DOCKETED	
Docket Number:	24-OPT-01
Project Title:	Perkins Renewable Energy Project
TN #:	270303
Document Title:	Perkins Response to Data Request Part 2 Att B2-B6
Description:	Biological support documentation for Perkins 2nd Data Responses
Filer:	Emily Capello
Organization:	Panorama Environmental, Inc.
Submitter Role:	Applicant Consultant
Submission Date:	5/27/2026 3:42:11 PM
Docketed Date:	5/27/2026

Attachment B.3 Biologists Resumes and Survey Data

Ironwood Consulting

Kevin Barry Brennan

Senior Biologist V

Education

- BS. Wildlife Management, California State University, Humboldt, California

Trainings & Certifications

- Wilderness First Aide & CPR

Professional Summary

Kevin is a wildlife biologist with extensive field experience capturing, tracking, inventorying, and monitoring bighorn sheep, deer, black bear, spotted owls, peregrine falcons, bald eagles, and other wildlife populations. His additional skills include the following:

- **Endangered species management**:
  - Working on multispecies habitat conservation plans for Stephen's Kangaroo Rat, Coachella Valley and Western Riverside County
  - Serving as an agency representative for peregrine falcons and bald eagles on recovery teams and working groups
  - Contributing to the development of a recovery plan for bighorn sheep in the Peninsular Ranges
- **Environment review**:
  - expert on wildlife issues, CEQA, and NEPA process, application of wildlife laws and regulations, mitigation monitoring, and project compliance
- **Wildlife incident management:**
  - expert in public safety and depredation events involving bears, mountain lions and coyotes. Expertise in the capture and removal of wildlife in urban settings
  - Incident response for wildfires and pollution spills
- **Public education and outreach:**
  - regional public information representative for high-profile wildlife incidents and environmental issues, translating biological science into stories

Professional Experience

Easley Renewable Energy Project, Desert Center, CA. Fall 2024-Present.

- Conducting biological surveys for rare, threatened, and endangered species including desert tortoise, burrowing owl, and desert kit fox.
- Monitoring and managing burrowing owl ESA's.
- Monitoring project for environmental compliance; conducting fence checks; performing pre-construction clearance surveys for sensitive species.

Redonda Solar Project, Desert Center, CA. Spring 2024.

- Conducting biological surveys for rare, threatened, and endangered species including desert tortoise, burrowing owl, and desert kit fox.

Oberon Solar Project, Desert Center, CA. 2022-2023.

- Conducting biological surveys for rare, threatened, and endangered species including desert tortoise, burrowing owl, and desert kit fox.

Perkins Solar Project, El Centro, CA. Spring 2024.

- Conducting biological surveys for rare, threatened, and endangered species including flat-tailed horned lizard, desert tortoise, burrowing owl, and desert kit fox.

Designated Biologist and Team lead, Arica Victory Pass Solar Project, Clearway Energy, Desert Center California, and Desert Quartzite Solar Project, EDF Renewables, Blythe, California, 2022-Present. Kevin Served as a designated biologist on renewable energy projects in the California Mojave Desert. His responsibilities include:

- Acting as the primary point of contact for wildlife and resource agencies, construction managers and biological field teams and biological resource specialists
- Conducting biological surveys for rare, threatened, and endangered species including desert tortoise, burrowing owl, and desert kit fox.
- Monitoring and managing burrowing owl ESA's. Excavate burrows.
- Providing team members with a key person to handle issues as they arise
- Supervising and directing biological monitoring and construction monitoring crew to ensure adherence to project mitigation measures and permit requirements
- Mentoring biologists and field staff to support project goals and career development
- Performing and overseeing surveys for nesting birds and regionally sensitive species throughout the project and construction areas
- Presenting the Worker Environmental Awareness Program to train field staff and construction workers on endangered species, and other sensitive biological resource issues

Wildlife Biologist (Environmental Scientist), Idyllwild & San Diego, California, 1992-2020. Kevin coordinated research, inventory, monitoring, and management activities for peninsular bighorn sheep. His responsibilities included:

- Investigating and conducting research on survivorship, mortality, distribution, habitat use and selection, effects of habitat loss and fragmentation and predation on bighorn sheep
- Organizing, funding, planning, and leading the monitoring efforts, annual helicopter surveys, field surveys and investigations, collection of telemetry data and water hole counts
- Planning captures to radio mark animals to facilitate population inventory and monitoring efforts, collect distributional data, biological data, and tissue samples
- Providing environmental review of EIRs for development projects
- Analyzing development proposals in threatened and endangered species habitats
- Providing biological review and comments to planning commissions, city councils, other agencies, and governmental organizations
- Providing biological support for law enforcement officers with the California Department of Fish and Wildlife
- Responding to public safety, depredation and nuisance wildlife incidents concerning bears, mountain lions, coyotes, and other wildlife species
- Safely capturing and handling wildlife with the aid of chemical immobilization using dart guns, and physical restraint using net-guns and traps
- Leading efforts to remove animals involved in attacks on people
- Identifying instances of wildlife depredation and issuing depredation permits to the public to take offending animals

Wildlife Biologist, Plumas National Forest, Quincy, California, 1987-1992. Kevin served as the spotted owl coordinator for the Sierra Nevada Province. His responsibilities included:

- Providing communication between national forests and regional offices on inventory and monitoring efforts, and management policy, for this species
- Ensuring consistency for monitoring efforts being conducted and to provide technical assistance to forest staff
- Preparing and presenting spotted owl monitoring workshops and training sessions for forest biologists and technical staff

- Writing and presenting annual reports and findings of monitoring results for the California region
- Preparing NEPA documents and cumulative effects analysis for timbers sales and prepared habitat management plans for bald eagle nesting sites
- Leading forest wide inventory and monitoring of spotted owl populations on the Plumas National Forest
- Supervising field crews and collected data on breeding and distribution of owls across the forest
- Conducting focused surveys for goshawks, willow flycatchers and other forest sensitive species
- Constructing wildlife drinkers, nesting structures, and other wildlife habitat improvements

Wildlife Biologist, Colorado Division of Wildlife, Craig and Durango, Colorado, seasonal 1985-1986. In this position, Kevin served as a peregrine falcon specialist and a sharp-tailed grouse specialist. His responsibilities included:

- Surveying cliff sites in Southwestern Colorado for breeding pairs of peregrine falcons
- Observing and recording matting behaviors, identified new eyrie sites, and collected eggs for artificial incubation and fostering
- Collecting population statistics on sharp-tailed grouse in northwestern Colorado
- Capturing, banding, and placing radio telemetry devices on wild grouse
- Collecting blood samples and distributional data
- Collecting information on habitat attributes at nest sites and conducting composition counts at lek sites during the breeding season.

Michelle Cloud-Hughes
Senior Botanist

Education

- BS, Biology with an emphasis in Ecology, *cum laude*, San Diego State University, San Diego, CA

Professional Activities

- Board Member, Southern California Botanists. April 2016-Present
- Editor, *Crossosoma, Journal of the Southern California Botanists, Inc.* December 2015- Present

Professional Memberships

- Botanical Society of America
- American Society of Plant Taxonomists
- Southern California Botanists
- California Native Plant Society
- Cactus and Succulent Society of America
- California Botanical Society
- Arizona Native Plant Society
- Nevada Native Plant Society
- New Mexico Native Plant Society

Professional Summary

Ms. Cloud-Hughes has over 25 years of experience as a botanist, restoration ecologist, and project manager. She has a comprehensive background in managing botanical and ecological restoration projects, conducting focused surveys, and writing technical reports. Her experience includes conducting surveys ranging from reconnaissance-level investigations to special-status species surveys following agency protocols; performing population studies; and conducting habitat evaluations and vegetation and habitat mapping. In her eleven years as an independent consulting botanist, Ms. Cloud-Hughes has participated in numerous rare plant surveys for large-scale projects in the Mojave, Sonoran, Great Basin, and Chihuahuan Deserts.

Project Experience

Rare Plant Surveys for Multiple Solar/Development Projects, Riverside County, California, 2011-present. Performed field surveys to identify all plant species within the proposed project areas. Mapped, photographed, and documented all rare plant populations within the project areas. Survey methodologies followed Bureau of Land Management (BLM) and California Native Plant Society (CNPS) established protocols. See below for details:

- As subcontractor/employee for Ironwood Consulting, Inc: Redonda (March-April 2024), Bajada (April 2024), Easley (March 2022), Arica, Victory Pass, and Oberon Solar (October 2019 & March-June 2020); Athos Solar (May 2018 & March 2019); Paradise Valley (March 2019); Quartzsite Solar (March 2013).
- As subcontractor for Alice E. Karl & Associates: Palen Solar (September 2013); Blythe Solar (August-September 2012); McCoy Solar (October 2011).
- As subcontractor for URS Corporation: Rio Mesa Solar (March-May 2011, March 2012, & September 2012); Sonoran West Solar (September-October 2011, March 2012, & September-October 2012).

John Wesley Powell Rare Plant Surveys, 2021-2022. Field surveys and data collection for rare plant species in the proposed John Wesley Powell National Conservation Area, Uintah County, Utah. Discovered and documented a new population and range extension of *Frasera ackermaniae*. Survey methodologies followed Bureau of Land Management (BLM) protocols.

Nevada Rare Plant Surveys (in Clark County, Nevada), April 2020-2024. Field surveys and data collection for five high-profile but poorly documented rare plant species. Methodologies followed the Bureau of Land Management and Nevada State Heritage Program rare plant survey protocols. Discovered and documented multiple new populations of *Cylindropuntia multigeniculata*, among other rare species.

Vegetation Resource Efforts (for Silver State South, Stateline, and McCoy Solar Projects, Clark County, Nevada and Riverside County, California), March 2013-March 2015. Led vegetation resource efforts for three large-scale solar projects, with a particular emphasis on the Silver State Solar South Project in Primm, Nevada. Co-authored vegetation management and salvage plan; managed and performed cactus and yucca census over entire project footprint; mapped, tagged, and assisted with salvage of cacti and yucca for onsite salvage garden, BLM Clark County salvage yard, and El Dorado Valley restoration site; designed and supervised construction of salvage garden; salvaged cacti and yucca and planted onsite salvage garden; prepared required reports.

MCC-VIC rare plant surveys (in Clark County, Nevada and San Bernardino County, California), March-June 2021. Performed rare plant surveys and vegetation community mapping along McCullough-Victorville transmission line. Recorded and mapped all rare plant species located. Survey methodologies followed Bureau of Land Management and California Native Plant Society established protocols.

MCAGCC Twentynine Palms Rare Plant Surveys (in Bernardino County, California), March 2014 – 2018. Performed vegetation alliance mapping within the MCAGCC Twentynine Palms Expansion areas and tortoise translocation areas. Methodologies followed California Native Plant Society protocols for vegetation alliance determination and description.

MCAGCC Twentynine Palms vegetation mapping (in San Bernardino County, California), March 2018 – December 2021. Performed vegetation alliance mapping within the MCAGCC Twentynine Palms Expansion areas and tortoise translocation areas. Methodologies followed California Native Plant Society protocols for vegetation alliance determination and description.

Implementation of the Habitat Quality Assessment Modified Monitoring Protocol (at Edwards Air Force Base, Los Angeles and Kern Counties, California), March-April 2019. Performed rare plant surveys between Whitewater and Redlands, California. Recorded and mapped all rare plant species located. Survey methodologies followed Bureau of Land Management and California Native Plant Society protocols.

Rare Plant Surveys for Centennial Project (at Tejon Ranch, Kern County, California), April-June 2015. Performed rare plant surveys over approximately 6000 acres of grassland, oak woodland, and wetland habitats on the Tejon Ranch. Recorded and mapped all rare plant populations located. Survey methodologies followed Bureau of Land Management and California Native Plant Society protocols.

Rare Plant Habitat Suitability Modeling Report and Surveys (in Riverside County, California), June 2014 and March 2017. Prepared and edited final report on a rare plant habitat suitability modeling project between BLM, and University of California, Riverside. In March 2017, performed ground-truthing for these habitat suitability models for three rare plant species in Riverside County, California.

Ironwood Consulting

Nathan Gross

Field Technician III

Education

- BA. Geography, California State Polytechnic University, Humboldt, Arcata, California

Professional Summary

Nathan has been working in conservation since 2014. With a professional background in hydrology and fisheries, both in the field and the lab, and thousands of miles hiking in desert, he has a broad overview of conservation in the American Southwest.

Project and Professional Experience

Hydrology and fisheries restoration, Bureau of Land Management, Coos Bay, Oregon, April to September 2023, April to September 2024. Nathan conducted stream surveys to identify hydrological features and map stream networks. He took part in restoration projects which involved capture and release of ESA listed and incidental aquatic species. He assisted tribal, state, federal, and non-governmental partners in restoration projects and biological surveys. He performed wetland delineation and drafted reports of his findings. Additionally, he monitored camera traps, installed and maintained water chemistry loggers, collected eDNA sample

Oberon, Desert Center, Riverside County, CA, March 10 to April 15, 2022. Nathan performed pre-construction surveys, desert tortoise tracking, excavating burrows of the desert kit fox, desert tortoise, burrowing owl, and transplanting cactus.

Arica and Victory Pass, Desert Center, Riverside County, CA, March 10 to April 4, 2022. Nathan monitored construction during this project.

