulk-scale energy storage solution. It provides long-duration, emission-free storage that can be flexibly sited where the electricity grid requires it, providing multi-hundred megawatts of generation capacity and a suite of ancillary services in a fifty (50) year life. This is enabled by combining industry-proven technologies with two key innovations: the use of hydrostatically compensated air storage caverns and a proprietary thermal management system.

The energy storage systems store compressed air in purpose-built underground storage caverns, analogous to those used worldwide for hydrocarbon storage. The storage caverns are flooded with water through a hydraulic conduit from a water storage compensation reservoir at the ground surface level. The weight of the water in this compensation reservoir maintains a near-constant air-pressure in the cavern throughout both the charging and discharging cycles, supporting efficient operation, and significantly reducing the cavern volume requirements.

The thermal management system captures the heat developed during air-compression, stores it, and re-uses it when generating electricity, making the process adiabatic. This increases the system's efficiency and eliminates the need for burning of fossil fuels, as is required for traditional CAES.

When the Hydrostor system is charging (known as "Charge Cycle"), off-peak or surplus electricity from the grid is used to drive air compressors, converting the electrical energy into potential energy in the compressed air and heat energy stored by the thermal energy management system. At multiple points in the compression process, the heat generated during air-compression is transferred to a thermal fluid by a set of heat exchangers and stored separately for later use during the discharge cycle.

The air stream exits the compression process at the same pressure as maintained in the air storage cavern which is governed by the vertical distance between the cavern and the connected hydrostatic compensation reservoir located at the surface. As air is charged into the storage cavern, water is displaced up the hydraulic conduit and into the surface reservoir. This maintains a near-constant pressure of the air within the cavern and stores substantial potential energy in the elevated water. Once in the cavern, the air can be stored until electricity is required.

To generate electricity (known as the "Discharge Cycle"), compressed air is discharged from the cavern, which allows the compensation water to re-flood the cavern. Similar to the charge cycle, the compensation water from the reservoir maintains a near-constant air pressure in the cavern during discharging. The cool high-pressure air exiting the cavern is re-heated using the heat stored by the thermal management system and the same set of heat exchangers that were initially used to extract it. The reheated compressed air is then used to drive air-expansion turbine-generators which efficiently convert the stored potential energy back into electricity for the grid.

1.2 Existing Conditions

Existing conditions within the Survey Area broadly include areas of sparse to moderately high desert vegetation cover, intermixed with disturbed areas suitable for fossorial mammals and consequently, burrowing owls. Evidence of occupancy by fossorial mammals, such as white-tailed antelope squirrel (*Ammospermophilus leucurus*) and California ground squirrel (*Otospermophilus beecheyi*), was moderate.

The eastern portion of the Project ranges topographically from gently sloping hills with sparse vegetative cover to relatively steep slopes associated with ephemeral drainages (dry at the time of the surveys) with ample bare ground and sandy to gravelly soils. A mix of rural residential development, agricultural land, and paved and dirt roads intersect the landscape. The majority of the Project right-of-way (ROW) is centered on paved and dirt roads, and a large stretch of the ROW parallels an existing transmission/gen-tie line running northeast to southwest. The Gem parcels are located entirely on sparsely vegetated, undeveloped land.

The central portion of the Project consists of generally flat, sparsely vegetated open areas with occasional gentle slopes, as well as scattered residences and dirt roads. The ROW is primarily centered on dirt and paved roads with the remainder of the Survey Area on a mostly undeveloped area. Existing solar arrays occur along the northern and southern boundaries of this portion of the Survey Area.

The western portion of the Project consists of generally flat and gradually sloped land with a range of low to moderate vegetative cover. Dirt and paved roads associated with historical and current rural residential development, as well as access roads to existing solar arrays to the northeast and south, Manzana Wind facilities to the north, and the existing Whirlwind Substation to the southwest, regularly intersect the landscape. An existing transmission/gen-tie line, originating at the Whirlwind Substation, runs northeast to southwest through this portion of the Survey Area. One portion of the proposed tie-line route extends into the existing Whirlwind substation; therefore, part of the Project site and Survey Area were within the developed footprint of the Whirlwind substation. However, the existing Whirlwind substation was excluded from these surveys due to a lack of authorized access and a perceived lack of suitable owl habitat. Despite the presence of numerous dirt roads and scattered rural residential development, the western portion of the Survey Area remains mostly undeveloped.

Trees observed within the Survey Area are correlated primarily to rural residential development in the form of ornamental plantings and windbreaks that vary in height from six to 40 feet. Scattered tamarisk (*Tamarix* spp.), averaging 20 feet in height, also occur throughout the Survey Area. Native Joshua trees (*Yucca brevifolia*) also occur as a component of the high desert vegetation communities in the Survey Area. Cover types and vegetation communities are depicted in Figure 2 (Attachment A) and further discussed in Section 4.0 of the *Hydrostor Gem Energy Storage Center Application for Certification Project Biological Technical Report (*Blackhawk Environmental 2021.

2.0 REGULATORY SETTING

The proposed Project is subject to a host of State and federal regulations associated with a number of regulatory programs. These programs often overlap and were developed to protect natural resources, including: State and federally listed plants and animals; aquatic resources such as rivers, creeks, ephemeral streambeds, wetlands and riparian areas; other special-status species that are not listed as threatened or endangered by the State or federal governments; and other special-status vegetation communities.

2.1 State and/or Federally Listed Plant and Wildlife Species

The Federal Endangered Species Act (FESA) protects federally listed plant and wildlife species, and the California Endangered Species Act (CESA) protects State-listed plant and wildlife species. The following sub-sections detail these laws.

2.1.1 State of California Endangered Species Act

California's Endangered Species Act (CESA) defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that is in danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." The State defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an Endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike the Federal Endangered Species Act (FESA), CESA does not list invertebrate species.

Article 3, Sections 2080 through 2085, of the CESA addresses the taking of threatened, endangered, or candidate species by stating "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided." Under the CESA, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require permits or memoranda of understanding and can be authorized for endangered species, threatened species, or candidate species for scientific, educational, or management purposes and for take incidental to otherwise lawful activities. Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

2.1.2 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species

is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the United States Fish and Wildlife Service (USFWS), through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification that result in injury to, or death of species as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants.

2.1.3 State and Federal Take Authorizations for Listed Species

Federal or state authorizations of impacts to or incidental take of a listed species by a private individual or other private entity would be granted in one of the following ways:

- Section 7 of the FESA stipulates that any federal action that may affect a species listed as threatened or endangered requires a formal consultation with USFWS to ensure that the action is not likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of designated critical habitat. 16 U.S.C. 1536(a)(2).

- In 1982, the FESA was amended to give private landowners the ability to develop Habitat Conservation Plans (HCP) pursuant to Section 10(a) of the FESA. Upon development of an HCP, the USFWS can issue incidental take permits for listed species where the HCP specifies at minimum, the following: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require as being necessary or appropriate for the plan.

- Sections 2090-2097 of the California Endangered Species Act (CESA) require that the state lead agency consult with CDFW on projects with potential impacts on state-listed species. These provisions also require CDFW to coordinate consultations with USFWS for actions involving federally listed as well as state- listed species. In certain circumstances, Section 2080.1 of the California Fish and Game Code allows CDFW to adopt the federal incidental take statement or the 10(a) permit as its own based on its findings that the federal permit adequately protects the species under state law.

2.2 California Environmental Quality Act

Shortly after the United States federal government passed the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA) was passed in 1970 to institute a statewide policy of environmental protection. CEQA does not directly regulate land uses, but instead requires state and local agencies within California to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects and adopt all feasible measures to mitigate those impacts. CEQA makes environmental protection a mandatory part of every California state and local agency's decision-making process.

2.2.1 CEQA Thresholds of Significance

Environmental impacts relative to biological resources are assessed using impact significance threshold criteria, which reflect the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State of California to:

> *"Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities..."*

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to CEQA, Section 15064.7 (Thresholds of Significance), each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and the CEQA Guidelines, Attachment G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

> *"The project has the potential to: substantially degrade the quality of the environment, 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 wildlife community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, ..."*

Therefore, for the purpose of this analysis, impacts to biological resources (specifically, Swainson's hawks) are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following criteria discussed below would result from implementation of the proposed Project.

2.2.2 Criteria for Determining Significance Pursuant to CEQA

Attachment G of the 1998 State CEQA guidelines indicates that a project may be deemed to have a significant effect on the environment if the project is likely to:

> ***a)*** *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 the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*
>
> ***b)*** *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*
>
> ***c)*** *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through*

direct removal, filling, hydrological interruption, or other means.

d) *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.*

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

2.2.3 CEQA Guidelines Section 15380

The CEQA requires evaluation of a project's impacts on biological resources and provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts. Sections 5.1.1 and 5.2.2 below set forth these thresholds and guidelines. Furthermore, pursuant to the CEQA Guidelines Section 15380, CEQA provides protection for non-listed species that could potentially meet the criteria for state listing. For plants, CDFW assigns California Rare Plant Ranks (CRPR) to species categorized as List 1A, 1B, or 2 of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants in California* may meet the criteria for listing and should be considered under CEQA. CDFW also recommends protection of plants, which are regionally important, such as locally rare species, disjunctive populations of more common plants and/or plants on the California Rare Plant Rank (CRPR) 3 or 4 lists; however, for the purpose of the associated Biological Technical Report for this Project, CRPR list 3 and 4 species were not evaluated.

2.3 Special-Status Species Designations

Special-status plant and wildlife species are protected by State and federal laws and regulations. USFWS and CDFW are the primary regulatory agencies. A variety of designations are used to designate various levels of listing statuses. These designations are further described in the following sub-sections.

2.3.1 Federally Designated Special-Status Species

Some years ago, the USFWS instituted changes in the listing status of candidate species. Former C1 (candidate) species are now referred to simply as candidate species and represent the only candidates for listing. All references to federally protected species in this report (whether listed, proposed for listing, or candidate) include the most current published status or candidate category to which each species has been assigned by USFWS. Additionally, the USFWS *Birds of Conservation Concern 2008* report was published to identify the migratory and non-migratory bird species (beyond those already federally listed) that represent the highest conservation priorities for USFWS.

For this report, the following acronyms are used for federal special-status species:

FE Federally listed as Endangered
FT Federally listed as Threatened
FPE Federally proposed for listing as Endangered
FPT Federally proposed for listing as Threatened
FC Federal Candidate species (Former Category 1 candidates)
BCC USFWS Birds of Conservation Concern

2.3.2 State-Designated Special-Status Species

Some mammals and birds are protected by the State of California as Fully Protected (FP) Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. California Species of Special Concern (SSC) are species designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. This list is primarily a working document for the CDFW's California Natural Diversity Database (CNDDB) project. Informally listed taxa are not protected but warrant consideration in the preparation of biotic assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites.

For this report the following acronyms are used for State special-status species:

SE State-listed as Endangered
ST State-listed as Threatened
SCE State candidate for listing as Endangered
SCT State candidate for listing as Threatened
FP State Fully Protected
SSC Species of Special Concern

2.4 Additional Applicable Local, State and Federal Regulations

Each of the following regulations bears some applicability toward assessing the natural resources of the Project Site and any effects that construction and long-term operations and maintenance activities may have upon such resources. These are included for informational and referential purposes only.

2.4.1 Fish and Wildlife Conservation Act of 1980

The Fish and Wildlife Conservation Act of 1980 (PL 96-366; 16 USC §§2901 et seq.) provides for conservation, protection, restoration and propagation of certain species, including migratory birds threatened with extinction.

2.4.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (PL 65-186, as amended; 16 USC §§ 703 et seq.) protects most birds, whether or not they migrate. Birds, their nests, eggs, parts, or products may not be killed or possessed. Game birds are listed and protected except where specific seasons, bag limits, and other features govern their hunting. Exceptions are made for some agricultural pests, which require a USFWS permit (yellow-headed, red-winged, bi-colored red-winged, tri-colored red-winged, Rusty and Brewer's blackbirds, cowbirds, all grackles, crows and magpies). Some other birds that injure crops in California may be taken under the authority of the County Agricultural Commissioner (meadowlarks, horned larks, golden-crowned sparrows, white- and other crowned sparrows, goldfinches, house finches, acorn woodpeckers, Lewis' woodpeckers and flickers). Permits may be granted for various non-commercial activities involving migratory birds and some commercial activities involving captive-bred migratory birds.

2.4.3 California Fish & Game Codes 3500 Series

California Fish & Game Codes 3500, 3503, 3503.5, 3505, 3511 and 3513 are State regulations that cover resident and non-resident game birds, protected bird nests, protected raptor nests, egrets, ospreys, Fully Protected bird species, and take considerations for Migratory Bird Treaty Act birds.

- **Code 3500:** "(a) Resident game birds are as follows:
  (1) Doves of the genus *Streptopelia*, including, but not limited to, spotted doves, ringed turtledoves, and Eurasian collared-doves.
  (2) California quail and varieties thereof.
  (3) Gambel's or desert quail.
  (4) Mountain quail and varieties thereof.
  (5) Sooty or blue grouse and varieties thereof.
  (6) Ruffed grouse.
  (7) Sage hens or sage grouse.
  (8) Hungarian partridges.
  (9) Red-legged partridges including the chukar and other varieties.
  (10) Ring-necked pheasants and varieties thereof.
  (11) Wild turkeys of the order *Galliformes*.
  (b) Migratory game birds are as follows:
  (1) Ducks and geese.
  (2) Coots and gallinules.
  (3) Jacksnipe.
  (4) Western mourning doves.
  (5) White-winged doves.
  (6) Band-tailed pigeons.
  (c) References in this code to "game birds" means both resident game birds and migratory game birds."