Bright Angel Creek Humpback Chub Restoration, Grand Canyon National Park, October 2020 to February 2021. Nathan has experience with handling and PIT-tagging native fish, and he served as the crew leader during this project. He was responsible for crew safety, work logistics, and the mechanical removal of non-native species.

Upper Colorado River Endangered Fish Recovery Project, Grand Junction Fish and Wildlife Conservation Office, April 2021 to October 2021. During this project Nathan performed seining and trammel netting for native fish. His professional experience includes handling and PIT-tagging native and endangered species, radio telemetry, tracking, fish hatchery and fish ladder maintenance. He also has 700 hours of oar powered raft and jet boat experience.

Water Quality and Fisheries Monitoring, Curecanti National Recreation Area and Black Canyon of the Gunnison National Park, May to October 2018; May to October 2020. Nathan served as the crew lead responsible for safety and scheduling field work. He assisted in collecting samples, processing them in the lab according to USGS standards, collecting data on flow and other stream parameters, and operating a twin outboard boat during scientific studies. His professional experience includes upland vegetation monitoring, delineating wetlands, and springs under three different protocols, and calibrating and maintaining field and lab equipment.

Water Quality Monitoring, Glen Canyon National Recreation Area, March to October 2019. Nathan participated in the collection and processing of water samples in a Utah state-certified lab. He also operated an outboard motor boat in narrow canyons, attended a spring inventory workshop, and maintained and calibrated the field and lab equipment.

Backcountry Ranger, Wenatchee-Okanogan National Forest, May to September 2017. In this role, Nathan traveled extensively in the backcountry and performed various trail work tasks.

Snowcat Operator, Vail Resorts, November 2016 to April 2017. Nathan safely groomed slopes in all weather conditions while operating a tiller, blade, and multi tracked vehicle.

Over The Road Truck Driver, Werner Enterprises, April 2015 to April 2016. Nathan traveled over 140,000 miles in all weather conditions for this long-distance trucking firm.

Trails and Conservation, Alaska Service Corps, April 2014 to September 2014. In three National Parks and one Alaska State Park, Nathan performed various trail work tasks in this position, including the construction of rock staircases and a new trail.

Ironwood Consulting

Tyler Cole

Field Technician II

Education

- BS. Bachelor of Science in Natural Resource Ecology and Management, Louisiana State University

Project and Professional Experience

Kawich and Mosey Solar Projects, Pahrump, NV and Indian Springs, Nevada, Spring 2024. Tyler performed presence-absence surveys for the Mojave desert tortoise (*Gopherus agassizii*) before permitting began for the solar project. Surveys included collecting data on scat, burrows, carcasses, and live tortoises.

Silverstate Solar Project, Primm, Nevada, Spring 2024. Tyler conducted clearance surveys for Mojave desert tortoise (*Gopherus agassizii*) at a functional solar facility that had a fence breach due to flooding. Prepared daily monitoring logs to be shared with client.

Redonda and Bajada Solar Projects, Desert Center, California, Spring 2024. Tyler was the lead desert tortoise biologist on pre-construction surveys. He conducted 10-m surveys for desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), Mojave fringe-toed lizard (*Uma scoparia*) and desert kit fox (*Vulpes macrotis*). He collected data on rare plants such as *Astragalus insularis* var. *harwoodii*, *Eriastrum harwoodii*, and *Johnstonella costata*. Tyler also prepared daily monitoring logs that were shared with the client.

Sagittarius and Aquarius Solar Projects, Lancaster, California and Victorville, California. Spring 2024. Tyler performed pre-construction surveys for sensitive species during this time, focusing on desert kit fox (*Vulpes macrotis*), burrowing owl (*Athene cunicuaria*), and Joshua tree (*Yucca brevifolia*). He prepared daily monitoring logs to be shared with client.

Arica, Victory Pass, and Oberon Solar Projects, Desert Center, California 2023-2024. Tyler was a biological monitor during this time. He provided Endangered Species Act reporting, documentation as well as monitoring for several projects. He completed surveys of special status species such as desert tortoise (*Gopherus agassizii*) and burrowing owl (*Athene cunicularia*) during construction activities. He oversaw construction activities through biological monitoring and biological report writing. Tyler facilitated informed and effective decision making by assessing, monitoring, and documenting any endangered species and all nesting birds. He assisted with wildlife camera setup and monitoring, assured client's adherence to environmental best management practices for all phases of construction, and assisted with surveys, radio telemetry tracking, and health assessments for desert tortoises at the Oberon recipient site.

USGS Contracted Habitat Assessment Plot Surveys, Clark County, Nevada. Fall 2023. As part of a USGS research project, Tyler performed as a fisheries scientific aide and conducted 5-m presence/absence surveys for the Mojave desert tortoise (*Gopherus agassizii*).

High Mountain Lakes Crew, California Department of Fish and Wildlife, June-November 2022. Tyler performed Fisheries Scientific Aide during this time. His responsibilities included surveying the populations of endangered Sierra Nevada Yellow-Legged Frogs (*Rana sierrae*) in mountain lakes in the northern Sierra. The surveys included PIT tagging and translocation of Rana sierrae. Tyler conducted habitat restoration efforts via deployment of gillnets and electrofishing. He also electro-fished for invasive rainbow trout in the Silver King Creek, as part of the effort to protect the endangered Paiute cutthroat trout (*Oncorhynchus clarkii seleniris*).

Range-Wide Crew, Great Basin Institute, Spring 2022. Tyler worked as a Research Associate during this time. In the Mojave Desert, his responsibilities included participating in a multi-year project estimating population density of Desert Tortoise, *Gopherus agassizii*. The surveys followed line-distance sampling protocol and included attaching permanent tags and temporary radio transmitters to wild tortoises.

High Mountain Lakes Crew, Idaho Department of Fish and Game. June-November 2021. During this time, Tyler served as a fisheries biological aide. His responsibilities included participating in a research project that studied how stocking affects the ecology of mountain lakes in the Selway-Bitterroot Wilderness and determined future management of stocked lakes. Tyler conducted wildlife surveys at mountain lakes, focusing primarily on counting amphibians, utilizing gillnets in remote lakes, and processing samples in the field.

Tonopah Crew Great Basin Institute, Spring 2021. Tyler served as a Desert Tortoise Research Associate during this time. His responsibilities included participating in a research project that studied the ecology and demographics of desert tortoises (*Gopherus agassizii*). He also helped to determine the northernmost range of desert tortoise in the Mojave Desert (Nevada). The surveys involved taking biometric data, attaching permanent tags, and attaching temporary radio transmitters to wild tortoises.

Freshwater Ecology Lab at Louisiana State University Agricultural Center January 2019 to January 2020. During this time, Tyler served as a research associate. His responsibilities involved assisting graduate students and professional scientists in field and lab research, as well as collecting water quality data in large rivers, lakes, and streams. Tyler performed boat and backpack electrofishing surveys for fish and invertebrates, as well as driving, trailering, and performing routine maintenance and safety checks on state vehicles and boats.

Ironwood Consulting

Thomas Silvia

Senior Biologist I

Education

- MS, Forestry, Fisheries and Wildlife, University of Nebraska-Lincoln
- BS, Biology, Nebraska Wesleyan University, Lincoln, Nebraska

Professional Summary

Thomas has nearly 30 years of experience in the biological field. As an environmental compliance inspector and wildlife biologist, Thomas possesses extensive knowledge and familiarity with environmental monitoring and biological surveying for research and development projects that align with the Endangered Species Act, Migratory Bird Treaty Act, Section 404 of the Clean Water Act, and various tribal, state, or local government regulations. Thomas has experience in environmental inspection and biological and construction monitoring on small- or large-scale developments, including alternative energy, border security, and gas, electric, and road improvement projects in the southwestern U.S. He is an accomplished environmental consultant and liaison that ensures all facilities and systems adhere to federal and state environmental regulations.

Thomas has Mojave desert tortoise (*Gopherus agassizii*) experience, including pre-construction surveys, clearance surveys, radio telemetry, handling/assisting during transmittering and health assessments, monitoring construction activities, escorting construction equipment and inspecting/repairing desert tortoise fences and shade structures. His other field experience includes, flat-tailed horned lizard (*Phyrnosoma mcalli*) biological monitoring and data collection, translocating wildlife out of harm's way, setting up environmentally sensitive area (ESA) buffers, conducting vegetation surveys, locating, flagging, and transplanting sensitive cacti for avoidance, field data collection and data entry.

Project Experience

MDLT Training Surveys – Mojave Desert Land Trust and Ironwood Consulting, Inc., Joshua Tree, CA. 2024. Thomas served as a senior biologist and assisted the MDLT on their annual surveys of conservation plot Coyote Valley to collect data on desert tortoise signs and perform general habitat assessment while walking approximately 41 miles (mi) in 32 hours. Within an approximately 0.9-mi^2 area, he conducted 10-m presence and absence surveys for Mojave desert tortoise, sensitive species, and incidental species. The four- to seven-member survey team located three tortoises and tortoise signs, including scat, active/inactive tortoise burrows, tracks, and carcasses. Desert kit fox and other mammal burrows were also identified. Thomas recorded and saved tracks using a Garmin GPSMAP 64sx unit. He used applications, including Field Maps and iForms, for navigation, entering data/report information, or safety assessment. Thomas learned about the MDLT's projects and mission and attended a tour of the MDLT facility, including the seed bank and nursery areas.

Arrow Canyon Solar Project, EDF, Las Vegas, Nevada. 2024. Thomas served as a senior biologist on an existing solar site and performed 5-meter (m), ~7-m, and 10-m targeted/alternative surveys for Mojave desert tortoise while walking approximately 47 mi in 42 hours. He located portions of carcasses, recorded and saved tracks using a Garmin GPSMAP 64sx unit, and observed carcasses and inactive canid burrows located by other survey team members. He also conducted surveys to locate tortoises that entered the site through previously identified breaches in the desert tortoise perimeter fencing. The surveyed regions of the site included vegetated areas, roads, and various distances between the solar panels.

Kawich Heritage Clearway, Indian Springs Valley, Nevada, 2024. Thomas served as a senior biologist and performed 10-m presence/absence surveys for Mojave desert tortoise on a proposed solar site while walking approximately 30 mi in 24 hours. He located inactive tortoise burrows and observed carcasses located by other survey team members. He also identified canid and other mammal burrows and recorded and saved tracks using a Garmin GPSMAP 64sx unit. Thomas used applications, such as ArcGIS Field Maps and iForms, for navigation, data entry, reporting information, and completing safety assessments.

East Mesa Solar (Perkins) – Aspen, El Centro, California, 2024. Thomas served as a senior biologist and conducted 20-m presence/absence surveys for special status/sensitive and incidental wildlife and plant species within 40-m of newly proposed access roads and out to a 150-m buffer for western burrowing owl (*Athene cunicularia hypugaea*) on a proposed solar site. He conducted avian surveys and recorded the incidental birds detected. He conducted burrow monitoring of previously visited western burrowing, desert kit fox (*Vulpes macrotis*) and canid burrows and added records for any new burrows not previously recorded. He also surveyed for sign of special status species, including flat-tailed horned lizard and western burrowing owl. Thomas used applications, such as ArcGIS Field Maps and iForms, for navigation, data entry, reporting information, and completing safety assessments.

Silver State South, NextEra, Primm, Nevada, 2024. Thomas served as a senior biologist and conducted 5-m clearance and high-grade surveys for Mojave desert tortoise in an existing solar site while walking approximately 8 mi and 2 mi, respectively, in 14 hours. He located scat and recorded and saved tracks using a Garmin GPSMAP 64sx unit. Thomas also conducted surveys to locate tortoises that entered the site through previously identified breaches in the desert tortoise perimeter fencing. The surveyed regions of the site included vegetated areas, roads, and basins.

Arida2b – Heritage, Laughlin, Nevada, 2024. Thomas served as a senior biologist and conducted 10-m presence/absence surveys for Mojave desert tortoise on a proposed solar site while walking approximately 50 mi in 44 hours. He located two tortoises, scat, and active/inactive tortoise burrows and observed two additional tortoises, tracks, and carcasses located by other survey team members. Thomas identified desert kit fox, canid, or other mammal burrows, and recorded and saved tracks using a Garmin GPSMAP 64sx unit. Thomas used applications, such as ArcGIS Field Maps and iForms, for navigation, data entry, reporting information, and completing safety assessments.

Crimson Solar Project, AECOM, Blythe, California, 2022. Thomas served as a senior biologist and performed perimeter fence checks and site inspection at a battery energy storage system facility, conducted a survey for roadkill on an entry road, assisted in conducting telemetry surveys and health assessments for transmittered tortoises at a proposed solar site south of the facility and handled three tortoises. He used applications including Field Maps for navigation and iForm/Survey123 for entering data and report information.

Oberon Solar Project, Aspen Environmental Group, Desert Center, California, 2022. Thomas served as a senior biologist and participated in conducting protocol clearance surveys and pre-construction surveys for desert tortoises. He excavated burrows, radio-tracked desert tortoises, handled and assisted in radio-transmittering one tortoise, monitored construction activities, and escorted construction equipment. Thomas performed perimeter fence and shade structure checks, repair, or maintenance. He completed timely daily monitoring reports that included compliance problem areas, resolutions and all species observed. He used applications including Field Maps for navigation and iForm/Survey123 for entering data and report information. He stayed in frequent contact with team members and the designated biologist to communicate effectively and efficiently. Thomas set up ESA buffers and located, flagged, and transplanted cacti to designated nursery areas.