- **Code 3503:** "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto."

- **Code 3503.5:** "It is unlawful to take, possess, or destroy any birds in the orders *Falconiformes* or *Strigiformes* (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

- **Code 3505:** "It is unlawful to take, sell, or purchase any aigrette or egret, osprey, bird of paradise, goura, numidi, or any part of such a bird."

- **Code 3511:** "(a) (1) Except as provided in Section 2081.7 or 2835, fully protected birds or parts thereof may not be taken or possessed at any time. No provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected bird, and no permits or licenses heretofore issued shall have any force or effect for that purpose. However, the department may authorize the taking of those species for necessary scientific research, including efforts to recover fully protected, threatened, or endangered species, and may authorize the live capture and relocation of those species pursuant to a permit for the protection of livestock. Prior to authorizing the take of any of those species, the department shall make an effort to notify all affected and interested parties to solicit information and comments on the proposed authorization. The notification shall be published in the California Regulatory Notice

Register and be made available to each person who has notified the department, in writing, of his or her interest in fully protected species and who has provided an e-mail address, if available, or postal address to the department. Affected and interested parties shall have 30 days after notification is published in the California Regulatory Notice Register to provide any relevant information and comments on the proposed authorization.

(2) As used in this subdivision, "scientific research" does not include any actions taken as part of specified mitigation for a project, as defined in Section 21065 of the Public Resources Code.

(3) Legally imported fully protected birds or parts thereof may be possessed under a permit issued by the department.

(b) The following are fully protected birds:

(1) American peregrine falcon (*Falco peregrinus anatum*).
(2) Brown pelican.
(3) California black rail (*Laterallus jamaicensis coturniculus*).
(4) California clapper rail (*Rallus longirostris obsoletus*).
(5) California condor (*Gymnogyps californianus*).
(6) California least tern (*Sterna albifrons browni*).
(7) Golden eagle.
(8) Greater sandhill crane (*Grus canadensis tabida*).
(9) Light-footed clapper rail (*Rallus longirostris levipes*).
(10) Southern bald eagle (*Haliaeetus leucocephalus leucocephalus*).
(11) Trumpeter swan (*Cygnus buccinator*).
(12) White-tailed kite (*Elanus leucurus*).
(13) Yuma clapper rail (*Rallus longirostris yumanensis*)."

- **Code 3513:** "It is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act."

3.0 METHODS

A literature review was conducted using the California Natural Diversity Database (CNDDB) for documented occurrences of special-status species within five miles of the Project ROW. The results included 15 records detailing multiyear SWHA nesting activity in two to three different territories within five miles of the Project site (CDFW 2009, 2011, 2012, 2013, 2106, 2017, 2018, 2020). Notations about Swainson's hawk foraging and wintering in the immediate vicinity of ferruginous hawk (*Buteo regalis;* FEHA) observations are included in six CNDDB accounts within five miles of the Project site (CDFW 2011).

Before conducting the surveys, the general survey approach was discussed by Blackhawk Environmental Principal biologist Kris Alberts and Jaime Marquez of CDFW over the phone on March 29, 2021. During the phone call, it was agreed that the survey approach would include the mapping of all Swainson's hawk suitable nest trees within one-half mile of the Project, CDFW-protocol level Swainson's hawk surveys catered specifically toward the Antelope Valley region, and the documentation of nest competitors and all Swainson's hawk observations within the Survey Area.

Using the literature review results as background preparation for the focused Swainson's hawk surveys, Blackhawk Environmental Principal biologist Kris Alberts and Associate Biologists Katie Quint, Tawni Gotbaum, and Desiree Johnson conducted nine focused Swainson's hawk surveys following CDFW protocol for Kern County over 13 days between March 31 and July 13, 2021 (Table 1 below). The Survey Area included the entire Project footprint of the proposed energy storage facility parcels, gen-tie lines, and its associated 250-foot-wide ROW (125 feet to either side of the centerline) plus a half-mile buffer surrounding all proposed Project features.

The survey methods generally followed the latest accepted CDFW SWHA protocol specifically referencing Kern County (CEC and CDFW 2010). CDFW protocol designates ten surveys to be conducted over four Survey Periods aiming to capture progressive nesting behaviors and activity. This includes a preliminary survey of potential nest locations (Survey Period I) followed by surveys targeting initial occupancy of traditional nest territories and nesting behaviors (Survey Period II), direct monitoring of known/identified active nests to confirm incubation (Survey Period III), and direct monitoring of known/identified active nests to confirm young rearing (Survey Period IV).

A total of nine focused SWHA surveys were performed by Blackhawk Environmental in 2021 by vehicle and/or foot with teams of two experienced raptor biologists and the aid of a 60x-power spotting scope and binoculars. An initial biological reconnaissance survey was conducted on March 31, 2021, during CDFW's SWHA Survey Period I, satisfying CDFW recommendations for site familiarization and potential SWHA nest detection (CEC and CDFW 2010). Two focused Swainson's hawk surveys were performed during Survey Period II in order to catalog, revisit, and check all suitable nest trees identified within the Survey Area and continue assessing any additional suitable trees as potential SWHA nesting substrate. Surveyors utilized a mobile aerial map (ESRI ArcGIS Collector) to demarcate trees suitable for potential nesting as well as active competitor nests; fine-scale ground-truthing and refinement of mapped SWHA-suitable Joshua trees (*Yucca brevifolia*) occurred during pedestrian Joshua tree inventory surveys (Attachment A, Figure 3). Three surveys were conducted for both Survey Periods III and IV intended for monitoring only known active SWHA nest sites; however, Blackhawk Environmental teams surveyed the entire Survey Area for two of the three Survey Period III surveys which led to the discovery of an active SWHA territory. Additionally, one final sweep of high-quality nesting substrate identified throughout the Survey Area concluded the final July 13, 2021, nest check and survey. By exceeding the stated CDFW requirements, the confidence level that these surveys accurately captured Swainson's hawk presence/absence and nesting behaviors within the Survey Area is high.

Surveys of the entire Survey Area were conducted from early morning to late afternoon on March 31, April 5-6, April 28-29, May 4-5, and May 18, 2021, by vehicle and/or foot. Biologists drove slowly along existing roads (mostly dirt roads) through SWHA-suitable habitats to gain visual access to all SWHA-suitable trees. Biologists drove 5 miles per hour to the greatest extent feasible to provide 100-percent visual coverage of the Survey Area. Biologists paused to scan SWHA-suitable trees for nests as appropriate and to scan for individual SWHA on the landscape with the aid of binoculars and/or a 60x-power spotting scope. While driving and scanning, biologists specifically searched for Swainson's hawks perching or flying. During the active nest checks on May 19, June 17, June 29 and July 13, 2021, the biologist(s) conducted observations concealed by native vegetation and with the aid of a 60x-power spotting scope from designated observation points 930 and 1,020 feet away from the nest site to minimize the potential for observation-based disturbance. All photography was taken with a 400mm zoom lens or digiscoped via an Apple iPhone camera image captured through the eyepiece of the 60x-power spotting scope used for observations (Attachment B). All SWHA-relevant data and wildlife species were recorded in the field notes of the biologists, and significant observations, including incidentally observed sensitive species, were digitally mapped in the ESRI ArcGIS Collector application.

All observed Swainson's hawks, including the one nesting pair, all SWHA-suitable trees and active competitor nests within the Survey Area, are shown in Attachment A, Figures 2 and 3 and detailed in Section 4.0. Survey conditions and details are presented in Table 1 below.

Table 1. Survey Conditions for Focused Swainson's Hawk Surveys in 2021

Date	Survey #	Survey Period				Personnel	Start/End Times	Start/End Temperature (F°)	Start/End Wind Speed (mph)	Start/End Cloud Cover (%)	Start/End Precipitation
		I	II	III	IV						
3/31/21	1	•				Kris Alberts Tawni Gotbaum	0805-1745	46/73	0-2/2-8	0/0	0/0
4/5/21	2		•			Katie Quint Tawni Gotbaum	0730-1700	62/72	5-8/12-15	0/20	0/0
4/6/21	2		•			Katie Quint Tawni Gotbaum	0700-1100	54/75	7-9/3-5	15/10	0/0
4/28/21	3		•			Katie Quint Tawni Gotbaum	0630-1500	52/80	0-2/4-6	0/0	0/0
4/29/21	3		•			Katie Quint Tawni Gotbaum	0640-1315	52/88	1-2/6-8	0/15	0/0
5/4/21	4			•		Katie Quint Tawni Gotbaum	0545-1515	54/96	0-1/6-8	0/0	0/0
5/5/21	4			•		Katie Quint Tawni Gotbaum	0545-1530	56/93	1-2/5-7	0/10	0/0
5/18/21	5			•		Katie Quint Desiree Johnson	0600-1500	61/87	0-2/10-16	0/0	0/0
5/19/21	5			•		Katie Quint	0610-0800	68/70	15-20/10-15	50/50	0/0
5/25/21	6			•		Hayley Milner Desiree Johnson	1700-1730	83/83	3-5/3-5	25/25	0/0
6/17/21	7				•	Katie Quint Dr. Pete Bloom	0645-0700	82/82	2-4/2-4	20/20	0/0
6/29/21	8				•	Katie Quint Tawni Gotbaum	0625-0753	71/76	0-2/0-2	80/80	0/0
7/13/21	9				•	Katie Quint Tawni Gotbaum	0510-0830	82/83	2-4/2-4	85/50	0/0

4.0 RESULTS

One active SWHA pair and their associated active nest within their territory was documented within approximately 810 feet of the Project ROW and first confirmed on territory during surveys on May 19, 2021, with possible incubation at that time; incubation was definitively confirmed during surveys conducted on June 17, 2021. Ultimately, a nesting failure at this active territory was confirmed on June 29 and July 13, 2021. This SWHA pair utilized a native Joshua tree as nesting substrate and native open creosote scrub with Joshua trees intermixed as immediately adjacent foraging habitat. No active foraging or hunting attempts were observed to confirm the extent of this pair's preferred foraging areas. This pair and territory had not been previously documented in the long-term studies of the Antelope Valley SWHA population conducted by Bloom Biological, Inc. or Bloom Research, Inc. and was not highlighted in any of the CNDDB records in the literature review relevant to these surveys. One adult SWHA feather was discovered under the nest site after nesting failure was confirmed and submitted to Bloom Research, Inc. on July 13, 2021, for genetic testing in order to determine the genetic lineage of the individual.

Six additional transient/dispersing individual Swainson's hawks were observed within the Survey Area, for a total of eight SWHA observed within the Survey Area. Two independent observations of apparently transient/dispersing SWHA were made during focused SWHA surveys on April 5, and four more transient/dispersing SWHA were incidentally observed during focused BUOW surveys conducted on April 14 and 15, 2021.

Swainson's hawk-suitable nesting trees were generally found throughout the Survey Area. The focused SWHA surveys resulted in mapping a total of 433 suitable potential nest trees within the Survey Area, 45 of which occurred within the Project ROW. Of the 433 total suitable nesting trees observed within the half-mile buffer surrounding the Project, all but one were unoccupied by SWHA; an additional 56 suitable nests occupied by competitors (namely red-tailed hawks and common ravens) were observed in trees, distribution poles, lattice towers and other structures, four of which occurred within the Project ROW. Results are summarized in Table 2 below.

Table 2. Focused SWHA Survey Results

Observation	Total within Survey Area	Total Subset located Within Project ROW
Active SWHA Pair and Nesting Territory	1	0
SWHA-Suitable Potential Nesting Trees	433	45
Active Competitor Nests	56	4
Transient/dispersing individual SWHA	6	1

While a large portion of the Project site is composed of open creosote bush- and saltbush-dominated vegetation communities with scrub density often suitable for SWHA foraging, nesting opportunities are limited to those areas supporting suitable nesting trees including landscaping and ornamental plantings often in the form of windrows. Except for rural residential parcels with suitable nesting trees, most of the developed areas within the Survey Area were excluded from the surveys due to a lack of suitable habitat for foraging and nesting.

Moderate to high densities of creosote bush, combined with saltbush, white bursage, non-native forbs and grasses that occur within the northern, central, and western portions of the Survey Area, as well as

scattered landscaped and ornamental shrubs and trees generally associated with disturbed/ developed areas, preclude fossorial mammal movement in a general capacity. These areas offered limited foraging suitability at the time of the surveys due to an absence of open ground suitable for Swainson's hawk to maneuver and hunt prey and evade ground predators.

5.0 POTENTIAL IMPACTS

One active Swainson's hawk territory and six transient/dispersing individual Swainson's hawks were found present within the Project site and within the half-mile buffer around the Project footprint. Due to the detection of an active Swainson's hawk territory within a half-mile of the Project ROW, presence of both suitable foraging and nesting habitat, and availability of contiguous suitable Swainson's hawk habitat, this Project may adversely affect Swainson's hawks both temporarily and permanently. Based on the requirements as per the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (CEC and CDFW 2010), if an active nest site is found, a Swainson's Hawk Monitoring and Mitigation Plan must be prepared by a qualified biologist approved by and in consultation with the Department and the appropriate lead agency prior to construction in order to reduce temporary and permanent impacts to less than significant levels.