Arica and Victory Pass Solar Project, Panorama Environmental, Inc., Desert Center, California, 2022. Thomas served as a senior biologist and participated in conducting protocol clearance surveys (Arica) and pre-construction surveys for desert tortoise (Arica and Victory Pass). He monitored construction activities, escorted construction equipment, and performed perimeter fence and shade structure checks, repair, or maintenance. He completed timely daily monitoring reports that included compliance problem areas, resolutions, and all species observed. He used applications including Field Maps for navigation and iForm/Survey123 for entering data and report information. He stayed in frequent contact with team members and the designated biologist to communicate effectively and efficiently. Thomas set up ESA buffers and located, flagged, and transplanted cacti to designated nursery areas.

Topock Remediation Project, Pacific Gas and Electric (PG&E), Topock, Arizona/California, 2019-2020. Thomas served as a biological monitor and assisted PG&E as a consultant by providing construction and biological monitoring during a remediation project adjacent to the Colorado River, Arizona / California. He provided recommendations and guidance to construction contractors to ensure compliance with avoidance and minimization measures related to Mojave desert tortoise and other biological resources. He conducted biological resource clearance sweeps prior to, during, and following ground-disturbing activities, as well as various types of construction activities. Thomas worked closely with construction lead foremen, construction crews, and PG&E inspectors to ensure personnel understood the measures necessary to maintain environmental compliance and avoid impacts on biological resources. He translocated non-special status species out of harm's way and imminent danger, completed timely and accurate daily monitoring forms, daily photologs, and weekly summaries, including any compliance concerns, and completed pre-activity forms and tailgate safety meeting forms, if required. Thomas entered data and report information using Wildnote software and flagged biological resource areas within construction work activity areas for avoidance purposes. Thomas conducted passive listening and nesting behavior surveys for avian species protected under the Endangered Species and Migratory Bird Treaty Acts.

Line 300A and B In-line Inspection Project, PG&E, Essex to Hinkley, California, 2018. Thomas served as a tortoise monitor and assisted PG&E as a consultant by providing construction and biological monitoring during construction and deconstruction activities on a gas transmission pipeline project in southern California. He provided recommendations and guidance to construction contractors to ensure compliance with avoidance and minimization measures related to Mojave desert tortoise and other biological resources. He worked closely with construction lead foremen, straws, construction crews, and PG&E inspectors to ensure personnel understood the measures necessary to maintain environmental compliance and avoid impacts on biological resources. Thomas observed two tortoises and collected pertinent information on encounter forms. He assisted in ensuring tortoises were not disturbed or adversely impacted during construction activities. He translocated non-special-status species out of harm's way and imminent danger. Thomas also completed timely and accurate daily monitoring forms, daily photologs, and weekly summaries, including any compliance concerns, as well as pre-activity forms and tailgate safety meeting forms, if required.

High Pressure Regulator Rebuild Project, PG&E, Edwards Air Force Base, California, 2018. Thomas assisted PG&E as a consultant by providing construction and biological monitoring during construction and deconstruction activities on a gas distribution pipeline project in southern California. He provided recommendations and guidance to construction contractors to ensure compliance with avoidance and minimization measures related to Mojave desert tortoise and other biological resources. He conducted biological resource clearance sweeps prior to, during, and following ground-disturbing activities and other types of construction activities. He worked closely with construction lead foremen, construction crews, and PG&E inspectors to ensure personnel understood the measures necessary to maintain environmental compliance and avoid impacts to biological resources. He translocated non-special status species out of harm's way and imminent danger. Thomas also completed timely and accurate daily monitoring forms, daily photologs, and weekly summaries, including any compliance concerns, as well as pre-activity forms and tailgate safety meeting forms, if required.

Pipeline Corrosion and Cathodic Test Station Install Project – PG&E, Newberry Springs to Bakersfield, California. (2018). Thomas served as a biologist/tortoise monitor. He provided construction and biological monitoring during construction and deconstruction activities on a gas transmission pipeline project in southern California. He provided recommendations and guidance to construction contractors to ensure compliance with avoidance and minimization measures related to Mojave desert tortoise and other biological resources. He conducted biological resource clearance sweeps prior to, during, and following ground-disturbing activities and various other types of construction activities, including BMP and tortoise exclusion fence removal. He worked closely with construction lead foremen, construction crews, and PG&E inspectors to ensure personnel understood measures necessary to maintain environmental compliance and to avoid impacts to biological resources. He translocated non-special status species out of harm's way and in imminent danger. Thomas also completed timely and accurate daily monitoring forms, daily photologs, and weekly summaries, including any compliance concerns, as well as pre-activity forms and tailgate safety meeting forms, if required.

Eldorado to Ivanpah Transmission Project (EITP), AECOM, Boulder City/Primm, Nevada and Nipton, California, 2012-2013. Thomas served as an environmental specialist/biologist and walked a total of 174 mi in 177 hours as an authorized desert tortoise monitor while conducting 14-day pre-construction surveys (90 mi/84 hours) and day-of or clearance sweeps (84 mi/93 hours) for Mojave desert tortoise and other biological resources on a Southern California Edison (SCE) 35-mi-long transmission line replacement project. Thomas also conducted meandering surveys within a 30-100' buffer of approved disturbance areas. (He was one of five monitors remaining at the project's conclusion out of 70+ biological monitors that worked on the project.) Thomas located and encountered ten and nineteen individual tortoises, respectively, and recorded numerous observations of other non-special and special status species and desert tortoise sign including burrows and scat. He translocated non-special status species out of harm's way and imminent danger. He worked closely with construction crews by communicating effectively with construction foremen and monitoring on-site project compliance in order to reduce impacts to tortoises and other biological resources. He logged 1,315 hours monitoring project equipment and construction activities involving mowing, grading, drilling, escorting, hauling, cement pouring / washout, wreck out and removal, wash restoration, wire-stringing and pulling, jumper and spacer installation, BMP installation and removal, and site-release work. He conducted nesting bird behavior clearance sweeps within a 400' buffer of disturbance areas prior to and during construction activities. Thomas completed timely and accurate daily monitoring reports; species, habitat, and mortality events; or observations/incidents in SCE's Field Reporting and Environmental Database.

U.S. Customs and Border Protection Road Improvement Project, Gulf South Research Corporation (GSRC), Yuma, Arizona. 2010. GSRC selected Thomas to serve as an independent biological consultant and an on-site biological monitor on a Department of Homeland Security-funded project near the Arizona-Mexico border. He surveyed for flat-tailed horned lizards (FTHL's) and captured/translocated 37 FTHL's and other reptiles to minimize adverse impacts during improvements for an approximately 2.9-mi portion of a U.S. Border Patrol (USBP) road on the Barry M. Goldwater Air Force Range/Yuma Desert. He completed survey and observation data forms by recording morphological measurements of FTHL's and environmental conditions during official and incidental pedestrian and windshield surveys. During on-site biological monitoring and road construction, Thomas coordinated with the U.S. Army Corps of Engineers, U.S. Army Reserves, and USBP agents. He completed survey forms and daily monitoring reports for the consultant lead; photo-documented site conditions, project progress, compliance, or violations of best management practices; and provided verbal and/or written recommendations to construction personnel to assist in adherence to environmental compliance.

Line 1903 MP 271 Tortoise Monitoring Project, El Paso Corporation, Blythe, California, 2008. Thomas served as a consultant and biologist/environmental specialist. He provided construction and biological monitoring during construction and deconstruction activities on a gas transmission pipeline project. He provided recommendations and guidance to construction contractors on how to comply with avoidance measures for Mojave desert tortoise and other biological resources. He worked closely with construction lead foremen and the construction crew to ensure personnel understood the measures necessary to maintain environmental compliance and avoid impacts on biological resources. Thomas also conducted biological resource clearance sweeps before, during, and after ground-disturbing activities, as well as other types of construction activities.

obsDateFmt	submitter	fieldwork	obsTimeFo	species	speciesOth	liveActiveOrRecentSign	signTypes	signTypes	elfOwlGilo	elfOwlGilo	burrowID	burrowWi	burrowEn	burrowLe	burrowAc	numOfBu	nestID	numOfAd	numOfJuv	numOfInd	behavior	behaviorC	comments	signLatitu	signLongit	userLatitu	userLongit	utmEastin	utmNorth	dateAdde	xmlFileNa	recModifi	recModifi	recModifi	recordNot	observationID
2023-03-25	Lois Neff	Hattie Osw	12:11:00	Burrowing		No	Carcass					0		0	Unk	-9999		0	0	0				32.72667	-115.181	32.7267	-115.181	670434	3622452	45010.67	i19_Sensit					SS-BIRD-2593
2023-03-25	Lois Neff	Hattie Osw	14:51:00	Burrowing		Yes	Carcass					0		0	Unk	-9999		1	0	1			wing possibly the same bird as previous wing	32.72465	-115.184	32.72467	-115.184	670212	3622223	45010.67	i19_Sensit					SS-BIRD-2605

Species / Special Resource / Habitat: Burrowing owl

Project Name:	**East Mesa**	Observer:	**Jackie White**
Observation Date:	**03-25-2023**	Creation Date:	**03-25-2023**
Latitude:	**0**	Easting:	
Longitude:	**0**	Northing:	

Sign Type(s):
- Burrow
- Carcass / skeleton
- Whitewash
- Pellets

Substrate/Surficial Geology:
- Sand sheet

Vegetation Type:
- Larrea tridentata

Comments

Additional Photos

Photo description:

BUOW carcass

Photo description:

BUOW burrow, whitewash, pellets and feathers

Photo description:

BUOW wing with predator scat

Photo description:

Date Surveyed	SurveyTypes	SurveyTypesOther	StartTime	StartEasting	StartNorthing	EndTime	EndEasting	EndNorthing	SubmitterName	Fieldworkers	FieldworkersOther	No. of Surveyors	StartTemp(C)	EndTemp(C)	CloudCover	WindSpeed	Precipitation	WeatherNotes	Disturbances	DisturbancesOther	HabitatNotes	SurveyNotes	StartLatitude	StartLongitude	EndLatitude	EndLongitude
2023-03-20	Habitat Assessment		11:39:00	675771	3620655	15:49:00	675110	3620676	Wendy Mcbride	Adam Walters;Gabriela Chio;Hattie Oswald;Leigh Rouse;Tracy Ridlinghafer		6	18	23	51%+	11 to 15 MPH	None		OHV Activity,Trash Dumping		Sandy gravel substrate, LAR TRI dominate vegetation community	A good first day	32.70965679	-115.1246615	32.70995138	-115.1317067
2023-03-20	Other	20m	11:53:00	675500	3621238	16:09:00	676600	3620843	Kendra Gietzen	Charlie Primuth;Jackie White;Lois Neff;Marcy Bueno;Marina Lavender:Other	Mch	7	28	29.1	26 to 50%	11 to 15 MPH	None		OHV Activity		Creosote Shrub		32.7149563	-115.1274417	32.71121923	-115.1157852
2023-03-21	Habitat Assessment,Sensitive Species		08:31:00	675090	3620678	15:20:00	673790	3620700	Wendy Mcbride	Gabriela Chio;Hattie Oswald;Lois Neff		4	15	22	51%+	Over 15 MPH	Light Rain,Rain	Sprinkling on and off until noon then overcast and one more rain burst about 3-330pm	OHV Activity,Trash Dumping,Vegetation Removal		Sandy gravelly to sandy soil with LAR TRI dominated veg community.		32.70997259	-115.1319196	32.71037675	-115.1457792
2023-03-21	Other	20m	08:46:00	676630	3620839	15:15:00	678300	3620841	Kendra Gietzen	Jackie White:Leigh Rouse:Tracy Ridlinghafer		4	18	16.6	51%+	11 to 15 MPH	Rain		OHV Activity		Creosote shrub		32.71117835	-115.1154661	32.7109274	-115.0976562
2023-03-21	Other	20m	09:31:00	675480	3621314	15:18:00	674300	3621620	Marcy Bueno	Adam Walters;Charlie Primuth;Marina Lavender;Other	Mch	5	18.8	17.4	51%+	6 to 10 MPH	Light Rain	Light rain off and on throughout the day. Wind speed increased above 10 mph towards end of survey.	OHV Activity,Trash Dumping		Creosote Scrub with patches of dunes.	Start line 675480, End line 674300 - North Section.	32.71564469	-115.1276407	32.71859094	-115.1401682
2023-03-22	Burrowing Owl,Habitat Assessment,Sensitive Species		08:29:00	673770	3620700	16:00:00	674340	3620530	Wendy Mcbride	Gabriela Chio;Hattie Oswald;Lois Neff		4	13.8	21.1	1 - 10%	11 to 15 MPH	None	Sunny to partly cloudy throughout the day. High winds in the morning, calmer in the afternoon.	OHV Activity,Trash Dumping,Vegetation Removal		Sandy-gravelly to sandy soils, LAR TRI dominated veg community, not much diversity. Tracks nearly ubiquitous across this polygons near highway due to border patrol activity.	Start eastings for transects north of highway 98 working west. We finished surveying small polygon just north of the highway. End eastings reflect eastern endpoint for afternoon surveys in portion of same polygon just south of the highway. These transects ran east/west.	32.71037991	-115.1459925	32.70875714	-115.1399456
2023-03-22	Other	20 m survey	08:32:00	674280	3621624	16:12:00	673500	3621200	Charlie Primuth	Adam Walters;Marcy Bueno;Marina Lavender		4	16.4	25	1 - 10%	0 to 5 MPH	None		OHV Activity,Trash Dumping		Creosote bush scrub. Stabilize dunes, hummocks.	Slaying these lines. No sign of boarder patrol.	32.71863016	-115.1403807	32.71493049	-115.1487788
2023-03-22	Other	20m	08:40:00	673180	3621200	15:56:00	672560	3621584	Kendra Gietzen	Jackie White:Leigh Rouse:Tracy Ridlinghafer		4	17.3	22.4	11 to 25%	6 to 10 MPH	None		OHV Activity				32.71498085	-115.1521916	32.71854033	-115.1587328
2023-03-23	Burrowing Owl,Habitat Assessment,Sensitive Species		08:10:00	675623	3620630	04:00:00	675630	3620570	Wendy Mcbride	Gabriela Chio;Hattie Oswald;Lois Neff		4	12.2	23.3	0%	11 to 15 MPH	None		OHV Activity		Sandy loam dominated by Larrea tridentata. Border control vehicle tracks common across surveyed area.	UTMS reported above apply to morning survey area. After that, we moved north and surveyed between the following easting/northings: 651540 - 3621980 (eastmost) 671080 - 3621970 (westmost)	32.70945499	-115.1262446	32.70891292	-115.1261812
2023-03-23	Other	20m	08:35:00	672540	3621526	16:20:00	671760	3621957	Kendra Gietzen	Jackie White:Leigh Rouse:Tracy Ridlinghafer		4	16	26.3	11 to 25%	11 to 15 MPH	None		OHV Activity				32.71802053	-115.1589569	32.72202839	-115.1671965
2023-03-23	Other	20m surveys	08:51:00	673480	3621180	13:15:00	673200	3621180	Marcy Bueno	Adam Walters:Charlie Primuth:Marina Lavender:Other	Michelle Hughes	5	16	25.2	0%	6 to 10 MPH	None	Gusts over 10 mph through the day	OHV Activity,Trash Dumping				32.71475332	-115.1489958	32.71479738	-115.151982
2023-03-23	Other	20m survey	14:33:00	670880	3620400	15:40:00	670545	3620400	Marcy Bueno	Adam Walters;Charlie Primuth;Marina Lavender;Matt Adams;Other	Michelle Hughes	6	25	24.6	11 to 25%	6 to 10 MPH	None		OHV Activity,Trash Dumping		Wetland dominate species. Heavily disturbed. Pluchea serecea dominant. Abundance of Tamarisk. Prosopis pubescens population seen and healthy, (species declining in it's range). Habitat dominated by alkaline soils.	Representative habitat photo taken by MCH	32.70812705	-115.1768683	32.70817895	-115.1804409
2023-03-24	Other	20m	08:29:00	671740	3621937	15:36:00	670760	3622110	Kendra Gietzen	Jackie White:Tracy Ridlinghafer		3	16.1	26.2	1 - 10%	6 to 10 MPH	None		OHV Activity				32.72185119	-115.1674135	32.72356338	-115.1778345
2023-03-24	Other	20m survey	08:56:00	670920	3620740	16:22:00	670180	3620755	Marcy Bueno	Adam Walters:Leigh Rouse:Marina Lavender:Other	Michelle Hughes	5	14.4	25	1 - 10%	6 to 10 MPH	None		OHV Activity,Trash Dumping				32.71118636	-115.1763793	32.71143615	-115.1842685
2023-03-24	Burrowing Owl,Habitat Assessment,Sensitive Species		09:05:00	666700	3622900	16:00:00	667160	3622900	Wendy Mcbride	Charlie Primuth;Hattie Oswald;Lois Neff		4	14.4	22.7	1 - 10%	0 to 5 MPH	None		OHV Activity		Sandy loam dominated by Larrea tridentata. Lots of evidence of border patrol activity (old tracks nearly ubiquitous)		32.73130841	-115.2209986	32.73123866	-115.2160916
2023-03-25	Burrowing Owl,Habitat Assessment,Sensitive Species		08:46:00	670740	3622120	15:00:00	670200	3622120	Wendy Mcbride	Hattie Oswald;Jackie White;Lois Neff;Tracy Ridlinghafer		5	13.3	22.7	0%	0 to 5 MPH	None		OHV Activity		Silty soil with sandy layer atop surface. Primarily dominated by Larrea tridentata. Lots of border control off roaring across this area. Generally a dry year out here likely resulting in fewer annual plants than would be expected during a normal precip year.		32.72365664	-115.1780459	32.72374023	-115.1838057
2023-03-25	Other	20m	13:21:00	670160	3620775	13:21:00	669700	3620775	Kendra Gietzen	Adam Walters:Charlie Primuth:Leigh Rouse		4	17.8	28.8	1 - 10%	0 to 5 MPH	None		OHV Activity				32.71161957	-115.1844782	32.71169052	-115.189384
2023-03-27	Sensitive Species		09:18:00	670180	3622120	16:42:00	669740	3622120	Lois Neff	Hattie Oswald;James Borgmeyer;Leigh Rouse;Lois Neff;Marcy Bueno		6	18.2	24	0%	6 to 10 MPH	None	higher speed gusts	OHV Activity		creosote scrub, sand and gravel, stable dunes, ephedra mounds.	3 live flat tails and much scat.	32.72374332	-115.1840191	32.72381123	-115.1887123
2023-03-27	Burrowing Owl,Habitat Assessment,Sensitive Species		09:55:00	669680	3620730	15:18:00	669100	3620762	Wendy Mcbride	Anthony Chasar;Kenny Bender;Maggie Pasanen;Sadie Decurtis		5	16.6	23.3	1 - 10%	6 to 10 MPH	None		OHV Activity		Sandy loam primarily dominated by LAR TRI, some veg patches dominated by ISO ACR (narrow bands). Border control tracks nearly ubiquitous. Very dry year likely reflected by lack of annual plant abundance.		32.71128787	-115.1896055	32.71166556	-115.1957854
2023-03-28	Burrowing Owl,Habitat Assessment,Sensitive Species		08:41:00	669700	3623120	15:30:00	668840	3623118	Wendy Mcbride	Maggie Pasanen;Mandy Wegmann;Marcy Bueno;Sadie Decurtis		5	12.8	26.6	1 - 10%	0 to 5 MPH	None		OHV Activity,Trash Dumping		Mainly Sandy loam and silty-sand soil dominated by Larrea tridentata. Some low-lying areas where ephemeral water lingers that is co-dominated by Isocoma acradenia and Larrea tridentata.		32.73283365	-115.1889566	32.73294785	-115.1981309
2023-03-28	Habitat Assessment,Other	20 m	08:45:00	669700	3622120	16:12:00	668760	3622120	Kenny Bender	Anthony Chasar;Hattie Oswald;Leigh Rouse;Lois Neff		5	15.9	30.9	1 - 10%	0 to 5 MPH	None		OHV Activity				32.7238174	-115.1891389	32.72396185	-115.1991653
2023-03-29	Burrowing Owl,Nesting Bird,Sensitive Species,Other	Flst-tailed horned lizard	08:31:00	668740	3622120	16:08:00	667960	3622120	Leigh Rouse	Anthony Chasar;Hattie Oswald;Kenny Bender;Lehong Chow;Lois Neff		6	17.6	31.2	51%+	0 to 5 MPH	None		OHV Activity,Trash Dumping,Trespassing		creosote scrub with Isocoma and Prosopis mesic swale		32.72396491	-115.1993786	32.72408416	-115.2076985
2023-03-29	Burrowing Owl,Habitat Assessment,Sensitive Species		08:35:00	668820	3623120	16:19:00	667820	3623120	Wendy Mcbride	Maggie Pasanen;Mandy Wegmann;Marcy Bueno;Sadie Decurtis		5	14.4	25.5	26 to 50%	6 to 10 MPH	None	Average wind speed in the morning 0-5 mph, but at 16:00 hours average wind speed increased to 10-15 mph	OHV Activity		See previous daily form...habitat very similar.		32.73296895	-115.1983439	32.73312185	-115.2090115
2023-03-30	Burrowing Owl,Sensitive Species,Other	20 m, rare plants	08:30:00	667940	3623120	15:44:00	667380	3623120	Kenny Bender	Anthony Chasar;Hattie Oswald;Leigh Rouse		4	17.4	20.8	51%+	6 to 10 MPH	None,Light Rain	Rain brief, wind heaviest toward end of day	OHV Activity,Trash Dumping				32.73310355	-115.2077314	32.73318884	-115.2137052
2023-03-31	Burrowing Owl,Nesting Bird,Sensitive Species,Other	20 m, FTHL, rare plants	08:15:00	667360	3623120	16:31:00	666880	3622120	Kenny Bender	Anthony Chasar;Hattie Oswald;Leigh Rouse		4	15.8	26.4	11 to 25%	0 to 5 MPH	None		OHV Activity				32.73319188	-115.2139186	32.72424835	-115.2192183
2023-03-31	Burrowing Owl,Habitat Assessment,Sensitive Species		08:20:00	669080	3620768	15:43:00	668240	3620780	Sadie Decurtis	Lois Neff;Maggie Pasanen;Mandy Wegmann;Marcy Bueno		5	14.2	28.1	1 - 10%	0 to 5 MPH	None	Partly cloudy but turned complete overcast by mid day	None		Dry wetland wash was VERY thick		32.71172273	-115.1959976	32.71195952	-115.204954
2023-04-01	Burrowing Owl,Habitat Assessment,Sensitive Species		08:11:00	668160	3619535	15:22:00	667080	3362120	Sadie Decurtis	Anthony Chasar;Hattie Oswald;Leigh Rouse;Lois Neff;Mandy Wegmann		6	15.8	30.1	1 - 10%	0 to 5 MPH	None		None				32.70074635	-115.2060319	30.37949389	-115.2611387
2023-04-03	Other	20m survey	07:53:00	668500	3620099	15:48:00	668220	3620789	Anthony Chasar	Mandy Wegmann:Marcy Bueno:Sadie Decurtis		4	7	20	1 - 10%	Over 15 MPH	None						32.70577965	-115.2023043	32.71204372	-115.2051657
2023-05-15	Burrowing Owl,Sensitive Species		09:00:00	678000	3621037	15:11:00	676834	3624038	Sadie Decurtis	Jesse Goodyear		2	31.5	38.4	1 - 10%	6 to 10 MPH	None		OHV Activity				32.71274301	-115.1008181	32.73998739	-115.1126828