6.0 CONCLUSION AND RECOMMENDATIONS

Focused Swainson's hawk surveys took place within the 14,495-acre Survey Area, including the Project site and associated half-mile survey buffer for the proposed Hydrostor Gem Energy Storage Center Project. A total of one active SWHA hawk pair was discovered incubating on a nest in a native Joshua tree prior to their confirmed nesting failure. The observation of an active SWHA territory occupying native habitat is significant to the area given the context of the local SWHA population generally occupying non-native trees (e.g., Aleppo pine [*Pinus halepensis*] and black locust [*Robinia pseudoacacia*]) for nesting and altered landscapes for foraging at present. The significance of this newly discovered territory being found in native foraging habitat using a native nesting substrate is that it is the first true epitome of the re-occupancy of Swainson's hawks in native habitat of the Antelope Valley of California described by CDFW (2016).

The nest of the active SWHA pair on territory is located approximately 810 feet south of the nearest Project ROW. An additional six transient individual SWHA observations were documented within the Survey Area. A total of 443 unoccupied suitable nest trees were mapped within the Survey area, 45 of which are located within the Project ROW.

Because one active SWHA pair was observed on territory and six other individual transient SWHA observations were made within the Survey Area over the course of the surveys, the proposed Project has the potential to adversely affect locally occurring SWHA, both permanently and temporarily. By preparing a Swainson's Hawk Monitoring and Mitigation Plan as required by CDFW and providing targeted mitigation measures, temporary and permanent SWHA impacts may be adequately mitigated. If direct SWHA impacts cannot be avoided, additional consultation with CDFW may be required to mitigate for Project-related impacts. If proposed Project mitigation includes preserving and maintaining long-term high-quality foraging area(s) with adequate scrub density near known occupied nest sites and/or suitable parcels of native Joshua tree forest habitat, including but not limited re-routing the Project alignment to avoid the half-mile buffer around the nest site to preserve the active SWHA territory identified during these focused surveys, occupancy potential within the Antelope Valley may be significantly enhanced.

Along with an approved Swainson's Hawk Monitoring and Mitigation Plan, additional measures may be required for Project authorization upon finalization of the proposed Project design or as Project construction needs may dictate.

7.0 SURVEYOR CERTIFICATION

All data, statements, analyses, findings and attachments within this report are accurate and truthful in terms of describing the existing conditions and the Project as proposed to Blackhawk Environmental. By adhering to the CDFW recommendation to prepare targeted mitigation measures with a Swainson's Hawk Monitoring and Mitigation Plan and through coordination with the relevant regulatory agencies during the pre-construction, construction and post-construction phases, mitigation related to complete the Project can potentially be met to CEQA significance thresholds for Swainson's hawks.

Kris Alberts
Principal Biologist

8.0 REFERENCES

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors
2012 The Jepson Manual: Vascular Plants of California, Second Edition. University of California Press, Berkeley, CA.

Bechard, M. J., C. S. Houston, J. H. Saransola, and A. S. England. Swainson's Hawk (*Buteo swainsoni*),
2010 version 2.0. In the Birds of North America (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bna.265.

California Energy Commission and California Department of Fish & Wildlife (CEC & CDFW)
2010 Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California. June 2, 2010.

California Department of Fish and Wildlife (CDFW)
2016 Five Year Status Review for Swainson's Hawk (*Buteo swainsoni*) in California. April 11, 2016.

California Department of Fish and Wildlife (CDFW)
2021 California Natural Diversity Database (CNDDB). RareFind Version 3.1.0. Database Query for the 7.5-minute Superstition Mountain, Plaster City, Brawley NW and Seeley quadrangles. Wildlife and Habitat Data Analysis Branch. Version dated April 13, 2017.

Google
2021 Google Earth. US Department of State Geographer. Data SIO, U.S. Navy, NGA, GEBCO. *earth.google.com/*

Sawyer, J.O., Jr., and T. Keeler-Wolf
2009 *A Manual of* California *Vegetation Second Edition*. California Native Plant Society.

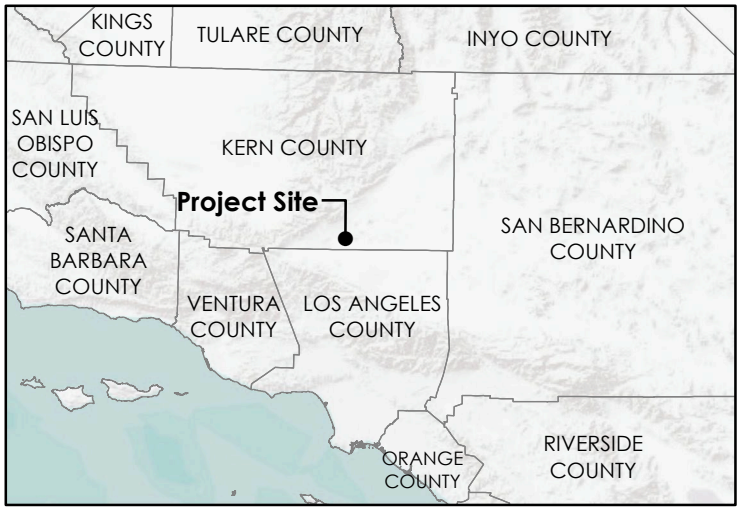
United States Geological Survey (USGS)
2021 7.5-minute topographic quadrangle maps for Willow Springs, Little Buttes, Tylerhorse Canyon, and Fairmont Butte.

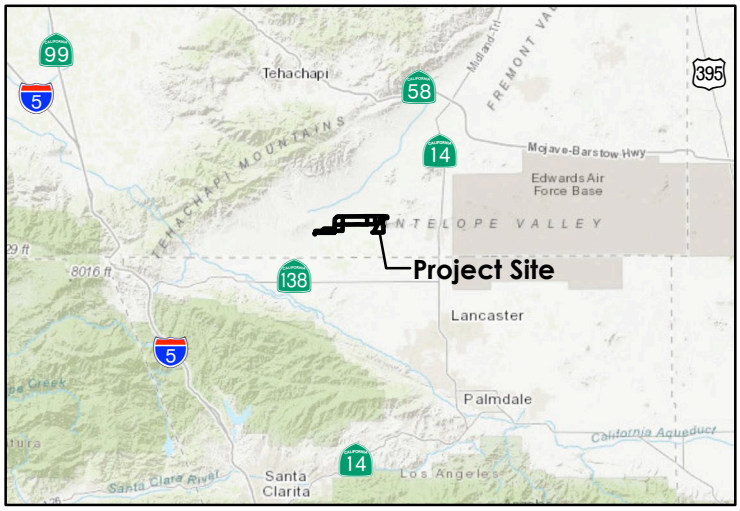
Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds.
1988-1990 California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.

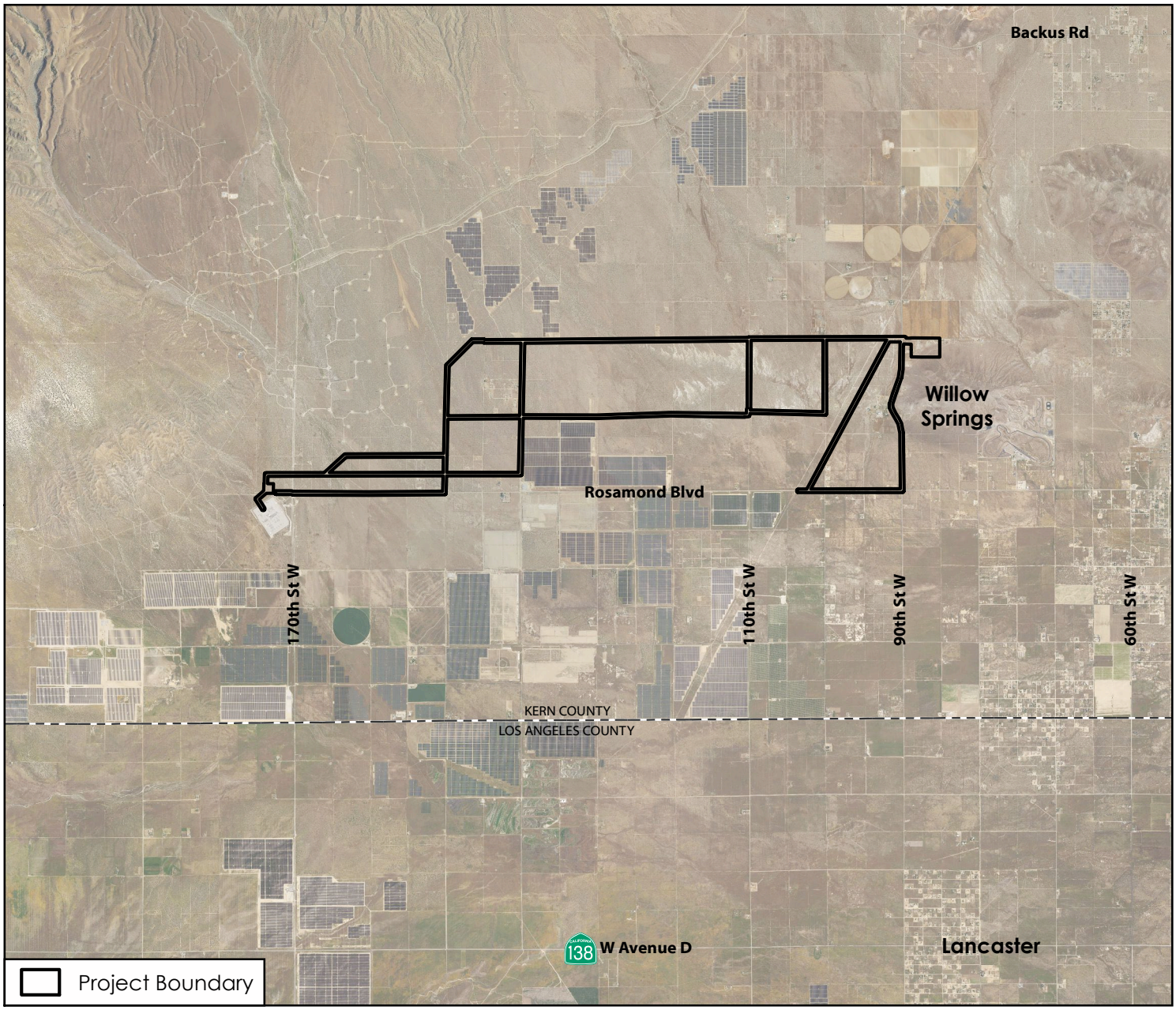
ATTACHMENT A

Figures

Blackhawk Environmental







Aerial Photo: USDA NAIP 2020

Figure 1

Project Vicinity and Location

Willow Springs

BLACKHAWK Environmental

N

0 2 Miles

ATTACHMENT B

Photo Pages

Blackhawk Environmental

Photograph 1: North-facing view of one adult Swainson's hawk of the active nesting pair perched 250 feet west of the active nest taken on May 19, 2021 (digiscoped and zoomed).

Photograph 2: Representative photo of the native foraging and nesting habitat comprising the active Swainson's hawk territory in 2021.

Photograph 3. Northeast- facing view of first possible sign of incubation indicated by the dark body and tail of an adult Swainson's hawk observed on the active nest taken on May 19, 2021.

Photograph 4: Northeast-facing close-up view of active Swainson's hawk nest taken on June 29, 2021, when the pair's nesting failure was first identified (digiscoped and zoomed).

Photograph 5: Northeast-facing view of active Swainson's hawk nest observed in a Joshua tree taken on July 29, 2021, when the pair's nesting failure was first identified (digiscoped and zoomed).

Photograph 6: Northeast-facing view of representative survey distance of approximately 1,020 ft away from the nest observed with the aid of a 60x professional spotting scope. Nest tree is circled in yellow.

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HYDROSTOR, INC. GEM ENERGY STORAGE CENTER APPLICATION FOR CERTIFICATION PROJECT

FOCUSED BURROWING OWL SURVEY REPORT

WILLOW SPRINGS, KERN COUNTY, CALIFORNIA

Prepared for:

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September 2, 2021

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EXECUTIVE SUMMARY

Blackhawk Environmental (Blackhawk) was contracted by Golder Associates, Inc. for a proposed Project that seeks to construct up to two energy storage facility sites (collectively known as the Gem Energy Storage Center on approximately 70 acres) and approximately 10.9 miles of 230 kilovolt (kV) single-circuit tie-lines interconnecting to the existing Southern California Edison (SCE) Whirlwind Substation or an approximately 3.5-mile 230 kV single-circuit tie-line interconnecting to the future Los Angeles Department of Water and Power (LADWP) Rosamond Substation. Each tie-line would include a 125-foot-wide corridor on primarily undeveloped land. The proposed energy storage sites and the tie-lines are collectively known as the Hydrostor Gem Energy Storage Center Project (Project). Blackhawk was tasked with conducting a literature review followed by four protocol-level focused burrowing owl (*Athene cunicularia*; BUOW) surveys and producing this Focused Burrowing Owl Survey Report. The Project boundary, which includes the energy storage facility parcels plus all proposed alternatives for the tie-lines, covers approximately 977 acres in and near Willow Springs, Kern County, California. The Survey Area, which includes the Project boundary plus a 150-meter buffer, covers approximately 4,460 acres.

To support Project consistency with California Environmental Quality Act (CEQA) guidelines, Blackhawk Environmental was contracted to perform surveys for burrowing owl per the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The initial habitat assessment and focused burrowing owl surveys resulted in the detection and mapping of a total of 65 unoccupied, suitable burrowing owl burrows and 41 unoccupied, suitable burrowing owl burrow complexes within the Survey Area. Burrowing owl sign was present at one suitable burrow complex within the Project site, and burrowing owl sign was present at one suitable burrow plus one suitable burrow complex within the Survey Area. **One adult burrowing owl was observed within the Survey Area during the April 16, 2021 survey; however, the burrowing owl was not detected on subsequent surveys, nor was an occupied burrow identified in the vicinity of the observation.**

With the recommendations of a preconstruction burrowing owl take avoidance survey to be conducted within 14 days prior to initial ground disturbance/construction activities, a final take avoidance survey to be conducted within 24 hours of initial ground disturbance/construction activities, shelter-in-place activities for occupied burrows, passive relocations of non-nesting burrows, collapsing unoccupied burrows, and/or biological monitoring during construction, no negative impacts to burrowing owl are anticipated. Preconstruction survey methods should follow those described in the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). If burrowing owls are determined to occupy the Project site or the immediate vicinity as construction is set to commence, the California Department of Fish and Wildlife (CDFW) and/or other pertinent parties will be notified, and avoidance measures will be implemented during the peak breeding season (February 15 through July 15). If burrowing owls are present during the non-peak breeding season (July 16 through February 14), and nesting is not actively occurring, burrowing owl exclusion measures may be implemented in accordance with CEQA standards and in consultation with CDFW and the United States Fish and Wildlife Service (USFWS).

1.0 INTRODUCTION

Blackhawk Environmental (Blackhawk) was contracted by Golder Associates, Inc. for a proposed Project that seeks to construct up to two energy storage facility sites (totaling up to 70 acres) and approximately 10.9 miles or 3.5 miles of tie-lines (depending on the selected alternative) on primarily undeveloped land for the proposed Hydrostor Gem Energy Storage Center Project (Project). Blackhawk was tasked with: conducting a literature review; conducting an onsite reconnaissance-level biological survey and sensitive species habitat assessment; conducting a jurisdictional delineation survey; conducting focused burrowing owl (*Athene cunicularia*; BUOW), desert tortoise (*Gopherus agassizii*), Swainson's hawk (*Buteo swainsoni*) and rare plant surveys; providing a Jurisdictional Delineation Report; providing a Swainson's Hawk Survey Report; providing a Biological Technical Report (BTR) and; providing this Focused Burrowing Owl Survey Report. The Survey Area covers approximately 4,460 acres of privately and publicly owned land, a 977-acre portion of which is proposed for energy storage and associated tie-line development for this Project. The Survey Area is located within fragmented natural habitat that is intersected by dirt and paved roads, scattered rural residential development, electrical infrastructure and existing solar arrays. The Project is in and around the community of Willow Springs, immediately west of Willow Springs Butte, and is generally bound by Hamilton Road to the north and Rosamond Boulevard to the south (Figure 1).

The purpose of these surveys and report is to identify and document the presence/absence of suitable burrowing owl burrows, burrowing owl sign (i.e., cough pellets, whitewash, feathers, tracks, nest decorations) and/or burrowing owls potentially occurring within the Project site and surrounding areas up to 150 meters from the Project site boundary (Survey Area), and then to propose mitigation measures to avoid, minimize and/or mitigate for any potential adverse direct or indirect impacts. The Project site is not covered by any Habitat Conservation Plan (HCP) but is subject to State review, the Project is required to follow CEQA biological standards for common and sensitive onsite biological resources that are known to be present or that may be present onsite, including the burrowing owl.

The initial survey effort took place during the week of April 12-16, 2021 and included a focused burrowing owl survey for the Project site and the Survey Area. Three additional focused burrowing owl surveys were completed within the breeding season by July 15, 2021. This report describes the results of the focused burrowing owl survey effort conducted for the Project.

1.1 Project Description

The proposed Project broadly includes the installation of new energy storage facilities and new single-circuit tie-lines. The Gem Energy Storage Center (GESC or Gem) will be a nominal 500-megawatt (MW) advanced compressed air energy storage (A-CAES) facility deploying Hydrostor Inc. (Hydrostor) proprietary A-CAES technology. The site will be designed to store 500 MW for up to 14 hours and deliver up to 4,000 Megawatt hours (MWh) over an 8-hour period when discharging. The Gem project will consisting consist of the following main elements:

- Approximately 70-acre energy storage site(s) with security fencing and access gate
- Five electric motor-driven air compressors and five 100 MW turbine-generators
- Heat exchangers
- Thermal storage system

- Hydrostatically compensating approximately 500-acre-foot surface water reservoir with floating cover
- Underground compressed air storage cavern
- Related interconnecting conduits and facilities
- Electric fire pump with emergency 250 horsepower (hp) diesel-fired backup engine
- Two 5-MW, 4.16-kV emergency diesel-fired engines to maintain critical loads in the event of a loss of power
- Onsite 230 kV substation
- An approximately 10.9-mile 230 kV single-circuit tie-line interconnecting to the Southern California Edison (SCE) Whirlwind Substation, or an approximately 3.5-mile 230 kV single-circuit tie-line interconnecting to the future Los Angeles Department of Water and Power (LADWP) Rosamond Substation.

Gem does not require combustion of fossil fuel and will not produce combustion-related air emissions during normal operation.

Gem will be an energy storage facility consisting of five, 100-MW (nominal) power blocks. Each power block will contain a motor-driven air compressor drivetrain, heat exchangers, and an air turbine generator and their ancillary equipment. Each power block will share a common set of thermal storage tanks (hot and cold) as well as the air storage cavern.

Hydrostor's proprietary technology is a low-cost, bulk-scale energy storage solution. It provides long-duration, emission-free storage that can be flexibly sited where the electricity grid requires it, providing multi-hundred megawatts of generation capacity and a suite of ancillary services in a fifty (50) year life. This is enabled by combining industry-proven technologies with two key innovations: the use of hydrostatically compensated air storage caverns and a proprietary thermal management system.

The energy storage systems store compressed air in purpose-built underground storage caverns, analogous to those used worldwide for hydrocarbon storage. The storage caverns are flooded with water through a hydraulic conduit from a water storage compensation reservoir at the ground surface level. The weight of the water in this compensation reservoir maintains a near-constant air-pressure in the cavern throughout both the charging and discharging cycles, supporting efficient operation, and significantly reducing the cavern volume requirements.

The thermal management system captures the heat developed during air-compression, stores it, and re-uses it when generating electricity, making the process adiabatic. This increases the system's efficiency and eliminates the need for burning of fossil fuels, as is required for traditional CAES.

When the Hydrostor system is charging (known as "Charge Cycle"), off-peak or surplus electricity from the grid is used to drive air compressors, converting the electrical energy into potential energy in the compressed air and heat energy stored by the thermal energy management system. At multiple points in the compression process, the heat generated during air-compression is transferred to a thermal fluid by a set of heat exchangers and stored separately for later use during the discharge cycle.

The air stream exits the compression process at the same pressure as maintained in the air storage cavern which is governed by the vertical distance between the cavern and the connected hydrostatic compensation reservoir located at the surface. As air is charged into the storage cavern, water is displaced up the hydraulic conduit and into the surface reservoir. This maintains a near-constant pressure of the air within the cavern and stores substantial potential energy in the elevated water. Once in the cavern, the air can be stored until electricity is required.

To generate electricity (known as the "Discharge Cycle"), compressed air is discharged from the cavern, which allows the compensation water to re-flood the cavern. Similar to the charge cycle, the compensation water from the reservoir maintains a near-constant air pressure in the cavern during discharging. The cool high-pressure air exiting the cavern is re-heated using the heat stored by the thermal management system and the same set of heat exchangers that were initially used to extract it. The reheated compressed air is then used to drive air-expansion turbine-generators which efficiently convert the stored potential energy back into electricity for the grid.

1.2 Existing Conditions

Existing conditions within the Survey Area broadly include areas of sparse to moderately high desert vegetation cover, intermixed with disturbed areas suitable for fossorial mammals and consequently, burrowing owls. Evidence of occupancy by fossorial mammals, such as white-tailed antelope squirrel (*Ammospermophilus leucurus*) and California ground squirrel (*Otospermophilus beecheyi*), was moderate.

The eastern portion of the Project ranges topographically from gently sloping hills with sparse vegetative cover to relatively steep slopes associated with ephemeral drainages (dry at the time of the surveys) with ample bare ground and sandy to gravelly soils. A mix of rural residential development, agricultural land, and paved and dirt roads intersect the landscape. The majority of the Project right-of-way (ROW) is centered on paved and dirt roads, and a large stretch of the ROW parallels an existing transmission/gen-tie line running northeast to southwest. The Gem parcels are located entirely on sparsely vegetated, undeveloped land.

The central portion of the Project consists of generally flat, sparsely vegetated open areas with occasional gentle slopes, as well as scattered residences and dirt roads. The ROW is primarily centered on dirt and paved roads with the remainder of the Survey Area on a mostly undeveloped area. Existing solar arrays occur along the northern and southern boundaries of this portion of the Survey Area.

The western portion of the Project consists of generally flat and gradually sloped land with a range of low to moderate vegetative cover. Dirt and paved roads associated with historical and current rural residential development, as well as access roads to existing solar arrays to the northeast and south, Manzana Wind facilities to the north, and the existing Whirlwind Substation to the southwest, regularly intersect the landscape. An existing transmission/gen-tie line, originating at the Whirlwind Substation, runs northeast to southwest through this portion of the Survey Area. One portion of the proposed tie-line route extends into the existing Whirlwind substation; therefore, part of the Project site and Survey Area were within the developed footprint of the Whirlwind substation. However, the existing Whirlwind substation was excluded from these surveys due to a lack of authorized access and a perceived lack of suitable owl habitat. Despite the presence of numerous dirt roads and scattered rural residential development, the western portion of the Survey Area remains mostly undeveloped.

Trees observed within the Survey Area are correlated primarily to rural residential development in the form of ornamental plantings and windbreaks that vary in height from six to 40 feet. Scattered tamarisk (*Tamarix* spp.), averaging 20 feet in height, also occur throughout the Survey Area. Native Joshua trees (*Yucca brevifolia*) also occur as a component of the high desert vegetation communities in the Survey Area. Cover types and vegetation communities are depicted in Figure 2 (Attachment A) and further discussed in Section 4.0.

2.0 REGULATORY SETTING

The proposed Project is subject to a host of State, federal and regional regulations associated with a number of regulatory programs. These programs often overlap and were developed to protect natural resources, including State and federally listed threatened and/or endangered plant and wildlife species, aquatic resources (e.g., rivers, creeks, ephemeral streambeds, wetlands and riparian areas), other special-status plant and wildlife species that are not listed as threatened or endangered by the State or federal governments, and special-status vegetation communities.

2.1 State and/or Federally Listed Plant and Wildlife Species

The Federal Endangered Species Act (FESA) protects federally listed plant and wildlife species, and the California Endangered Species Act (CESA) protects State-listed plant and wildlife species. The following sub-sections detail these laws.

2.1.1 State of California Endangered Species Act

California's Endangered Species Act (CESA) defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that is in danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." The State defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an Endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike the Federal Endangered Species Act (FESA), CESA does not list invertebrate species.

Article 3, Sections 2080 through 2085, of the CESA addresses the taking of threatened, endangered, or candidate species by stating "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided." Under the CESA, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require permits or memoranda of understanding and can be authorized for endangered species, threatened species, or candidate species for scientific, educational, or management purposes and for take incidental to otherwise lawful activities. Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

2.1.2 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species

is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the United States Fish and Wildlife Service (USFWS), through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification that result in injury to, or death of species as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants.

2.1.3 State and Federal Take Authorizations for Listed Species

Federal or state authorizations of impacts to or incidental take of a listed species by a private individual or other private entity would be granted in one of the following ways:

- Section 7 of the FESA stipulates that any federal action that may affect a species listed as threatened or endangered requires a formal consultation with USFWS to ensure that the action is not likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of designated critical habitat. 16 U.S.C. 1536(a)(2).

- In 1982, the FESA was amended to give private landowners the ability to develop Habitat Conservation Plans (HCP) pursuant to Section 10(a) of the FESA. Upon development of an HCP, the USFWS can issue incidental take permits for listed species where the HCP specifies at minimum, the following: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require as being necessary or appropriate for the plan.

- Sections 2090-2097 of the California Endangered Species Act (CESA) require that the state lead agency consult with CDFW on projects with potential impacts on state-listed species. These provisions also require CDFW to coordinate consultations with USFWS for actions involving federally listed as well as state- listed species. In certain circumstances, Section 2080.1 of the California Fish and Game Code allows CDFW to adopt the federal incidental take statement or the 10(a) permit as its own based on its findings that the federal permit adequately protects the species under state law.