2023-05-16	Sensitive Species		07:10:00	676800	3621037	15:08:00	675390	3621789	Jesse Goodyear	Sadie Decurtis		2	23.3	40.5	0%	0 to 5 MPH	None		OHV Activity				32.71293623	-115.1136155	32.71994161	-115.1285111
2023-05-17	Burrowing Owl,Sensitive Species		06:40:00	675360	3621786	14:40:00	674310	3621789	Sadie Decurtis	Jesse Goodyear		2	21.6	40.5	1 - 10%	6 to 10 MPH	None	Super hot	OHV Activity				32.71991934	-115.1288316	32.72011306	-115.1400299
2023-05-18	Sensitive Species		06:00:00	674280	3621787	11:50:00	673830	3621368	Jesse Goodyear	Sadie Decurtis		2	24.7	33.8	26 to 50%	6 to 10 MPH	None	Overcast and light wind	OHV Activity				32.72009977	-115.1403502	32.71639317	-115.145228
2023-05-22	Sensitive Species		05:54:00	673800	3621368	14:33:00	673350	3621368	Jesse Goodyear	Sadie Decurtis		2	19.8	39.3	1 - 10%	0 to 5 MPH	None		OHV Activity				32.7163979	-115.1455479	32.71646881	-115.1503473
2023-05-23	Sensitive Species		05:49:00	673320	3621368	13:38:00	672990	3621749	Jesse Goodyear	Sadie Decurtis		2	21.2	42.1	1 - 10%	0 to 5 MPH	None		OHV Activity				32.71647353	-115.1506672	32.71996053	-115.154116
2023-05-24	Sensitive Species		06:10:00	672960	3621749	14:32:00	672510	3621749	Jesse Goodyear	Sadie Decurtis		2	22.5	40.3	0%	0 to 5 MPH	None		OHV Activity				32.71996524	-115.154436	32.72003582	-115.1592355
2023-05-25	Sensitive Species		06:01:00	672480	3621749	12:32:00	672150	3622135	Jesse Goodyear	Sadie Decurtis		2	21.1	35.5	0%	0 to 5 MPH	None		OHV Activity				32.72004052	-115.1595555	32.72357237	-115.1630038
2023-06-12	Sensitive Species		05:40:00	672120	3622138	15:46:00	671070	3622136	Jesse Goodyear	Marina Lavender:Nathan Labieniec		3	19.3	36.5	0%	0 to 5 MPH	None		OHV Activity				32.72360411	-115.1633232	32.72374969	-115.1745231
2023-06-13	Sensitive Species		14:07:00	675616	3620985	14:57:00	675100	3620985	Jesse Goodyear	Marina Lavender:Nathan Labieniec		3	38.8	42.1	0%	0 to 5 MPH	None		OHV Activity				32.71265677	-115.1262523	32.7127389	-115.1317552
2023-06-14	Sensitive Species		05:28:00	671020	3622116	14:02:00	674560	3620985	Jesse Goodyear	Marina Lavender;Nathan Labieniec		3	25.6	39.2	0%	0 to 5 MPH	None		OHV Activity			We started on the large parcel in the morning, our last line was 670710, 3622116. After lunch we p picked up where we left off on the southern parcel, our last line was 674560, 3620985.	32.72357713	-115.1750601	32.7128246	-115.1375142
2023-06-15	Sensitive Species		05:26:00	670680	3622116	14:33:00	674200	3621164	Jesse Goodyear	Marina Lavender;Nathan Labieniec		3	21.3	45.9	0%	0 to 5 MPH	None		OHV Activity			Similar to yesterday, we started on the large parcel in the morning, our last line was 670350, 3622116. After lunch we picked up where we left off on the southern parcel, our last line was 674200, 3621164.	32.72362988	-115.1786867	32.71449545	-115.14132
2023-06-16	Sensitive Species		05:39:00	670320	3621485	11:24:00	670230	3621447	Jesse Goodyear	Marina Lavender		2	23	39.7	0%	0 to 5 MPH	None		OHV Activity				32.71799637	-115.182642	32.71766767	-115.1836088
2023-06-19	Sensitive Species		05:51:00	670200	3621446	13:32:00	669870	3621426	Jesse Goodyear	Charlie Primuth		2	25.6	39.7	11 to 25%	0 to 5 MPH	None		OHV Activity				32.71766329	-115.183929	32.71753391	-115.1874523
2023-06-20	Sensitive Species		05:35:00	669840	3621427	14:40:00	673960	3620957	Jesse Goodyear	Charlie Primuth		2	24.1	40.8	0%	6 to 10 MPH	None		OHV Activity				32.71754755	-115.187772	32.71266705	-115.1439183
2023-06-21	Sensitive Species		05:27:00	669480	3621366	14:17:00	669150	3621315	Jesse Goodyear	Charlie Primuth		2	23.7	41.6	0%	0 to 5 MPH	None		OHV Activity				32.717053	-115.1916228	32.7166439	-115.1951517
2023-06-22	Sensitive Species		06:08:00	673930	3620957	13:30:00	668910	3621231	Jesse Goodyear	Charlie Primuth		2	24.1	38.9	0%	0 to 5 MPH	None		OHV Activity				32.71267179	-115.1442382	32.71592336	-115.1977266
2023-06-23	Sensitive Species		05:51:00	668880	3622754	15:51:00	668303	3622951	Jesse Goodyear	Rudy Badia		2	20.1	31.8	0%	0 to 5 MPH	None		OHV Activity				32.72965978	-115.1977703	32.73152435	-115.2038896
2023-06-26	Sensitive Species		06:12:00	668150	3622958	15:58:00	667340	3623237	Jesse Goodyear	Maggie Pasanen		2	25.6	43.5	0%	0 to 5 MPH	None		OHV Activity				32.73161085	-115.2055204	32.73424984	-115.2141109
2023-06-27	Sensitive Species		05:24:00	667310	3623244	15:38:00	668670	3621451	Jesse Goodyear	Maggie Pasanen		2	22.7	42.4	0%	0 to 5 MPH	None		OHV Activity				32.73431751	-115.2144296	32.71794372	-115.2002465
2023-06-28	Sensitive Species		05:36:00	668640	3622873	14:50:00	667470	3621451	Jesse Goodyear	John Chikezie:Maggie Pasanen:Nathan Labieniec		4	23.8	41.2	0%	0 to 5 MPH	None		OHV Activity				32.73076951	-115.2003088	32.71812683	-115.2130454
2023-06-29	Sensitive Species		05:41:00	667350	3623236	14:07:00	669380	3621302	Jesse Goodyear	John Chikezie:Maggie Pasanen:Nathan Labieniec		4	23.2	40.1	0%	0 to 5 MPH	None		OHV Activity				32.7342393	-115.2140044	32.71649134	-115.192701
2023-06-30	Sensitive Species		05:31:00	669350	3621302	09:52:00	668150	3620780	Jesse Goodyear	Maggie Pasanen:Nathan Labieniec		3	23.1	37.1	0%	0 to 5 MPH	None		OHV Activity				32.71649596	-115.1930209	32.71197325	-115.2059138
2023-07-04	Sensitive Species		05:26:00	666880	3620946	13:27:00	668770	3620742	Jesse Goodyear	Emily Siffrin:Kenny Bender:Marina Lavender:Rudy Badia		5	24.7	44.1	0%	0 to 5 MPH	None		OHV Activity				32.71366308	-115.2194288	32.71153583	-115.1993084
2024-03-25	Other	JD	07:30:00	666992	3620739	17:31:00	670570	3620714	Leigh Rouse	Nathan Gross		2	13.3	23.8	0%	6 to 10 MPH	None		Trash Dumping		creosote scrub sand sheet, mesic drainages	JD and Mesa lines	32.71177971	-115.2182714	32.71100618	-115.1801168
2024-03-26	Other	JD	07:51:00	670573	3620718	17:19:00	676075	3620712	Leigh Rouse	Nathan Gross		2	15	25.5	0%	0 to 5 MPH	None		Trash Dumping,Trespassing		creosote scrub, some sand dunes	JD Mesa	32.71104178	-115.180084	32.71012216	-115.1214088
2024-04-08	Other	20 m	11:33:00	670780	3621518	14:32:00	670960	3621583	Charlie Primuth	Anthony Chasar;Evan Tucker;Marina Lavender;Sadie Decurtis		5	22	26	11 to 25%	6 to 10 MPH	None		OHV Activity,Trash Dumping		Creosote scrub/ Isocoma acrademia scrub		32.71822268	-115.1777297	32.71878081	-115.175798
2024-04-09	Other	20 m	07:16:00	670980	3621565	15:39:00	671720	3621559	Charlie Primuth	Anthony Chasar;Evan Tucker;Marina Lavender;Sadie Decurtis		5	14	30	0%	0 to 5 MPH	None		OHV Activity,Trash Dumping		Creosote scrub/ isocoma acradenia scrub microphyll woodland		32.71861542	-115.175588	32.7184462	-115.1676965
2024-04-10	Other	20 m	07:01:00	678940	3620766	15:22:00	676400	3620977	Charlie Primuth	Anthony Chasar;Evan Tucker;Marina Lavender;Sadie Decurtis		5	13	32	0%	0 to 5 MPH	None		OHV Activity,Trash Dumping		creosote scrub, stabilized dunes		32.71014746	-115.0908455	32.7124594	-115.1178927
2024-04-11	Other	20 m	06:50:00	676640	3620967	15:07:00	674940	3621263	Charlie Primuth	Anthony Chasar;Evan Tucker;Marina Lavender;Sadie Decurtis		5	14	34	0%	0 to 5 MPH	None		OHV Activity,Trash Dumping		Creosote scrub/ ambrosia dumosa scrub		32.71233079	-115.1153351	32.71527077	-115.1334094
2024-04-12	Other	20 m	06:44:00	674860	3621288	12:50:00	671920	3621558	Charlie Primuth	Anthony Chasar;Evan Tucker;Marina Lavender;Sadie Decurtis		5	15	32	0%	11 to 15 MPH	None		OHV Activity,Trash Dumping		Creosote scrub	We moved to a new area on the east side mid day.	32.71550887	-115.1342579	32.71840599	-115.1655636
2024-04-15	Other	20m	07:00:00	0	0	16:00:00	0	0	Charlie Primuth	Anthony Chasar;Joli Stavish;Sadie Decurtis;Tracy Ridlinghafer		5	14	34	0%	0 to 5 MPH	None		OHV Activity			Record created by M Summers. Survey crew did not submit a form during survey	0	0	0	0
2024-04-16	Other	20m	07:00:00	0	0	16:00:00	0	0	Charlie Primuth	Anthony Chasar;Joli Stavish;Sadie Decurtis;Tracy Ridlinghafer		5	14	32	0%	0 to 5 MPH	None		OHV Activity			Record created by M Summers. Survey crew did not submit one during survey	0	0	0	0
2024-04-30	Jd		07:30:00	668858	3621691	14:50:00	667000	3620723	Leigh Rouse	Marcy Bueno		2	25	33	0%	0 to 5 MPH	None		OHV Activity,Trash Dumping,Other	border patrol activity	creosote scrub with mesic swales		32.72007883	-115.1981978	32.71163424	-115.2181889
2024-05-20	Burrowing Owl,Habitat Assessment,Sensitive Species,Other	20m	07:16:00	666995	3620932	15:16:00	667126	3620170	Tyler Cole	Other	Tom Silvia	2	25.8	38.3	51%+	0 to 5 MPH	None		Trash Dumping,Vegetation Removal		creosote scrub		32.71351943	-115.2182048	32.70662905	-115.2169443
2024-05-21	Burrowing Owl,Habitat Assessment,Sensitive Species,Other	20m, FTHL	07:11:00	667123	3620200	16:04:00	667195	3619725	Tyler Cole	Other	Tom Silvia	2	20.7	37	0%	0 to 5 MPH	None		OHV Activity,Trash Dumping,Trespassing,Vegetation Removal,Waterway Alteration				32.7069	-115.2169709	32.70260628	-115.2162883
2024-05-22	Burrowing Owl,Habitat Assessment,Sensitive Species,Other	20m, FTHL	06:54:00	667195	3619975	08:56:00	668174	3619860	Tyler Cole	Other	Tom Silvia	2	20.5	27	0%	0 to 5 MPH	None		Trash Dumping,Trespassing,Waterway Alteration				32.70486039	-115.2162435	32.70367454	-115.205824
2024-05-22	Burrowing Owl		10:12:00	678063	3620960	15:51:00	671113	3621555	Tyler Cole	Other	Tom Silvia	2	32.8	40.4	0%	0 to 5 MPH	None		OHV Activity,Trash Dumping,Trespassing,Vegetation Removal			burrow checks for BUOW	32.71203861	-115.1001609	32.7185046	-115.1741713
2024-05-30	Habitat Assessment		03:45:00	999999	9999999	07:15:00	999999	9999999	Bea Vizcarra	Kevin Brennan		2	40	37	0%	0 to 5 MPH	None		Other	Dirt roads throughout the project area/power lines	Creosote scrub Ephedra plants Mesquite and	Acoustic Detector 1 UTM: N 32.38279 W 111.50480 Acoustic Detector 2 UTM : N 32.73000 W 115.22142 Acoustic Detector 3 UTM - xxx-	90	-117	90	-117
2024-05-31	Habitat Assessment		07:30:00	999999	9999999	10:30:00	999999	9999999	Bea Vizcarra			1	36	36	0%	0 to 5 MPH	None		None			I picked Bat acoustic detectors and search for possible bat roost sites. The irrigation office located approximately 130 meters from the project area does contain potential tree roosting habitat such as cottonwood and eucalyptus trees. (No bats were found) The dam located by the irrigation office contains a gap that could house bats. I used binoculars to see if I could identify bat roost signs but I didn't observe any stains that indicated was being used by bats. I asked the irrigation workers if they had observed bats in the area and they said that they have seen a few bats flying around at night at their fuel station under their light structures.	90	-117	90	-117
2024-10-21	Jd		07:29:00	668252	3620131	15:48:00	670987	3620992	John Chikezie	Leigh Rouse		2	18.3	31.6	0%	0 to 5 MPH	None		OHV Activity,Trash Dumping		desert scrub.		32.70610607	-115.2049432	32.71344805	-115.1756185
2024-10-22	Jd		07:21:00	668870	3621508	12:14:00	667983	3622484	Leigh Rouse	John Chikezie		2	17.2	31.1	0%	0 to 5 MPH	None		OHV Activity,Trash Dumping,Trespassing		creosote scrub and vegetated swales	Upland data points for vegetated swales and veg communities	32.71842701	-115.198103	32.7273626	-115.2073875