2.2 California Environmental Quality Act

Shortly after the United States federal government passed the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA) was passed in 1970 to institute a statewide policy of environmental protection. CEQA does not directly regulate land uses, but instead requires state and local agencies within California to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects and adopt all feasible measures to mitigate those impacts. CEQA makes environmental protection a mandatory part of every California state and local agency's decision-making process.

2.2.1 CEQA Thresholds of Significance

Environmental impacts relative to biological resources are assessed using impact significance threshold criteria, which reflect the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State of California to:

> *"Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities..."*

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to CEQA, Section 15064.7 (Thresholds of Significance), each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and the CEQA Guidelines, Attachment G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

> *"The project has the potential to: substantially degrade the quality of the environment, 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 wildlife community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, ..."*

Therefore, for the purpose of this analysis, impacts to biological resources (specifically, burrowing owls) are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following criteria discussed below would result from implementation of the proposed Project.

2.2.2 Criteria for Determining Significance Pursuant to CEQA

Attachment G of the 1998 State CEQA guidelines indicates that a project may be deemed to have a significant effect on the environment if the project is likely to:

> ***a)*** *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 the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*
>
> ***b)*** *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*
>
> ***c)*** *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

d) *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.*

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

2.2.3 CEQA Guidelines Section 15380

The CEQA requires evaluation of a project's impacts on biological resources and provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts. Sections 5.1.1 and 5.2.2 below set forth these thresholds and guidelines. Furthermore, pursuant to the CEQA Guidelines Section 15380, CEQA provides protection for non-listed species that could potentially meet the criteria for state listing. For plants, CDFW assigns California Rare Plant Ranks (CRPR) to species categorized as List 1A, 1B, or 2 of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants in California* may meet the criteria for listing and should be considered under CEQA. CDFW also recommends protection of plants, which are regionally important, such as locally rare species, disjunctive populations of more common plants and/or plants on the California Rare Plant Rank (CRPR) 3 or 4 lists; however, for the purpose of the associated Biological Technical Report for this Project, CRPR list 3 and 4 species were not evaluated.

2.3 Special-Status Species Designations

Special-status plant and wildlife species are protected by State and federal laws and regulations. USFWS and CDFW are the primary regulatory agencies. A variety of designations are used to designate various levels of listing statuses. These designations are further described in the following sub-sections.

2.3.1 Federally Designated Special-Status Species

Some years ago, the USFWS instituted changes in the listing status of candidate species. Former C1 (candidate) species are now referred to simply as candidate species and represent the only candidates for listing. All references to federally protected species in this report (whether listed, proposed for listing, or candidate) include the most current published status or candidate category to which each species has been assigned by USFWS. Additionally, the USFWS *Birds of Conservation Concern 2008* report was published to identify the migratory and non-migratory bird species (beyond those already federally listed) that represent the highest conservation priorities for USFWS.

For this report, the following acronyms are used for federal special-status species:

FE Federally listed as Endangered
FT Federally listed as Threatened
FPE Federally proposed for listing as Endangered
FPT Federally proposed for listing as Threatened
FC Federal Candidate species (Former Category 1 candidates)
BCC USFWS Birds of Conservation Concern

2.3.2 State-Designated Special-Status Species

Some mammals and birds are protected by the State of California as Fully Protected (FP) Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. California Species of Special Concern (SSC) are species designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats; the burrowing owl is one such species. This list is primarily a working document for the CDFW's California Natural Diversity Database (CNDDB). Informally listed taxa are not protected but warrant consideration in the preparation of biotic assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites.

For this report, the following acronyms are used for State special-status species:

SE State-listed as Endangered
ST State-listed as Threatened
SCE State candidate for listing as Endangered
SCT State candidate for listing as Threatened
FP State Fully Protected
SSC Species of Special Concern

2.4 Additional Applicable Local, State and Federal Regulations

Each of the following regulations bears some applicability toward assessing the natural resources of the Project Site and any effects that construction and long-term operations and maintenance activities may have upon such resources. These are included for informational and referential purposes only.

2.4.1 Fish and Wildlife Conservation Act of 1980

The Fish and Wildlife Conservation Act of 1980 (PL 96-366; 16 USC §§2901 et seq.) provides for conservation, protection, restoration and propagation of certain species, including migratory birds threatened with extinction.

2.4.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (PL 65-186, as amended; 16 USC §§ 703 et seq.) protects most birds, whether or not they migrate. Birds, their nests, eggs, parts, or products may not be killed or possessed. Game birds are listed and protected except where specific seasons, bag limits, and other features govern their hunting. Exceptions are made for some agricultural pests, which require a USFWS permit (yellow-headed, red-winged, bi-colored red-winged, tri-colored red-winged, Rusty and Brewer's blackbirds, cowbirds, all grackles, crows and magpies). Some other birds that injure crops in California may be taken under the authority of the County Agricultural Commissioner (meadowlarks, horned larks, golden-crowned sparrows, white- and other crowned sparrows, goldfinches, house finches, acorn woodpeckers, Lewis' woodpeckers and flickers). Permits may be granted for various non-commercial activities involving migratory birds and some commercial activities involving captive-bred migratory birds.

2.4.3 California Fish & Game Codes 3500 Series

California Fish & Game Codes 3500, 3503, 3503.5, 3505, 3511 and 3513 are State regulations that cover resident and non-resident game birds, protected bird nests, protected raptor nests, egrets, ospreys, Fully Protected bird species, and take considerations for Migratory Bird Treaty Act birds.

- **Code 3500:** "(a) Resident game birds are as follows:
  (1) Doves of the genus *Streptopelia*, including, but not limited to, spotted doves, ringed turtledoves, and Eurasian collared-doves.
  (2) California quail and varieties thereof.
  (3) Gambel's or desert quail.
  (4) Mountain quail and varieties thereof.
  (5) Sooty or blue grouse and varieties thereof.
  (6) Ruffed grouse.
  (7) Sage hens or sage grouse.
  (8) Hungarian partridges.
  (9) Red-legged partridges including the chukar and other varieties.
  (10) Ring-necked pheasants and varieties thereof.
  (11) Wild turkeys of the order *Galliformes*.
  (b) Migratory game birds are as follows:
  (1) Ducks and geese.
  (2) Coots and gallinules.
  (3) Jacksnipe.
  (4) Western mourning doves.
  (5) White-winged doves.
  (6) Band-tailed pigeons.
  (c) References in this code to "game birds" means both resident game birds and migratory game birds."

- **Code 3503:** "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto."

- **Code 3503.5:** "It is unlawful to take, possess, or destroy any birds in the orders *Falconiformes* or *Strigiformes* (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

- **Code 3505:** "It is unlawful to take, sell, or purchase any aigrette or egret, osprey, bird of paradise, goura, numidi, or any part of such a bird."

- **Code 3511:** "(a) (1) Except as provided in Section 2081.7 or 2835, fully protected birds or parts thereof may not be taken or possessed at any time. No provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected bird, and no permits or licenses heretofore issued shall have any force or effect for that purpose. However, the department may authorize the taking of those species for necessary scientific research, including efforts to recover fully protected, threatened, or endangered species, and may authorize the live capture and relocation of those species pursuant to a permit for the protection of livestock. Prior to authorizing the take of any of those species, the department shall make an effort to notify all affected and interested parties to solicit information and comments on the proposed authorization. The notification shall be published in the California Regulatory Notice

Register and be made available to each person who has notified the department, in writing, of his or her interest in fully protected species and who has provided an e-mail address, if available, or postal address to the department. Affected and interested parties shall have 30 days after notification is published in the California Regulatory Notice Register to provide any relevant information and comments on the proposed authorization.

(2) As used in this subdivision, "scientific research" does not include any actions taken as part of specified mitigation for a project, as defined in Section 21065 of the Public Resources Code.

(3) Legally imported fully protected birds or parts thereof may be possessed under a permit issued by the department.

(b) The following are fully protected birds:

(1) American peregrine falcon (*Falco peregrinus anatum*).
(2) Brown pelican.
(3) California black rail (*Laterallus jamaicensis coturniculus*).
(4) California clapper rail (*Rallus longirostris obsoletus*).
(5) California condor (*Gymnogyps californianus*).
(6) California least tern (*Sterna albifrons browni*).
(7) Golden eagle.
(8) Greater sandhill crane (*Grus canadensis tabida*).
(9) Light-footed clapper rail (*Rallus longirostris levipes*).
(10) Southern bald eagle (*Haliaeetus leucocephalus leucocephalus*).
(11) Trumpeter swan (*Cygnus buccinator*).
(12) White-tailed kite (*Elanus leucurus*).
(13) Yuma clapper rail (*Rallus longirostris yumanensis*)."

- **Code 3513:** "It is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act."

3.0 METHODS

Other biological reports prepared for nearby or adjacent projects have acknowledged the presence of burrowing owl and suitable burrowing owl foraging habitat on and/or adjacent to previous project sites (ICF 2019, Western EcoSystems Technology 2020). CNDDB records include 21 records of this species within five miles of the Project site (CDFW 2007, 2010, 2011, 2013, 2014).

Using the literature review results as background preparation for the habitat assessment and focused burrowing owl surveys, Blackhawk Environmental biologists Desiree Johnson, Katie Quint, Tawni Gotbaum, Hayley Milner and Tamara Kramer conducted the four focused burrowing owl surveys following CDFW protocol by July 15, 2021. No surveys were conducted within five days following a rain event. The Survey Area included the entire Project footprint of the proposed energy storage facility parcels, tie-lines and their associated 250-foot-wide ROW (125 feet to either side of the centerline), plus a 150-meter buffer surrounding all proposed Project features.

The survey methods followed the latest accepted CDFW burrowing owl protocols (2012) and were performed in the same fashion as other burrowing owl surveys for similar projects in the Antelope Valley/Willow Springs area (ICF 2019, Western EcoSystems Technology 2020). CDFW protocol stipulates that four visits constitute a complete suite of focused burrowing owl surveys, with the first occurring between February 15 and April 15 and the remaining three to occur at least three weeks apart so that the last occurs between June 15 and July 15. The four surveys were conducted accordingly within the peak breeding season, with the first survey conducted after most or all burrowing owl migrants were expected to have moved out of the area, but with any resident burrowing owls present. Therefore, the confidence level that these surveys accurately captured burrowing owl presence/absence is high.

The first portion of the overall survey effort included preliminary vegetation mapping and a biological reconnaissance survey, conducted on March 31, 2021, by Blackhawk Environmental Principal Biologist Kris Alberts and Associate Biologist Tawni Gotbaum. Representative photographs were collected along the Project route to capture current site conditions within and surrounding the Project footprint and were included in the *Hydrostor Gem Energy Storage Center Application for Certification Project Biological Technical Report (*Blackhawk Environmental 2021), as well as Attachment B herein. Since suitable burrowing owl habitat was observed on site and the species is known to occur in the Project vicinity, a focused burrowing owl survey became required per CDFW guidelines. The first focused BUOW survey was performed during the week of April 12, 2021, by Blackhawk biologists Desiree Johnson, Katie Quint, Tawni Gotbaum, Hayley Milner and Tamara Kramer using ESRI ArcGIS Collector software to demarcate BUOW-suitable habitats from non-suitable habitats (Figure 2). Following the initial assessment and the first focused survey, three additional BUOW surveys were conducted only in areas of BUOW-suitable habitats with a focus on mapped suitable burrows and burrow complexes.

All burrowing owl surveys were conducted in the early morning or late afternoon hours on April 12-16 (Pass 1), May 3-5 (Pass 2), May 25-26 (Pass 3) and June 16 (pass 4) by walking slowly through BUOW-suitable habitats, particularly focused on BUOW-suitable burrows. Biologists walked a maximum of 30-meter-wide belt transects within the Survey Area to provide 100-percent visual coverage. Transects were spaced as close as 10 meters, depending on vegetative density and topography. While walking the transects, biologists specifically searched for BUOW, BUOW sign (i.e., cough pellets, whitewash, feathers, tracks, nest decorations) and BUOW-suitable burrows, burrow complexes and burrow surrogates. Biologists paused at least every 100 meters, as appropriate, to scan for BUOW using binoculars and/or the naked eye. In addition, the biologists listened for BUOW calls. For habitat where biologists could not safely survey or gain permission to access, such as private property, surveys were

conducted by meticulously scanning the area using binoculars. If BUOW were not directly observed at a suitable burrow with BUOW sign, sign was cleared from around the burrow entrances to facilitate detection of fresh sign that would indicate recent occupation in subsequent survey passes. Survey pass 1 included a full sweep of the entire Survey Area, while subsequent survey passes focused only on areas known to have suitable burrows that resulted from survey pass 1. All BUOW-relevant data and wildlife species were recorded in the field notes of the biologists. All observed BUOW-suitable burrows and habitats are shown on Figure 2. Survey conditions are presented in Table 1.