Special-Status Species Observation Data submission

Sensiti...-2024.xlsx

AM

Audrey McNamara

To: CNDDB@wildlife.ca.gov

Reply | Reply all | Forward

Mon 12/16/2024 11:06 AM

SensitiveSpecies - East Mesa...
69 KB

Hello,

Please see the attached spreadsheet containing special-status species observation data. Feel free to reach out with any questions if clarification is needed. Thank you.

Audrey McNamara

Project Coordinator - Biologist, Ironwood Consulting Inc.

949.563.0337 | amcnamara@ironwoodbio.com

www.ironwoodbio.com

Reply | Forward

ID	formID	recordType	projectID	projectNa	projectNa	obsDateFmt	submitterI	submitterI	submitterI	fieldworke	fieldworke	obsTimeFi	photosTak	species	speciesOth	liveActive	signTypes	signTypes	elfOwlGIIA	elfOwlGIIs	burrowID	burrowWi	burrowEn	burrowLe	burrowAct	numOfBur	nestID	numOfAdu	numOfJuv	numOfInd	behavior	behaviorO	comments	signLatitu	signLongit	userLatitu	userLongit	utmEastin	utmNorthi	dateAdded	xmlFileNa	recModifie	recModifie	recModifie	recordNot	observatio	obsDate	obsTime
9814	7693	Bird	56	EAST_MES		2024-04-09	431	Evan Tucke		Anthony C		08:39:00	No	Black Tailed Gnatcatcher		Yes	Live Individ						0		0	Unk		-9999		2	0	2	Perching			32.71264	-115.175	32.71265	-115.175	671060	3620904	45391.66	I19 Sensit					SS-BIRD-3	45391	0.360417
9815	7693	Bird	56	EAST_MES		2024-04-09	431	Evan Tucke		Anthony C		08:40:00	No	Lozeorhead Shrike		Yes	Live Individ						0		0	Unk		-9999		2	0	2	Territorial/		Mobbing a	32.71264	-115.175	32.71266	-115.175	671061	3620904	45391.66	I19 Sensit					SS-BIRD-3	45391	0.361111
9827	7696	Reptile/Am	56	EAST_MES		2024-04-09	251	Marina Lau		Anthony C		15:32:00	No	Flat-tailed horned lizard		No	Live Individ				0		0	-9999	1	0	1	Resting			1	Very cute	32.71825	-115.168	32.71831	-115.168	671703	3621537	45391.66	I19 Sensit					SS-REP-Ali	45391	0.647222			
9853	7714	Reptile/Am	56	EAST_MES		2024-04-10	431	Evan Tucke		Anthony C		12:06:00	No	Flat-tailed horned lizard		Yes	Live Individ				0		0	-9999	1	0	1	Resting					32.71207	-115.104	32.71202	-115.104	677700	3620957	45392.64	I19 Sensit					SS-REP-Ali	45392	0.504167			
9959	7774	Bird	56	EAST_MES		2024-04-15	377	Joli Stavish		Anthony C		07:08:00	No	Loggerhead Shrike		Yes	Live Individ						0		0	Unk		-9999		1	0	1	Perching			32.72206	-115.164	32.73164	-115.191	672046	3621965	45397.69	I19 Sensit					SS-BIRD-3	45397	0.297222			
9960	7774	Bird	56	EAST_MES		2024-04-15	377	Joli Stavish		Anthony C		14:59:00	No	Burrowing Owl		No	Burrow,Wi						0	No	0	Unk		-9999		0	0	0				32.71872	-115.154	32.71868	-115.154	672018	3621612	45397.69	I19 Sensit					SS-BIRD-3	45397	0.624306			
9972	7774	Reptile/Am	56	EAST_MES		2024-04-15	377	Joli Stavish		Anthony C		13:23:00	No	Flat-tailed horned lizard		Yes	Live Individ				0		0	-9999	1	0	1	Restine					32.7152	-115.161	32.71523	-115.161	672398	3621211	45397.89	I19 Sensit					SS-REP-Ali	45397	0.557639			
10371	8002	Bird	56	EAST_MES		2024-05-20	418	Tyler Cole		Other	Tom Silvia	12:36:00	No	Loggerhead Shrike		No	Live Individ						0		0	Unk		-9999		1	0	1	Perching,Si			32.71107	-115.22	32.71111	-115.22	666868	3620658	45432.64	I19 Sensit					SS-BIRD-3	45432	0.525			
10374	8005	Bird	56	EAST_MES		2024-05-21	418	Tyler Cole		Other	Tom Silvia	10:14:00	No	Loggerhead Shrike		No	Live Individ						0		0	Unk		-9999		1	0	1	Singing			32.70205	-115.218	32.70203	-115.218	667055	3619661	45433.67	I19 Sensit					SS-BIRD-3	45433	0.426389			
10379	8011	Bird	56	EAST_MES		2024-05-22	344	Thomas Sit		Tyler Cole		07:35:00	No	Loggerhead Shrike		Yes	Live Individ						0		0	Unk		-9999		0	0	0	Singing		Bird was ea	32.70386	-115.214	32.70376	-115.214	667385	3619867	45435.4	I19 Sensit					SS-BIRD-3	45434	0.315972			
10380	8014	Bird	56	EAST_MES		2024-05-22	344	Thomas Sit		Tyler Cole		08:00:00	No	Loggerhead Shrike		Yes	Live Individ						0		0	Unk		-9999		1	0	1	Perching		n-ew of my	32.70436	-115.213	32.70434	-115.213	667539	3619925	45435.4	I19 Sensit					SS-BIRD-3	45434	0.333333			
10381	8017	Bird	56	EAST_MES		2024-05-22	344	Thomas Sit		Tyler Cole		08:09:00	No	Black Tailed Gnatcatcher		No	Live Individ						0		0	Unk		-9999		2	0	2	Flying,Perc	birds were	The pair ca	32.70439	-115.215	32.77602	-115.568	667313	3619925	45435.4	I19 Sensit					SS-BIRD-3	45434	0.339583			
10377	8008	Bird	56	EAST_MES		2024-05-22	418	Tyler Cole		Other	Tom Silvia	11:02:00	No	Loggerhead Shrike		No	Live Individ						0		0	Unk		-9999		2	0	2	Flying,Sing			32.71312	-115.116	32.71312	-115.116	676593	3621054	45434.66	I19 Sensit					SS-BIRD-3	45434	0.459722			
10378	8008	Bird	56	EAST_MES		2024-05-22	418	Tyler Cole		Other	Tom Silvia	13:14:00	No	Loggerhead Shrike		No	Live Individ						0		0	Unk		-9999		1	0	1	Flying,Perc			32.71844	-115.167	32.71844	-115.167	671752	3621559	45434.66	I19 Sensit					SS-BIRD-3	45434	0.551389			
10382	8020	Mammal	56	EAST_MES		2024-05-22	344	Thomas Sit		Tyler Cole		15:15:00	No	Desert Kit Fox		Yes	Burrow,Di	Fresh soil a				0999		180	No		0	yes	1	0	0	0		fresh burro	32.72099	-115.177	32.77603	-115.568	670869	3621827	45435.4	I19 Sensit					SS-MAM-3	45434	0.635417			
10457	8209	Bird	56	EAST_MES		2024-09-09	339	Hattie Osw				10:38:00	No	Loggerhead Shrike		Yes	Live Individ						0		0	Unk		-9999		1	0	1	Flying,Perc		Flushed fro	32.7427	-115.203	32.74298	-115.203	668364	3624192	45544.61	I19 Sensit					SS-BIRD-3	45544	0.443056			
10456	8206	Reptile/Am	56	EAST_MES		2024-09-09	376	Jesse Good				08:49:00	No	Flat-tailed horned lizard		No	Live Individ				0		0	-9999	1	0	1	Restine					32.72234	-115.191	32.72235	-115.191	669545	3621954	45544.55	I19 Sensit					SS-REP-Ali	45544	0.367361			
10464	8227	Bird	56	EAST_MES		2024-09-11	376	Jesse Good				06:42:00	No	Loggerhead Shrike		No	Live Individ						0		0	Unk		-9999		1	0	1	Flying			32.7128	-115.198	32.71279	-115.198	668908	3620885	45548.54	I19 Sensit					SS-BIRD-3	45546	0.279167			
10460	8218	Bird	56	EAST_MES		2024-09-11	339	Hattie Osw				10:13:00	No	Black Tailed Gnatcatcher		Yes	Live Individ						0		0	Unk		-9999		0	0	0	Foraging		Foraging in	32.72586	-115.213	32.72596	-115.213	667461	3622209	45546.86	I19 Sensit					SS-BIRD-3	45546	0.425694			
10469	8239	Bird	56	EAST_MES		2024-09-12	339	Hattie Osw				10:21:00	No	Black Tailed Gnatcatcher		Yes	Live Individ						0		0	Unk		-9999		1	0	1	Foraging,C	calling whi		32.72254	-115.203	32.72253	-115.203	668424	3621957	45552.3	I19 Sensit					SS-BIRD-3	45547	0.43125			
10468	8242	Bird	56	EAST_MES		2024-09-13	339	Hattie Osw				10:30:00	No	Loggerhead Shrike		No	Live Individ						0		0	Unk		-9999		1	0	1	Perching,C	calling fron		32.7151	-115.155	32.71471	-115.154	672925	3621209	45552.3	I19 Sensit					SS-BIRD-3	45548	0.4375			
10465	8230	Reptile/Am	56	EAST_MES		2024-09-13	376	Jesse Good				09:38:00	No	Flat-tailed horned lizard		No	Live Individ				0		0	-9999	0	0	0	Restine					32.72925	-115.172	32.72922	-115.172	671302	3622750	45548.54	I19 Sensit					SS-REP-Ali	45548	0.401389			
10463	8230	Reptile/Am	56	EAST_MES		2024-09-13	376	Jesse Good				09:16:00	No	Flat-tailed horned lizard		Yes	Live Individ				0		0	-9999	1	0	1	Resting					32.72867	-115.169	32.72869	-115.169	671540	3622690	45548.54	I19 Sensit					SS-REP-Ali	45548	0.386111			

ObserverName*	ObserverContact*	SciName*
Lois Neff	lneff@ironwoodbio.com	Athene cunicularia
Lois Neff	lneff@ironwoodbio.com	Athene cunicularia
Lois Neff	lneff@ironwoodbio.com	Athene cunicularia
Lois Neff	lneff@ironwoodbio.com	Athene cunicularia
Marcy Bueno	mbueno@ironwoodbio.com	Athene cunicularia
Adam Walters	awalters@ironwoodbio.com	Buteo swainsoni
Lois Neff	lneff@ironwoodbio.com	Buteo swainsoni
Anthony Chasar	achaser@ironwoodbio.com	Lanius ludovicianus
Anthony Chasar	achaser@ironwoodbio.com	Lanius ludovicianus
Evan Tucker	etucker@ironwoodbio.com	Lanius ludovicianus
Joli Stavish	jstavish@ironwoodbio.com	Lanius ludovicianus
Kendra Gietzen	kgietzen@ironwoodbio.com	Lanius ludovicianus
Kendra Gietzen	kgietzen@ironwoodbio.com	Lanius ludovicianus
Leigh Rouse	lrouse@ironwoodbio.com	Lanius ludovicianus
Leigh Rouse	lrouse@ironwoodbio.com	Lanius ludovicianus
Leigh Rouse	lrouse@ironwoodbio.com	Lanius ludovicianus
Lois Neff	lneff@ironwoodbio.com	Lanius ludovicianus
Lois Neff	lneff@ironwoodbio.com	Lanius ludovicianus
Lois Neff	lneff@ironwoodbio.com	Lanius ludovicianus
Wendy Mcbride	wmcbride@ironwoodbio.com	Lanius ludovicianus
Evan Tucker	etucker@ironwoodbio.com	Phrynosoma mcallii
Jackie White	jwhite@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii

Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii

Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Jesse Goodyear	jgoodyear@ironwoodbio.com	Phrynosoma mcallii
Joli Stavish	jstavish@ironwoodbio.com	Phrynosoma mcallii
Kendra Gietzen	kgietzen@ironwoodbio.com	Phrynosoma mcallii
Kendra Gietzen	kgietzen@ironwoodbio.com	Phrynosoma mcallii
Kenny Bender	kbender@ironwoodbio.com	Phrynosoma mcallii
Leigh Rouse	lrouse@ironwoodbio.com	Phrynosoma mcallii
Leigh Rouse	lrouse@ironwoodbio.com	Phrynosoma mcallii
Leigh Rouse	lrouse@ironwoodbio.com	Phrynosoma mcallii
Lois Neff	lneff@ironwoodbio.com	Phrynosoma mcallii
Lois Neff	lneff@ironwoodbio.com	Phrynosoma mcallii
Lois Neff	lneff@ironwoodbio.com	Phrynosoma mcallii
Lois Neff	lneff@ironwoodbio.com	Phrynosoma mcallii
Marcy Bueno	mbueno@ironwoodbio.com	Phrynosoma mcallii
Marcy Bueno	mbueno@ironwoodbio.com	Phrynosoma mcallii
Marina Lavender	mlavender@ironwoodbio.com	Phrynosoma mcallii
Sadie Decurtis	sdecurtis@ironwoodbio.com	Phrynosoma mcallii
Sadie Decurtis	sdecurtis@ironwoodbio.com	Phrynosoma mcallii
Sadie Decurtis	sdecurtis@ironwoodbio.com	Phrynosoma mcallii
Tracy Ridlinghafer	tridlinghafer@ironwoodbio.com	Phrynosoma mcallii
Wendy Mcbride	wmcbride@ironwoodbio.com	Phrynosoma mcallii
Evan Tucker	etucker@ironwoodbio.com	Polioptila melanura
Kendra Gietzen	kgietzen@ironwoodbio.com	Polioptila melanura
Lois Neff	lneff@ironwoodbio.com	Polioptila melanura
Lois Neff	lneff@ironwoodbio.com	Polioptila melanura
Marcy Bueno	mbueno@ironwoodbio.com	Polioptila melanura
Marcy Bueno	mbueno@ironwoodbio.com	Polioptila melanura
Wendy Mcbride	wmcbride@ironwoodbio.com	Polioptila melanura
Wendy Mcbride	wmcbride@ironwoodbio.com	Polioptila melanura

ComName	SpFound(\	SpDetermine	ID_Confidence	**ObservationDate***
Burrowing Owl		Visual observation	Very confident	2023-03-29
Burrowing Owl		Visual observation	Very confident	2023-03-23
Burrowing Owl		Visual observation	Very confident	2023-03-25
Burrowing Owl		Visual observation	Very confident	2023-03-25
Burrowing Owl		Visual observation	Very confident	2023-03-23
Swainson's Hawk		Visual observation	Very confident	2023-03-21
Swainson's Hawk		Visual observation	Very confident	2023-03-25
Loggerhead Shrike		Visual observation	Very confident	2023-03-27
Loggerhead Shrike		Visual observation	Very confident	2023-03-27
Loggerhead Shrike		Visual observation	Very confident	2024-04-09
Loggerhead Shrike		Visual observation	Very confident	2024-04-15
Loggerhead Shrike		Visual observation	Very confident	2023-03-23
Loggerhead Shrike		Visual observation	Very confident	2023-03-22
Loggerhead Shrike		Visual observation	Very confident	2023-03-31
Loggerhead Shrike		Visual observation	Very confident	2023-03-30
Loggerhead Shrike		Visual observation	Very confident	2023-03-20
Loggerhead Shrike		Visual observation	Very confident	2023-04-01
Loggerhead Shrike		Visual observation	Very confident	2023-03-23
Loggerhead Shrike		Visual observation	Very confident	2023-03-21
Loggerhead Shrike		Visual observation	Very confident	2023-03-24
Flat-tailed horned lizard		Visual observation	Very confident	2024-04-10
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-12
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-14
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-13
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-16
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-14
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-21
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-21
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-12
Flat-tailed horned lizard		Visual observation	Very confident	2023-07-03
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-28
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-17
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-18
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-12
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-28
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-18
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-29
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-12
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-12

Flat-tailed horned lizard		Visual observation	Very confident	2023-06-19
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-12
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-26
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-27
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-23
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-21
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-23
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-14
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-23
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-23
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-23
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-23
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-23
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-23
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-21
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-20
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-16
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-16
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-14
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-14
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15

Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-16
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-14
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-16
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-20
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-13
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-16
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-20
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-12
Flat-tailed horned lizard		Visual observation	Very confident	2023-06-16
Flat-tailed horned lizard		Visual observation	Very confident	2024-04-15
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-21
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-04-26
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-27
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-27
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-27
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-31
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-28
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-25
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-28
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-28
Flat-tailed horned lizard		Visual observation	Very confident	2024-04-09
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-22
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-22
Flat-tailed horned lizard		Visual observation	Very confident	2023-05-22
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-24
Flat-tailed horned lizard		Visual observation	Very confident	2023-03-28
Black Tailed Gnatcatcher		Visual observation	Very confident	2024-04-09
Black Tailed Gnatcatcher		Visual observation	Very confident	2023-03-25
Black Tailed Gnatcatcher		Visual observation	Very confident	2023-04-01
Black Tailed Gnatcatcher		Visual observation	Very confident	2023-03-31
Black Tailed Gnatcatcher		Visual observation	Very confident	2023-03-30
Black Tailed Gnatcatcher		Visual observation	Very confident	2023-03-29
Black Tailed Gnatcatcher		Visual observation	Very confident	2023-03-30
Black Tailed Gnatcatcher		Visual observation	Very confident	2023-03-24

NumberObserved*	Phenology	Collection	AnimalAge	**AnimalSiteUse***	**AnimalBehavior***
1				Yes	Flying
1				Yes	Flying
1				Yes	Flying
1				Yes	Flying
1				Yes	Flying
5				Yes	Flying
1				Yes	Flying
1				Yes	Flying
2				Yes	Flying
2				Yes	Territorial/Combat
1				Yes	Perching
1				Yes	Perching
1				Yes	Perching
1				Yes	Perching
1				Yes	Perching
1				Yes	Flying;Perching
1				Yes	Flying;Perching
1				Yes	Perching
1				Yes	Flying
1				Yes	Singing
1				Yes	Resting
1				Yes	Resting
1				Yes	Basking
1				Yes	Basking
1				Yes	Basking
1				Yes	Basking
1				Yes	Basking
1				Yes	Basking
1				Yes	Basking
1				Yes	Basking
1				Yes	Basking
1				Yes	Basking
1				Yes	N/A
1				Yes	N/A
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting

1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting

1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
2				Yes	Resting
1				Yes	Resting;Basking
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting;Running
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Resting
1				Yes	Running
2				Yes	Perching
2				Yes	Perching
2				Yes	Flying;Foraging
1				Yes	Calling
1				Yes	Singing
1				Yes	Flying
1				Yes	Calling
1				Yes	Foraging

AnimalDetectionMethod*	LocationD	X_Coordinate*	Y_Coordinate*	Datum*	UTM_zone*
Seen		668292	3622803	WGS84	11N
Seen		671191	3622044	WGS84	11N
Seen		670465	3622113	WGS84	11N
Seen		670260	3622371	WGS84	11N
Seen		673213	3621856	WGS84	11N
Seen		674803	3622271	WGS84	11N
Seen		670253	3622409	WGS84	11N
Seen		669225	3621079	WGS84	11N
Seen		669113	3620987	WGS84	11N
Seen		671061	3620904	WGS84	11N
Seen		672046	3621965	WGS84	11N
Seen		671923	3622222	WGS84	11N
Seen		673132	3622398	WGS84	11N
Seen		667348	3622170	WGS84	11N
Seen		667425	3622087	WGS84	11N
Seen		675448	3620944	WGS84	11N
Seen		668390	3619826	WGS84	11N
Seen		675624	3620611	WGS84	11N
Seen		674285	3621208	WGS84	11N
Seen		666799	3623923	WGS84	11N
Seen		677700	3620957	WGS84	11N
Seen		671010	3623154	WGS84	11N
Seen		671525	3623217	WGS84	11N
Seen		670867	3621743	WGS84	11N
Seen		670441	3622770	WGS84	11N
Seen		672792	3622845	WGS84	11N
Seen		670470	3622871	WGS84	11N
Seen		670223	3622997	WGS84	11N
Seen		670994	3623251	WGS84	11N
Seen		669391	3623586	WGS84	11N
Seen		669489	3623641	WGS84	11N
Seen		671798	3622862	WGS84	11N
Seen		669858	3623569	WGS84	11N
Seen		668339	3621517	WGS84	11N
Seen		674590	3621770	WGS84	11N
Seen		674046	3621994	WGS84	11N
Seen		671191	3622277	WGS84	11N
Seen		668360	3622338	WGS84	11N
Seen		672928	3622353	WGS84	11N
Seen		674021	3622408	WGS84	11N
Seen		667360	3622490	WGS84	11N
Seen		672343	3622537	WGS84	11N
Seen		672955	3622728	WGS84	11N
Seen		671903	3622787	WGS84	11N
Seen		671729	3622925	WGS84	11N

Seen		670074	3623057	WGS84	11N
Seen		671777	3623235	WGS84	11N
Seen		667757	3623549	WGS84	11N
Seen		667133	3623950	WGS84	11N
Seen		673229	3621553	WGS84	11N
Seen		672807	3622067	WGS84	11N
Seen		672927	3622231	WGS84	11N
Seen		669388	3622252	WGS84	11N
Seen		672808	3622312	WGS84	11N
Seen		673322	3622314	WGS84	11N
Seen		672408	3622333	WGS84	11N
Seen		672924	3622348	WGS84	11N
Seen		672946	3622356	WGS84	11N
Seen		670831	3622367	WGS84	11N
Seen		672937	3622421	WGS84	11N
Seen		672864	3622436	WGS84	11N
Seen		673236	3622438	WGS84	11N
Seen		673239	3622452	WGS84	11N
Seen		673283	3622457	WGS84	11N
Seen		672997	3622485	WGS84	11N
Seen		672969	3622507	WGS84	11N
Seen		672431	3622523	WGS84	11N
Seen		673255	3622539	WGS84	11N
Seen		672935	3622568	WGS84	11N
Seen		672446	3622574	WGS84	11N
Seen		673284	3622582	WGS84	11N
Seen		672865	3622598	WGS84	11N
Seen		672390	3622651	WGS84	11N
Seen		672949	3622683	WGS84	11N
Seen		673259	3622700	WGS84	11N
Seen		672399	3622801	WGS84	11N
Seen		672421	3622891	WGS84	11N
Seen		672434	3622896	WGS84	11N
Seen		670437	3622914	WGS84	11N
Seen		669415	3623048	WGS84	11N
Seen		672326	3623067	WGS84	11N
Seen		670564	3623179	WGS84	11N
Seen		669709	3623227	WGS84	11N
Seen		670464	3623255	WGS84	11N
Seen		670321	3623288	WGS84	11N
Seen		670321	3623294	WGS84	11N
Seen		670519	3623295	WGS84	11N
Seen		671001	3623379	WGS84	11N
Seen		670455	3623379	WGS84	11N
Seen		671037	3623414	WGS84	11N
Seen		670440	3623426	WGS84	11N
Seen		670571	3623436	WGS84	11N

Seen		670494	3623455	WGS84	11N
Seen		670246	3623494	WGS84	11N
Seen		670995	3623504	WGS84	11N
Seen		670517	3623504	WGS84	11N
Seen		670276	3623546	WGS84	11N
Seen		669626	3623667	WGS84	11N
Seen		670440	3623673	WGS84	11N
Seen		669818	3623705	WGS84	11N
Seen		670259	3623770	WGS84	11N
Seen		669682	3623821	WGS84	11N
Seen		671133	3622235	WGS84	11N
Seen		670309	3623627	WGS84	11N
Seen		672398	3621211	WGS84	11N
Seen		677694	3620942	WGS84	11N
Seen		669777	3621074	WGS84	11N
Seen		669764	3622843	WGS84	11N
Seen		669758	3623788	WGS84	11N
Seen		670062	3623547	WGS84	11N
Seen		669855	3623853	WGS84	11N
Seen		668395	3621410	WGS84	11N
Seen		669142	3622142	WGS84	11N
Seen		670538	3623723	WGS84	11N
Seen		670547	3623749	WGS84	11N
Seen		668872	3623553	WGS84	11N
Seen		669236	3624204	WGS84	11N
Seen		671703	3621537	WGS84	11N
Seen		673774	3622160	WGS84	11N
Seen		673788	3622296	WGS84	11N
Seen		673705	3622482	WGS84	11N
Seen		671049	3623345	WGS84	11N
Seen		668920	3623753	WGS84	11N
Seen		671060	3620904	WGS84	11N
Seen		670174	3620894	WGS84	11N
Seen		668495	3619935	WGS84	11N
Seen		668267	3620781	WGS84	11N
Seen		667260	3624511	WGS84	11N
Seen		668258	3623375	WGS84	11N
Seen		667487	3623113	WGS84	11N
Seen		667125	3623979	WGS84	11N

CoordSource*	CoordAccu	**SurveyEffort***	Habitat	SiteQualit	LandUse	Disturban	Threats
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					

GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					

GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					
GPS		Preconstruction survey					

Landowne	Comments	Other
	flushed owl	
	Owl flew out while conducting survey.	
	Migrating	
	Mobbing a raven; seen feeding chicks in nearby tree	
	perched in prosopis	
	With scat and tracks. Found buried in sand after following tracks	
	Fthl found basking outside of small burrow	
	FTHL was found sleeping in a small burrow near the base of a creosote	
	Followed tracks to individual resting near the base of creosote	
	Resting in the shade of a creosote	
	Tracks followed to FTHL buried in sand less than 5m from second individual	
	Chicken scratch tracks found near ant pile, tracks to lizard on creosote mound.	
	Tracks followed to sleeping fthl; buried in sand	
	Tracks scat and live individual found	

	Tracks found near any pile followed to juvenile FTHL buried in the sand	
	Fthl found buried in the sand	
	Tracks followed to FTHL sleeping partially buried in sand	
	Tracks followed to FTHL sleeping in sand	
	Tracks followed to FTHL on creosote	
	Tracks followed to FTHL sleeping in sand	
	Adult lizard found resting in sand on creosote mound	
	Tracks followed to fthl fully submerged in sand	
	Tracks led up a creosote mound to a FTHL resting exposed on sand	
	Tracks led to lizard sleeping in the shade	
	Tracks followed to FTHL sleeping in the sand	
	Tracks followed to juvenile FTHL	
	Tracks followed to juvenile FTHL sleeping in the sand	
	FTHL tracks led to creosote mound and lizard found sleeping in the sand	
	Tracks followed to FTHL sleeping on top of sand	
	Tracks followed to horned lizard completely buried in the sand	
	Tracks followed to sleeping fthl	
	Tracks followed to fthl sleeping buried in sand	
	Tracks followed to FTHL buried in the sand with only head exposed	

	An adult and juvenile found resting in the shade together	
	gravelly substrate	

Attachment B.4 Assessment Yuma Ridgway's Rail and Black Rail

July 15, 2025

United States Fish and Wildlife Service
California Department of Fish & Wildlife
Bureau of Land Management

Re: Supplemental Memo Report for Yuma Ridgway's Rail and California Black Rail Presence Absence Survey Results for the Proposed Perkins Renewable Energy Project, Holtville, Imperial County, California.