Table 1. Survey Conditions

Date	Pass #	Personnel	Start/End Times	Start/End Temperature (F°)	Start/End Wind Speed (mph)	Start/End Cloud Cover (%)	Start/End Precipitation
4/12/21	1	Desiree Johnson Katie Quint	0700-1540	55/86	0-3/6-9	0/25	0/0
4/13/21	1	Desiree Johnson Katie Quint Hayley Milner	0645-1530	58/82	6-8/10-16	0/15	0/0
4/14/21	1	Desiree Johnson Katie Quint Hayley Milner Tamara Kramer	0645-1500	47/65	1-3/6-12	0/25	0/0
4/15/21	1	Desiree Johnson Katie Quint Hayley Milner Tamara Kramer Tawni Gotbaum	0645-1550	48/71	3-5/13-16	2/18	0/0
4/16/21	1	Desiree Johnson Hayley Milner Tamara Kramer Tawni Gotbaum	0645-1600	46/81	1-2/1-2	0/0	0/0
5/3/21	2	Desiree Johnson Hayley Milner	0545-0800	59/76	1-3/4-7	5/20	0/0
			1740-1950	79/71	5-8/4-6	0/0	0/0
5/4/21	2	Desiree Johnson	0540-0755	55/70	1-2/2-5	0/0	0/0

		Hayley Milner	1735-1920	88/79	8-14/7-15	0/0	0/0
5/5/21	2	Desiree Johnson Hayley Milner	0540-0800	58/71	2-4/2-4	0/0	0/0
5/25/21	3	Desiree Johnson Hayley Milner Tamara Kramer	0525-0800	65/72	2-5/8-12	5/10	0/0
			1745-1945	83/72	3-5/2-4	25/65	0/0
5/26/21	3	Desiree Johnson Hayley Milner Tamara Kramer	0535-0745	61/62	4-7/1-3	100/10	0/0
6/16/21	4	Desiree Johnson Hayley Milner	0530-0735	71/92	1-3/3-8	90/70	0/0
			1800-1930	109/102	8-10/7-9	60/60	0/0

4.0 RESULTS

A total of 11 vegetation communities were observed and mapped by Blackhawk in 2021 within the Survey Area: Creosote-White Bursage Series, Saltbush Scrub, Developed/Disturbed, Creosote-Saltbush Series, California Matchweed-Rubber Rabbitbrush Series, Agricultural Land, Annual Buckwheat/ Grasses, Creosote-White Bursage Series – Disturbed, Rubber Rabbitbrush Scrub, Saltbush Scrub – Disturbed, and Ornamental (Figure 2). Soft intergrades between these vegetation communities were often present, with plant species of the described communities often present to varying degrees in adjoining communities. Vegetation communities were described based on dominant plant(s) species generally characterizing the specific vegetation community. In addition, developed habitat was present within the surrounding Survey Area as compacted dirt and paved roadways, and buildings.

Creosote-White Bursage Series

A total of 2,516.82 acres of Creosote-White Bursage Series habitat was mapped in the Survey Area, including 513.26 acres within the Project site. Creosote-White Bursage Series habitat within the Project is characterized by dominant and co-dominant creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) with sub-dominant species that include Cooper's goldenbush (*Ericameria cooperi*), Joshua tree (*Yucca brevifolia*) and Nevada ephedra (*Ephedra nevadensis*). This vegetation community becomes increasingly creosote-bush dominant with reduced white bursage coverage in the central and western portions of the Project site.

Saltbush Scrub

A total of 1,013.02 acres of Saltbush Scrub habitat was mapped in the Survey Area, including 215.60 acres within the Project site. Saltbush Scrub habitat within the Project is characterized by dominant and co-dominant cattle saltbush (*Atriplex polycarpa*), fourwing saltbush (*Atriplex canescens*), shadscale saltbush (*Atriplex confertifolia*), and creosote bush with subdominant species that include shortpod mustard (*Hirschfeldia incana*), doveweed (*Croton setiger*), Nevada ephedra and Joshua tree. Total shrub cover varies throughout the Project with increased cover corresponding with greater dominance by creosote bush.

Developed/Disturbed

A total of 392.76 acres of Developed/Disturbed habitat was mapped in the Survey Area, including 140.38 acres within the Project site. Developed/Disturbed habitat within the Project site is composed of areas of bare ground either sparsely or moderately vegetated with a mix of mostly non-native, invasive, annual, weedy plant species with marginal cover of native species; developed areas consist of buildings, residences and their associated parcel footprints, as well as existing solar array facilities. Dominant plant species included shortpod mustard, brome grasses (*Bromus* spp.), Russian thistle (*Salsola tragus*), bristly fiddleneck (*Amsinckia tessellata*), anglestem buckwheat (*Eriogonum angulosum*) and doveweed. Additional disturbed habitat was mapped as large areas of bare ground supporting little to no vegetation that indicate historical or current anthropogenic use (i.e., dirt roads, staging areas, vacant lots, and margins of developed areas).

Creosote-Saltbush Series

A total of 180.12 acres of Creosote-Saltbush Series habitat was mapped in the Survey Area, including 44.80 acres within the Project site. Creosote-Saltbush Series habitat is characterized by dominant and co-dominant creosote bush, cattle saltbush, fourwing saltbush and shadescale saltbush with sub-dominant species that include white bursage, shortpod mustard and non-native grasses.

California Matchweed-Rubber Rabbitbrush Series

A total of 78.73 acres of California Matchweed-Rubber Rabbitbrush Series habitat was mapped in the Survey Area, including 18.32 acres within the Project site. California Matchweed-Rubber Rabbitbrush Series habitat is characterized by dominant and co-dominant California matchweed (*Gutierrezia californica*), matchweed (*Gutierrezia sarothrae*) and rubber rabbitbrush (*Ericameria nauseosa*) with subdominant species including creosote bush, Joshua tree and non-native grasses. Additionally, this vegetation community exhibits low overall cover and large gaps between shrubs.

Agricultural Land

A total of 64.48 acres of Agricultural Land was mapped in the Survey Area, including 4.49 acres within the Project site. Agricultural Land within the Project is characterized by landscaped and cultivated areas that have historically been or are currently associated with agricultural operations (i.e., cultivated land and vineyards) and livestock pastureland. This vegetation community does not support native species or natural community types and is adjacent to both developed areas and disturbed habitat.

Annual Buckwheat/Grasses

A total of 33.75 acres of Annual Buckwheat/Grasses habitat was mapped in the Survey Area, including 10.41 acres within the Project site. Annual Buckwheat/Grasses habitat is characterized by dominant and co-dominant anglestem buckwheat, annual wild buckwheat (*Eriogonum* spp.), and non-native grasses (*Bromus* spp.). At the time of the surveys, most species within this vegetation community were either senescent or exhibiting signs of stress due to enduring prolonged drought conditions.

Creosote-White Bursage Series – Disturbed

A total of 43.16 acres of Creosote-White Bursage Series – Disturbed habitat was mapped in the Survey Area, including 9.79 acres within the Project site. Similar to Creosote-White Bursage Series, dominant plant species include creosote and white bursage, however, co-dominant species consist of non-native, invasive, annual, weedy plant species characteristic of Disturbed/ Developed habitat. Signs of anthropogenic disturbance (i.e., dirt roads and partially cleared residential lots) are apparent within this vegetation community.

Rubber Rabbitbrush Scrub

A total of 7.08 acres of Rubber Rabbitbrush Scrub habitat was mapped within the Survey Area, including 4.37 acres within the Project site. Rubber Rabbitbrush Series habitat is characterized by dominant rubber rabbitbrush and sub-dominant creosote bush, with low overall shrub cover and gaps between vegetation comprised of non-native grasses or bare ground.

Saltbush Scrub - Disturbed

A total of 5.49 acres of Saltbush Scrub – Disturbed habitat was mapped in the Survey Area, including 0.59 acre within the Project site. Similar to Saltbush Scrub, this habitat is dominated by cattle saltbush, fourwing saltbush, shadescale saltbush and creosote bush with co-dominant species occurring as non-native grasses (*Bromus* spp.) and forbs, including shortpod mustard, in addition to both increased gaps between shrubs and prevalence of bare ground. Saltbush Scrub – Disturbed habitat within the Project occurs predominantly along the margins of roads, within previously developed areas, and adjacent to existing development.

Ornamental

A total of 0.85 acres of Ornamental habitat was mapped in the Survey Area, all of which was within the Project site. Ornamental habitat occurs in the form of landscaped and planted trees that include cottonwoods (*Populus* spp.), pines (*Pinus* spp.) and tamarisk associated with developed areas or as windbreaks adjacent to dirt and paved roads. Additional Ornamental habitat was mapped as landscaped succulents (e.g., *Opuntia* spp., *Cholla* spp.), turfgrass and oleander (*Nerium* sp.) also associated with developed areas.

Burrowing owl habitat within the Project site includes all habitats as shown on Figure 2. While a large portion of the Project site is composed of open creosote bush- and saltbush-dominated vegetation communities suitable for burrowing owl foraging, nesting opportunities are limited to those areas supporting potential host burrows or surrogates. Most of the developed areas within the Survey Area were excluded from the surveys due to a lack of suitable habitat, burrows, and/or burrow surrogates.

Moderate to high densities of creosote bush, combined with saltbush, white bursage, non-native forbs and grasses that occur within the northern, central and western portions of the Survey Area, as well as scattered landscaped and ornamental shrubs and trees generally associated with disturbed/ developed areas, generally deter fossorial mammal movement and/or burrow establishment by fossorial mammals. These areas offered no owl suitability at the time of the surveys due to an absence of suitable burrows and little to no open ground that burrowing owls utilize to scan for both prey and predators.

Burrowing owl-suitable burrows were found in several portions of the Survey Area, the majority of which were along or within 500 feet of dirt roads. The focused burrowing owl surveys resulted in a total of 65 unoccupied, suitable burrowing owl burrows and 41 unoccupied, suitable burrowing owl burrow complexes in the Survey Area. Within the smaller subset of the Project ROW, 15 suitable burrows and five suitable burrow complexes were mapped; one suitable burrow complex contained old burrowing owl sign. One suitable burrow and one suitable burrow complex with owl sign were documented within the 150-meter buffer outside of the Project site.

The remaining suitable burrows and suitable burrow complexes were observed within the 150-meter buffer surrounding the Project, all of which were unoccupied. Of the documented suitable burrows, only three contained burrowing owl sign (i.e., pellets and/or whitewash); however, the pellets were extremely desiccated, and the whitewash appeared to be fairly old, indicating owl presence in the recent past, perhaps within the last three years, but not currently occupied.

No fresh BUOW sign was observed on any of the focused burrowing owl surveys. One incidentally observed burrowing owl location within the Project ROW is depicted on Figure 2; this owl was not observed with an associated burrow and therefore was assumed to be migrating through the Project. Suitable burrowing owl habitat occurs over most of the Project site and the Survey Area, strongly correlated with areas associated with ephemeral drainages and earthen berms adjacent to dirt roads in open landscapes.

Mapped burrowing owl suitable burrows ranged in size from 10 to 30 centimeters in diameter, with most suitable burrows being openings within the sides of ephemeral drainages and within earthen berms along or near dirt roads. Most of the burrows were in locations of bare ground and were generally located on relatively flat or sloping terrain. Two suitable burrows and two suitable burrow complexes occurred as burrow surrogates in the form of pipe openings within earthen berms. Figure 2 depicts all suitable burrowing owl burrows and burrow complexes, as well as the locations of burrows with owl sign and the single burrowing owl observation that was not associated with a burrow.

5.0 POTENTIAL IMPACTS

One adult burrowing owl and numerous burrowing-owl suitable burrows and burrow complexes, including three burrows with old burrowing owl sign, were found present within the Project site and within the 150-meter Survey Area buffer around the Project. Due to the detection of one burrowing owl within the Project ROW, presence of both suitable habitat and owl sign, and the availability of suitable burrowing owl habitat, this Project may adversely affect burrowing owls both temporarily and permanently. Based on the *Staff Report on Burrowing Owl Mitigation* (2012), a preconstruction burrowing owl take avoidance survey should be conducted within 14 days prior to initial ground disturbance/construction activities, and a final take avoidance survey should be conducted within 24 hours of initial ground disturbance/construction activities, to avoid take of burrowing owls from within the Survey Area. Additional mitigation measures are proposed in the following section to reduce temporary and permanent impacts to less than significant levels.

6.0 CONCLUSION AND RECOMMENDATIONS

Focused burrowing owl surveys took place on the 977-acre Project site and associated 150-meter Survey Area for the proposed Hydrostor Gem Energy Storage Center Project. A total of one individual burrowing owl, 65 unoccupied, suitable burrowing owl burrows and 41 unoccupied, suitable burrowing owl burrow complexes were found. Within the Project ROW, 15 suitable burrows and five suitable burrow complexes were mapped. The remaining suitable burrows and suitable burrow complexes were observed within the 150-meter buffer surrounding the Project. One of the potential burrows within the Project ROW and two of the potential burrows within the 150-meter buffer were found to have burrowing owl sign. With the recommendation of a preconstruction burrowing owl take avoidance survey to be conducted within 14 days prior, plus a follow-up survey within 24 hours prior to initial ground disturbance/construction activities, no negative burrowing owl impacts are anticipated.

Since a burrowing owl was observed within the Survey Area over the course of the surveys, the proposed Project has the potential to adversely affect locally occurring burrowing owls, both permanently and temporarily. By implementing the recommended mitigation measures detailed in this report, temporary and permanent burrowing owl impacts may be adequately mitigated. If direct burrowing owl impacts cannot be avoided, additional consultation with CDFW may be required to mitigate for Project-related impacts. If proposed Project mitigation includes a net increase of artificial burrows installed in optimal locations, long-term burrowing owl occupancy potential may be significantly enhanced.

With the implementation of the proposed mitigation measures for potential Project-related impacts to burrowing owl, no negative impacts to the species are anticipated, and the Project will fulfill the requirements related to biological resources pursuant to CEQA and State of California standards.

- **MM-BUOW 1:** Within 14 days of initiating initial ground disturbance and/or construction activities, conduct a pre-construction take avoidance survey for burrowing owl per guidelines specified in the *Staff Report on Burrowing Owl Mitigation* (2012). In addition, within 24 hours of initiating initial ground disturbance and/or construction activities, conduct a final pre-construction take avoidance survey. Surveys shall include areas within the Project footprint and a surrounding 500-foot (150-meter) buffer. The survey shall consist of walking parallel transects and noting any fresh burrowing owl sign or presence. The results of the take avoidance survey shall be provided to CDFW. If more than 14 days pass between the take avoidance survey and initiation of Project construction, additional take avoidance surveys may be required, depending on what actions have been implemented to deter burrowing owls from moving into the Project footprint and buffer area.

- **MM-BUOW 2:** If burrowing owls are present during construction, adaptive mitigation measures for temporary impacts may include, but not necessarily be limited to: scheduling the construction during non-breeding periods; avoiding proximal areas of occupied burrows during construction; biological monitoring of occupied burrow sites during construction; passive relocation of non-nesting burrows, and; instituting buffer zones and/or "shelter in place" techniques around occupied burrows. If occupied burrows are found during take avoidance surveys or during construction, appropriate construction buffers or setback distances shall be determined by the qualified biologist on a case-by-case basis, depending on the season in which disturbance will occur, the type of disturbance, and other factors that could influence susceptibility to disturbance (e.g., topography, vegetation, existing

disturbance levels, etc.). To the extent feasible, buffers of 250 feet (approximately 75 meters) will be used during the breeding season (February 1 through August 31), and 160 feet (approximately 50 meters) will be used during non-breeding season (September 1 through January 31). "Shelter in place" techniques shall be used if necessary to create a visual and auditory barrier between construction activities and the occupied burrow. Techniques shall include placing hay bales, fencing, or another physical barrier between the occupied burrow and construction activities. The qualified biologist shall determine if and/or when shelter in place is necessary and feasible for implementation. When construction activities commence adjacent to the buffer area, a qualified biologist shall be present on-site full time to monitor the burrowing owl behavior for at least three days. The qualified biologist shall have the authority to increase the setback distance if there are signs of disturbance, such as changes in behavior as a result of construction or other indications of distress by the burrowing owls.

If burrowing owl activity is detected at a burrow within the Project footprint during the non-breeding season (September 1 through January 31), burrowing owls may be excluded from active burrows and encouraged to passively relocate to suitable, unoccupied habitat outside of the exclusion area. Burrowing owls shall be excluded by installing one-way doors in burrow entrances that will allow exit but not re-entry. Although passive relocation does not result in control of the recipient area for burrowing owls, the qualified biologists shall verify that there is an acceptable "recipient" area within a reasonable distance that provides the necessary subsidies to support burrowing owls with the goal to minimize the stress of relocation. Subsidies to be considered include suitable burrows (primary and satellite) and habitat quality (e.g., vegetation cover, diversity) that is equal to or greater than that from which they were relocated. If, during pre-construction surveys, burrowing owl activity is detected at a burrow within the Project footprint during the breeding season (February 1 through August 31), then an appropriate construction buffer or setback distance shall be determined by the qualified biologist on a case-by-case basis. This buffer shall be flagged, and all Project-related activity shall remain outside of the flagged area until a qualified biologist determines the burrow is no longer occupied (e.g., juveniles are foraging independently and are capable of independent survival).

- **MM-BUOW 3:** In the event that burrowing owls will be excluded from the Project footprint and occupied burrows will be impacted, a mitigation site with suitable burrows and habitat shall be secured, and a Burrowing Owl Exclusion Plan shall be developed and approved by CDFW prior to excluding from burrows. Specific objectives for burrowing owl protection addressed by this Burrowing Owl Exclusion Plan shall describe exclusion methodology, burrow excavation procedures, on-site and post-relocation monitoring of occupied burrows, and reporting.

- **MM-BUOW 4:** CDFW may require compensatory mitigation for temporary and/or permanent impacts to burrowing owl-suitable nesting and foraging habitat. If additional mitigation is required, artificial burrowing owl burrows installed onsite at the Project site edges may avoid the need to seek offsite mitigation opportunities while simultaneously incorporating the Project design into enhanced burrowing owl occupancy potential in the immediate area. The energy storage sites may be designed such that artificial burrows may be installed along the borders to any direction, preferably where foraging opportunities would likely be higher.

Specifications include: 1) wood construction, 2) at least two L-shaped entrance/exit tunnels to allow exit points should a predator enter, 3) the nest chamber should have at least 1,700 cm^2 of floor space, 4) the nest chamber should have a hatch in the roof to allow biological monitors to check for owl occupancy (especially nestlings) and other animals (if placed aboveground), or a wide observation pipe (bearing a removable cap) extending from the nest chamber's ceiling to a point approximately one to two feet aboveground, and 5) burrows should be maintained twice per year over time to remain functional for burrowing owls. Maintenance involves simply removing any soil and debris that may have filled vacant burrows due to winds or nearby erosion. In keeping with the locally existing burrow density, artificial burrow sites, at a ratio of 1:1, could be situated on the northern edge of the larger 60-acre Gem parcel, western edge of the smaller 10-acre Gem parcel. oriented towards agricultural and/or undeveloped land. Such placement would ensure that the burrows would be protected from long-term operations and maintenance activities, as the outer edges along a fenced perimeter would not be maintained as functional features of the energy storage sites, while also providing optimal locations for owls to scout for prey and predators over agricultural fields and/or undeveloped areas.

Occupied burrowing owl burrows directly impacted may be replaced by installing artificial burrows on mitigation sites (i.e., conservation easements, in-lieu fee lands, Farm Contract land), or other land as agreed to by CDFW, at a ratio of 1:1. For example, if destruction of two occupied burrows is unavoidable, two artificial burrows should be created in adjacent suitable habitat. If the mitigation sites identified for the Project have at least two suitable burrowing owl burrows for each occupied burrow directly impacted, then artificial burrows may not be installed. Suitable burrows are 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. Burrows shall be scoped to ensure they are of proper depth for burrowing owls.

- **MM-BUOW 5:** A qualified biologist shall be on-site during all ground-disturbing construction activities in potential burrowing owl habitat. The qualified biologist shall be responsible for implementing and overseeing burrowing owl avoidance and minimization measures. The qualified biologist shall have the authority to stop construction if activities are in violation of avoidance and minimization measures. A qualified biologist possesses a bachelor's degree in wildlife biology or a related field and has demonstrated field experience in the identification and life history of burrowing owl.

Additional measures may be required for Project authorization upon finalization of the proposed Project design or as Project construction needs may dictate.

7.0 SURVEYOR CERTIFICATION

All data, statements, analyses, findings and attachments within this report are accurate and truthful in terms of describing the existing conditions and the Project as proposed to Blackhawk Environmental. By adhering to the mitigation measures proposed within this report and through coordination with the relevant regulatory agencies during the pre-construction, construction and post-construction phases, mitigation related to the complete the Project will be met to CEQA significance thresholds for burrowing owl.

Kris Alberts
Principal Biologist

8.0 REFERENCES

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors
2012 The Jepson Manual: Vascular Plants of California, Second Edition. University of California Press, Berkeley, CA.

Blackhawk Environmental
2021 Hydrostor Gem Energy Storage Center Application for Certification Project Biological Technical Report.

California Department of Fish & Wildlife (CDFW)
2012 Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency. March 7, 2012.

California Department of Fish and Wildlife (CDFW)
2021 California Natural Diversity Database (CNDDB). RareFind Version 3.1.0. Database Query for the 7.5-minute Superstition Mountain, Plaster City, Brawley NW and Seeley quadrangles. Wildlife and Habitat Data Analysis Branch.

Google
2021 Google Earth. US Department of State Geographer. Data SIO, U.S. Navy, NGA, GEBCO. *earth.google.com/*

ICF
2019 Big Beau Solar Project, Kern County, California. Biological Technical Report. July 2019.

Klute, D.S., L.W. Ayers, M.T. Green, W.H. Howe, S.L. Jones, J.A. Shaffer, S.R. Sheffield, and T.S. Zimmerman
2003 *Status Assessment and Conservation Plan for Western Burrowing Owl in the United States.* United States Fish and Wildlife Service.

Sawyer, J.O., Jr., and T. Keeler-Wolf
2009 *A Manual of* California *Vegetation Second Edition*. California Native Plant Society.

Poulin, Ray G., L. Danielle Todd, E. A. Haug, B. A. Millsap and Mark S. Martell
2011 Burrowing Owl (Athene cunicularia), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/burowl

United States Geological Survey (USGS)
2021 7.5-minute topographic quadrangle maps for Willow Springs, Little Buttes, Tylerhorse Canyon, and Fairmont Butte.

Western EcoSystems Technologies, Inc.
2020 Biological Resources Technical Report. AVEP Solar Project. Kern County, California. August 26, 2019. Revised November 1, 2020.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds.

1988-1990 California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.

ATTACHMENT A

Figures

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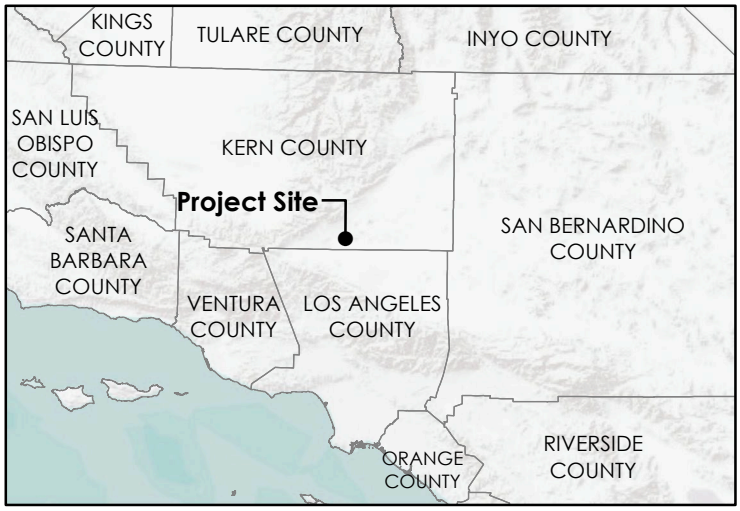

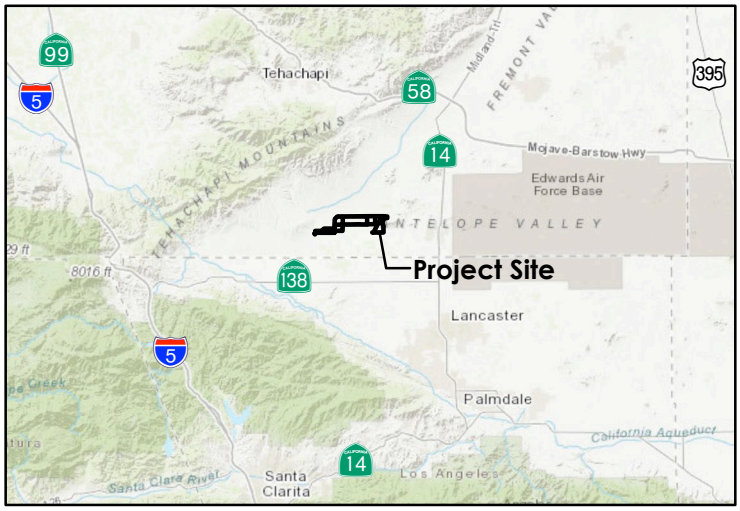

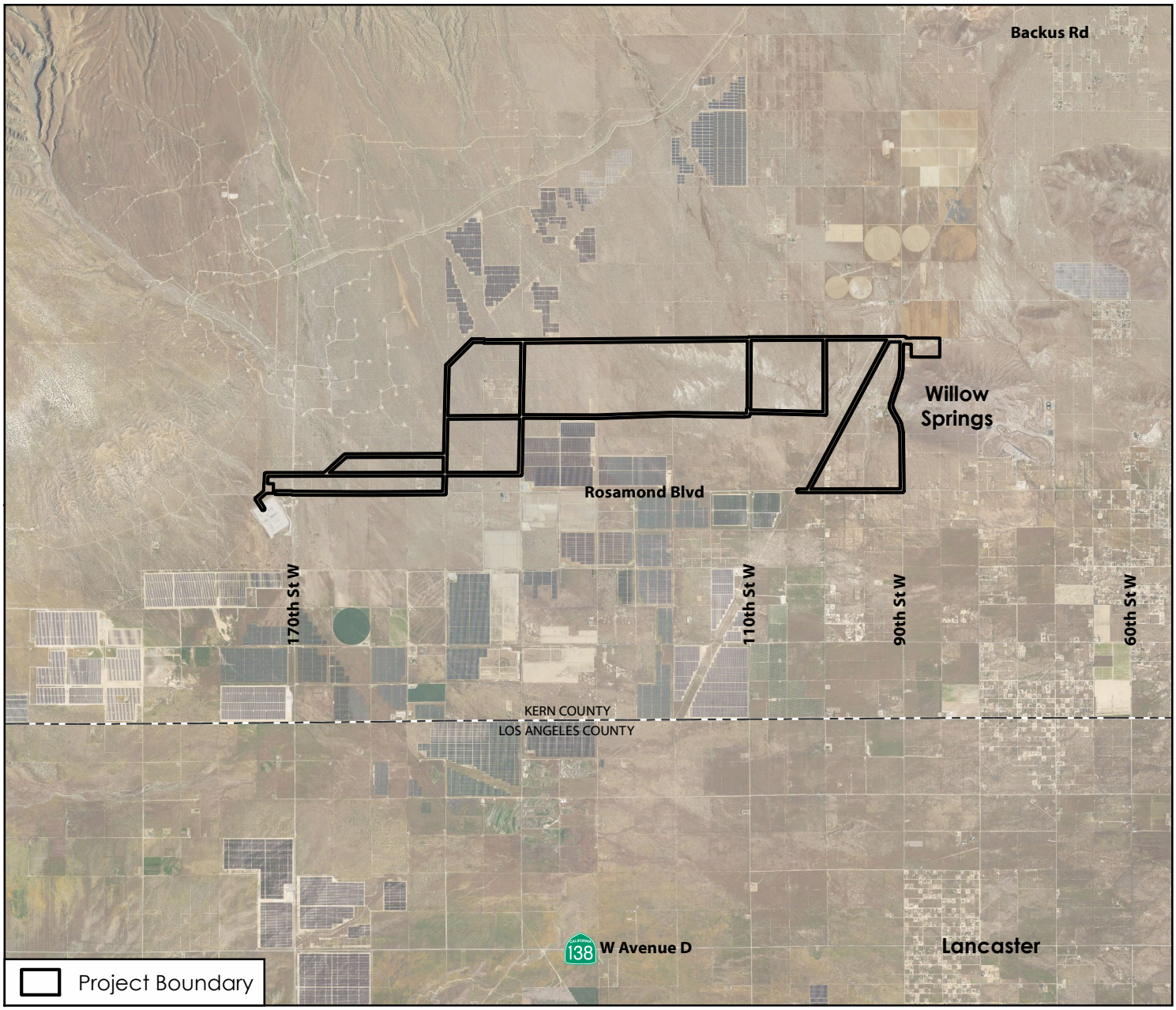

Aerial Photo: USDA NAIP 2020

Figure 1

Project Vicinity and Location

Willow Springs

BLACKHAWK Environmental

N

0 2 Miles

ATTACHMENT B

Photo Pages

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Photograph 1: Representative photo of a suitable unoccupied burrow under a creosote bush.

Photograph 2: Representative photo of an inactive burrowing owl burrow surrounded by whitewash and old burrowing owl cough pellets,

Photograph 3: Representative photo of a suitable burrow; entry coved with spider webs.

Photograph 4: Representative photo of a suitable burrow located under an ephedra shrub.

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Photograph 5: Representative photo of a potential surrogate burrow (culvert pipe) within a dry drainage, located along Stetson Avenue within the ROW.

Photograph 6: Representative photo of a suitable surrogate burrow (plastic pipe).

Photograph 7: Representative photo of a burrow complex located on the side of a wash with multiple entries.

Photograph 8: Representative photo of a burrow complex with multiple entries.

Photograph 9: Representative photo of a suitable burrow located on the side of a wash.

ATTACHMENT C

Representative Photographs

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Photograph 1: South-facing view of a Joshua tree within creosote-white bursage series habitat at the north end of the western Gem parcel.

Photograph 2: West-facing view of creosote-saltbush series habitat within the eastern Gem solar parcel.

Photograph 3: East-facing view of saltbush scrub habitat within the northwest corner of the eastern Gem solar parcel.

Photograph 4: East-facing view of a Joshua tree within saltbush scrub habitat in the west end of the eastern Gem solar parcel.

Photograph 5: Representative, northeast-facing view of a suitable burrowing owl burrow complex within the Survey Area.

Photograph 6: North-facing view of annual buckwheat/grasses habitat within the Survey Area.

Photograph 7: West-facing view of California matchweed-rubber rabbitbrush series habitat within the Survey Area.

Photograph 8: North-facing view of annual buckwheat/grasses (foreground) and saltbush scrub (center) habitats with agricultural land beyond within the Survey Area.

ATTACHMENT D

Observed Plant and Wildlife Species Lists

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PLANT SPECIES LIST

GYMNOSPERMS	
EPHEDRACEAE	**Ephedra Family**
Ephedra nevadensis	Mormon tea
PINACEAE	**Pine Family**
Pinus sp.	Pine

MONOCOTS	
AGAVACEAE	**Agave Family**
Yucca brevifolia	Joshua tree
POACEAE	**Grass Family**
**Bromus diandrus*	Ripgut brome
**Bromus madritensis*	Red brome

DICOTS	
AMARANTHACEAE	**Amaranth Family**
Krascheninnikovia lanata	Winterfat
APOCYNACEAE	**Dogbane Family**
**Nerium oleander*	Oleander
ASTERACEAE	**Aster Family**
Ambrosia dumosa	White bursage
Ericameria cooperi	Cooper's goldenbush
Ericameria nauseosa	Rubber rabbitbrush
Gutierrezia sarothrae	Matchweed
Tetradymia stenolepis	Mojave cottonthorn
Xylorhiza tortifolia	Mojave woodyaster
BORAGINACEAE	**Borage Family**
Amsinckia tessellate	Bristly fiddleneck
BRASSICACEAE	**Mustard Family**
**Hirschfeldia incana*	Short-pod mustard
Stanleya pinnata	Desert princesplume
CACTACEAE	**Cactus Family**
Cylindropuntia bigelovii	Teddybear cholla
Opuntia basilaris	Beavertail cactus
CHENOPODIACEAE	**Goosefoot Family**
Atriplex canescens	Fourwing saltbush
Atriplex confertifolia	Shadscale saltbush
Atriplex polycarpa	Allscale saltbush

**Salsola tragus*	Russian thistle
EUPHORBIACEAE	**Spurge Family**
Croton setiger	Doveweed
GERANIACEAE	**Geranium Family**
**Erodium cicutarium*	Redstem filaree
LAMIACEAE	**Sage Family**
Salvia columbariae	Chia sage
OLEACEAE	**Olive Family**
Forestiera pubescens	Desert olive
ONAGRACEAE	**Evening Primrose Family**
Eremothera boothii ssp. *desertorum*	Booth's desert primrose
PLANTAGINACEAE	**Plantain Family**
Penstemon incertus	Mojave beardtongue
POLEMONIACEAE	**Phlox Family**
Eriastrum eremicum	Desert woolystar
POLYGONACEAE	**Buckwheat Family**
***Chorizanthe spinosa*	Mojave spineflower
Eriogonum angulosum	Anglestem buckwheat
Eriogonum fasciculatum var. *polifolium*	California buckwheat
Eriogonum inflatum	Desert trumpet
Mucronea perfoliata	Perfoliate spineflower
SALICACEAE	**Willow Family**
Populus fremontii	Fremont cottonwood
SOLANACEAE	**Nightshade Family**
Datura wrightii	Jimsonweed
TAMARICACEAE	**Tamarisk Family**
**Tamarix ramosissima*	Tamarisk
ZYGOPHYLLACEAE	**Caltrop Family**
Larrea tridentata	Creosote bush

**Non-native species*
***CRPR 4.2 species*

WILDLIFE SPECIES LIST

REPTILIA	**REPTILES**
COLUBRIDAE	**Colubrid Snakes**
Masticophis flagellum piceus	Red racer
Pituophis catenifer catenifer	Pacific gopher snake
Salvadora hexalepis mojavensis	Mohave patch-nosed snake
CROTAPHYTIDAE	**Collared Lizards**
Gambelia wislizenii	Long-nosed leopard lizard
IGUANIDAE	**Iguanas & Allies**
Dipsosaurus dorsalis	Desert iguana
PHRYNOSOMATIDAE	**North American Spiny Lizards**
Callisaurus draconoides	Zebra-tailed lizard
Sceloporus uniformis	Yellow-backed spiny lizard
Uta stansburiana	Common side-blotched lizard
TEIIDAE	**Whiptails & Racerunners**
Aspidoscelis tigris tigris	Great Basin whiptail

AVES	**BIRDS**
ACCIPITRIDAE	**Kites, Hawks, Eagles and Allies**
Buteo jamaicensis	Red-tailed hawk
****Buteo swainsoni*	Swainson's hawk
ALAUDIDAE	**Larks**
Eremophila alpestris	Horned lark
APODIDAE	**Swifts**
Chaetura vauxi	Vaux's swift
ARDEIDAE	**Herons**
Ardea alba	Great egret
CAPRIMULGIDAE	**Nightjars**
Chordeiles acutipennis	Lesser nighthawk
CARDINALIDAE	**Cardinals & Allies**
Pheucticus melanocephalus	Black-headed grosbeak
Piranga ludoviciana	Western tanager
CATHARTIDAE	**New World Vultures**
Cathartes aura	Turkey vulture
CORVIDAE	**Jays, Magpies and Crows**
Corvus brachyrhynchos	American crow
Corvus corvax	Common raven
COLUMBIDAE	**Pigeons & Doves**
Columba livia	Rock pigeon

Columbina passerina	Common ground dove
**Streptopelia decaocto*	Eurasian collared-dove
Zenaida macroura	Mourning dove
CUCULIDAE	**Cuckoos, Roadrunners and Allies**
Geococcyx californianus	Greater roadrunner
FALCONIDAE	**Falcons & Caracaras**
****Falco columbarius*	Merlin
****Falco mexicanus*	Prairie falcon
Falco sparverius	American kestrel
FRINGILLIDAE	**Finches & Allies**
Haemorhous mexicanus	House finch
HIRUNDINIDAE	**Swallows & Martins**
Petrochelidon pyrrhonota	Cliff swallow
Stelgidopteryx serripennis	Northern rough-winged swallow
ICTERIDAE	**Blackbirds & Orioles**
Euphagus cyanocephalus	Brewer's blackbird
Icterus cucullatus	Hooded oriole
Icterus parisorum	Scott's oriole
Sturnella neglecta	Western meadowlark
LANIIDAE	**Shrikes**
****Lanius ludovicianus*	Loggerhead shrike
MIMIDAE	**Mockingbirds & Thrashers**
Mimus polyglottos	Northern mockingbird
****Toxostoma lecontei*	LeConte's thrasher
MOTACILLIDAE	**Wagtails, Longclaws and Pipits**
Anthus rubescens	American Pipit
ODONTOPHORIDAE	**New World Quails**
Callipepla gambelii	Gambel's quail
PARULIDAE	**New World Warblers**
Cardellina pusilla	Wilson's warbler
Setophaga coronata	Yellow-rumped warbler
Setophaga nigrescens	Black-throated gray warbler
****Setophaga petechia*	Yellow warbler
Vermivora celata	Orange-crowned warbler
PASSERELLIDAE	**New World Sparrows**
Artemisiospiza nevadensis	Sagebrush sparrow
Chondestes grammacus	Lark sparrow
Melospiza lincolnii	Lincoln's sparrow
Passerculus sandwichensis	Savannah sparrow
Spizella breweri	Brewer's sparrow
Zonotrichia leucophrys	White-crowned sparrow
PASSERIDAE	**Old World Sparrows**

**Passer domesticus*	House sparrow
PICIDAE	**Woodpeckers & Allies**
Colaptes auratus	Northern flicker
REMIZIDAE	**Penduline Tits**
Auriparus flaviceps	Verdin
SCOLOPACIDAE	**Sandpipers & Allies**
Numenius phaeopus	Whimbrel
STRIGIDAE	**True Owls**
****Asio otus*	Long-eared owl
****Athene cunicularia*	Burrowing owl
Bubo virginianus	Great horned owl
STURNIDAE	**Starlings & Mynas**
**Sturnus vulgaris*	European starling
TROCHILIDAE	**Hummingbirds**
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
TROGLODYTIDAE	**Wrens**
Campylorhynchus brunneicapillus	Cactus wren
TYRANNIDAE	**Tyrant Flycatchers**
Myiarchus cinerascens	Ash-throated flycatcher
Sayornis nigricans	Black phoebe
Sayornis saya	Say's phoebe
Tyrannus verticalis	Western kingbird
VEREONIDAE	**Vireos & Allies**
Vireo cassinii	Cassin's vireo

MAMMALIA	**MAMMALS**
BOVIDAE	**Sheep, Goats and Domestic Cattle**
**Capra hircus*	Domestic goat
**Ovis aries*	Domestic sheep
CANIDAE	**Foxes, Wolves and Allies**
**Canis familiaris*	Domestic dog
***Canis latrans*	Coyote
Vulpes macrotis arsipus	Desert kit fox
FELIDAE	**Cats & Allies**
Lynx rufus	Bobcat
HETEROMYIDAE	**Kangaroo Rats, Pocket Mice and Allies**
Dipodomys merriami	Merriam's kangaroo rat
LEPORIDAE	**Rabbits & Hares**

Lepus californicus	Black-tailed jackrabbit
Sylvilagus audubonii	Audubon's cottontail
SCIURIDAE	**Squirrels & Allies**
Ammospermophilus leucurus	White-tailed antelope squirrel
Otospermophilus beecheyi	California ground squirrel
Xerospermophilus tereticaudus	Round-tailed ground squirrel

**Non-native species*
***Only scat/sign observed*
****Special-Status species*