INTRODUCTION AND BACKGROUND

Blackhawk Environmental Inc. (Blackhawk) was contracted through Ironwood Consulting, Inc. (Ironwood), on behalf of Intersect Power, to complete supplemental protocol presence/absence surveys for Yuma Ridgway's rail (*Rallus obsoletus yumanensis*) and California black rail (*Laterallus jamaicensis coturniculus*) during the during the 2025 breeding season (March 1 to May 15) in potentially suitable rail habitat within 500 feet of the proposed Perkins Renewable Energy Project (formerly East Mesa Renewable Energy Project; Project). The Project is located adjacent to the All American Canal (AAC), approximately 1.3-miles north of the Mexican border and approximately 0.4 miles south of State Route 98 (SR-98) in eastern Imperial County, within USGS *Midway Well NW* 7.5-minute topographic quadrangle (Attachment A – Figures 1 and 2). Proposed project development areas include approximately 6,255 acres on Bureau of Land Management-managed land, 962.8 acres on Bureau of Reclamation- managed land, and 515.1 acres of privately owned land. This memo report is a supplement to the Biological Resource Technical Report for the Project.

The Yuma Ridgway's rail (YRRA) is listed as endangered under both the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) and is listed as a "fully-protected species" by the California Department of Fish & Wildlife (CDFW). The California black rail (BLRA) is listed as threatened under the CESA and is listed as a "fully protected species" by the CDFW; however, this species has no listing status under the FESA. These species are collectively referred to as "rails" in this report. A 15-Day Notification was submitted to the California Department of Fish and Wildlife, Sacramento and the Carlsbad Fish and Wildlife Office on February 21, 2025.

The proposed Project involves Installation of a photovoltaic solar array ("Project Development Areas") with upgrades and connections to nearby transmission lines to the south of the solar field ("Transmission Corridor"). The protocol rail surveys summarized herein were conducted to determine the presence of YRRA and BLRA on, or adjacent to, the Project. The surveys assessed all proposed Project Development Areas and the Transmission Corridor. To account for potential indirect impacts, the Survey Area included an additional 500-foot Survey Buffer beyond all proposed Project features (Attachment A – Figures 3A, 3B and 4). The Project Development Area, Transmission Line Corridor, and 500-foot Survey Buffer are collectively referred to herein as the Survey Area unless described otherwise.

Permitted biologist, Ryan Quilley (TE-92462A-3), holding a USFWS 10(a)1(a) permit for Yuma Ridgway's rail and CDFW MOU for Yuma Ridgway's rail and California black rail, conducted the habitat

assessment survey and all protocol presence/absence surveys assisted by trainees: Desiree Johnson, Hayley Milner, and Tony Chasar. Due to the expansive size of the proposed Project, the initial habitat assessment for Yuma Ridgway's rail and California black rail habitat suitability was conducted through detailed review of recent, high-resolution aerial imagery. Locations within the Project area that showed potentially suitable vegetation (e.g., cattails, bullrush, wetlands etc.) and/or inundated or ponded areas were marked as potentially suitable and assessed directly in the field and ground-truthed (Attachment A – Figure 3A and 3B). There is no suitable rail habitat within the Project Development Areas and the proposed Transmission Corridor (Attachment A – Figure 3B). A total of 2.17 acres of moderate-quality California black rail and low-quality Yuma Ridgway's rail habitat within the 500-foot buffer of the Survey Area was documented during the habitat assessment. Details of the habitat assessment are detailed in the methods and results sections below.

A total of three individual BLRA detections and one pair of YRRA detections were documented during presence/absence surveys. All rail detections were outside of the 500-foot buffer of the Survey Area and described further in the results section below.

SPECIES ACCOUNT

Yuma Ridgway's Rail

Habitat for YRRA varies seasonally depending on habitat types, prey availability, and other factors (Conway et al. 1993). However, a low to moderate water depth (less than one foot), low stem density, and lack of residual vegetation are consistent factors in preferred rail breeding habitat (Conway et al. 1993, Gould 1975). While emergent marsh dominated by southern cattail (*Typha domingensis*)or California bulrush (*Schoenoplectus acutus*) is the preferred habitat of the species, other communities observed to support Ridgway's rails as wintering or post-breeding habitat include fringe riparian bands and disturbed riparian areas dominated by tamarisk (Gould 1975, Eddleman 1989) , and other disturbed riparian habitats ranging from agriculture, developments, and areas with invasive species (Conway and Harrity 2020). Open channels or small patches of open water (less than 0.5 acre) are also consistent factors in high rail densities along the Colorado River (Gould 1975). Similarly important are strips of high ground or islands that allow for movement through the marsh (Gould 1975). Additional factors in suitable habitat include the apparent prey abundance, which can consist of nearly 95% crayfish (Ohmarrt and Tomlinson 1977). As marsh habitat matures, habitat quality for Yuma Ridgway's rail is reduced due to an increase in stem density and thatching, which are prohibitive of movement through the marsh (Conway et al. 1993, Hinojosa-Huerta et al. 2008). An increase in thatching of marsh vegetation can also reduce foraging potential and reduce overall habitat quality (Hinojosa-Huerta et al. 2008).

California Black Rail

Preferred breeding habitats for BLRA include moist to shallow surface water (optimally with an inch or less of water, but up to four inches) subject to minimal water level fluctuations, with gently sloping shorelines in dense marsh vegetation (Repking and Ohmart 1977). The dual characteristics of water depths under four inches and minimal water level fluctuations appear to be the primary factors in black rail suitability, rather than that of vegetation composition (Conway and Sulzman 2007). Because black rail habitat is largely contingent on water depth, the resulting habitat vegetation mosaic is commonly associated with a small group of plant species associated with transitional habitat between emergent marsh and upland habitat; this habitat is most commonly associated with the presence of common threesquare (*Schoenoplectus pungens*). Secondary species where black rails are detected commonly include arrowweed, Fremont cottonwood and mulefat (*Baccharis salicifolia*). Other noted plant associates include saltgrass (*Distichlis spicata*), southern cattail and California bulrush, with the latter often conditional on the water depth not becoming too deep (Conway and Sulzman 2007). The presence of tamarisk does not appear to negatively impact habitat suitability, provided that habitat patches are not dominated entirely by tamarisk (greater than 67-percent) (Conway and Sulzman 2007). Additionally, there appears to be a correlation between black rail detections and habitats not dominated by a single plant species or open water (Conway and Sulzman 2007).

METHODS

Habitat Assessment

On February 28, 2025, permitted biologist Ryan Quilley, visited the Project site and completed a breeding habitat assessment of all potentially suitable habitats that may provide the necessary ecological requirements for breeding Yuma Ridgway's rail and California black rail. The habitat assessment included all potentially suitable portions of the Project, as determined by high-resolution imagery, previous vegetation community mapping and personal knowledge of the area, and included a 500-foot Survey Buffer (Attachment 1 – Figure 3A). Project areas were surveyed on foot, with the use of binoculars where necessary. All potential wetland habitats and densely vegetated areas visible on high-definition aerial imagery were ground-truthed to determine if specific habitat requirements were present for YRRA and BLRA (Attachment 1 – Figure 3A). Factors including habitat patch size, water level, soil moisture, vegetation composition and density, slope, and thatch density were evaluated as part of the habitat assessment. The date and conditions of the habitat assessment are included in Table 1.

Table 1. Habitat assessment Conditions

Biologist	Date	Time	Air Temperature (°F)	Wind Speed (mph)	Skies	Precipitation
Ryan Quilley, Anthony Chasar (trainee)	2/28/2025	09:48 – 13:00	75 – 82	2 – 5	Mostly Sunny	None

Due to the high variability in seasonal habitat requirements for YRRA, habitat suitability was generally weighted toward the common factors of water depth, habitat structure and dominant vegetation. Within the Survey Area all habitat exhibiting saturated soil conditions to water depths up to two feet in depth, in combination with appropriate vegetation compositions (emergent marsh, and riparian areas) were considered suitable. Conversely, upland areas, mapped riparian areas which lacked surface soil moisture, or large expanses (greater than 0.5 acre) of open water were considered unsuitable for Ridgway's rail. Additional areas excluded from suitable habitat included bare ground/upland areas maintained adjacent to the AAC, as well as the steep banks of the AAC (in excess of 1:1 slope) which were fringed by a thin, but very thick band of phragmites (*Phragmites australis*) and rapidly transitioned to open water depths in excess of six feet within the channel. Similar habitat with thick vegetation of phragmites and deep water has also been excluded in recent studies in Imperial County and deemed unsuitable (Conway and Sliwa 2022); however, following discussions with USFWS, CDFW, BOR and BLM, the steep banks of the AAC were ultimately included as part of the Survey Area out of an abundance of caution.

Habitat requirements for BLRA were similarly evaluated with primary considerations including water depth and vegetation composition. Within the Survey Area, all habitats described above which were considered suitable for YRRA were also considered suitable for BLRA. Habitat considered suitable for YRRA which may not support BLRA included areas of apparently monotypic emergent marsh habitats (giant reed, phragmites, and cattail) and areas where thatch was greater than 1-foot in height. However, due to localized variability in vegetation structure within larger patches of habitat, combined with limited direct visual access to surface water conditions and understory vegetation communities, all habitat meeting criteria for either rail species was collectively mapped for both rail species, and considered "suitable habitat" shown on Figures 3B and 4. Representative photographs of suitable habitat as well as habitat deemed unsuitable are provided in Attachment B.

Establishing Survey Listening and Call Stations

Following the habitat assessment, listening and call stations (i.e. Survey Stations) were established adjacent to suitable habitat. Per the guidelines provided in the U.S. Fish and Wildlife Service (USFWS) *Yuma Ridgway's Rail Survey Protocol for Project Evaluation* (USFWS Protocol; 2017) Survey Stations must be established no less than 150 meters apart and no more than 200 meters apart. Each Survey Station was situated so that all suitable habitat areas within the Survey Area were effectively covered by a 200-meter radius circular plot. A total of six Survey Stations were established to cover all potentially suitable habitat. The Survey Stations were positioned at the fringes of suitable habitat and upland interface to prevent intrusion into suitable habitat and was oriented in such a way as to focus listening and call broadcast on areas likely to support target rail species. The final locations of Survey Stations established for this effort are shown on Attachment A – Figures 3B and 4, and summarized within Table 2 below:

Table 2. Call Station Locations

Station #	Within Transmission Corridor	Within 500-ft Buffer
1	-	Yes
2	-	Yes
3	Yes	
4	Yes	
5	Yes	
6	-	Yes

Presence/Absence Surveys

Presence/absence surveys for rail species were generally performed through a series of six survey passes conducted between March 1 and May 15, 2024. For Survey Stations 1 and 2, one survey pass was performed during each of the five survey windows as described in the USFWS Protocol, with two surveys occurring during the fifth survey window. A survey "pass" was considered complete following completion of listening and call broadcast at each established Survey Station within a given survey window. All surveys were performed during suitable weather conditions with temperatures of 50° Fahrenheit (F°) or above and wind speeds less than 10 miles per hour (mph). Morning surveys were performed beginning at sunrise and extended no more than three hours after sunrise. Evening surveys were performed beginning no more than two hours before sunset and extended a maximum of 30 minutes after sunset. The complete survey effort included at least one morning and one evening survey at each Survey Station.

During discussions with USFWS and CDFW on March 27, 2025, USFWS requested that the narrow band of phragmites along the steep banks of the AAC be included as part of the Survey Area, despite being considered unsuitable by the permitted rail biologist. The request by USFWS to include additional areas as part of the protocol survey occurred at the end of Survey Window 2, therefore, USFWS and CDFW concurred with a survey modification for the additional four Survey Stations (Stations 3 – 6). The survey modification allowed six surveys to be conducted during Survey Windows 3 – 5 (April 1 – May 15) at Survey Stations 3 – 6. The complete dates, times, and conditions for each survey pass are included in Table 3.

During each survey pass, listening and call broadcast periods were performed at each Survey Station. The listening and call broadcast period at each station followed USFWS Protocol, beginning initially with a five-minute passive detection/listening period to detect rails spontaneously calling within the Survey Area. The USFWS Protocol was adapted for the Project surveys to include broadcast of black rail calls. Following the initial five-minute passive listening period, a series of four California black rail broadcasts was performed, after which a series of four YRRA broadcasts was performed. Each period of call broadcast was followed by approximately one minute of silent listening to detect responses to the

calls. The total survey time at each Survey Station included approximately 13 to 14 minutes of listening and call broadcasts. If either a black rail or Ridgway rail call was detected during a survey period at the Survey Station, call broadcasts for the respective species was suspended until the following Survey Station. Following initial detection of calling rails, surveys continued for the remaining duration of the 13 to 14-minute survey period at each Survey Station to allow for continued listening periods and detections.

All rail detections were recorded on standardized data forms adapted from the *National Marsh Bird Monitoring Program* and are included in Attachment C. As rails were detected, each detection was assigned a unique identifying number corresponding to the species and number of detections during the survey pass (e.g., YRRA-1, YRRA-2). If pairs of rails were detected, the identification number was made using an alpha code following the identification number (e.g., YRRA-1A and YRRA-1B would indicate a single pair of rails). Following each survey period at a Survey Station, all rail detections were mapped directly into the Collector mobile Geographic Information Service (GIS) application by ESRI ArcGIS. Rails were mapped and attributed in Collector using unique identification numbers corresponding to the identification numbers on data forms for tracking. If a pair of rails detected, only a single point was recorded and attributed to indicate whether the point represented a pair or individual. All avian species incidentally detected during surveys are recorded in Attachment D.

Table 3. Survey Conditions

Survey Window	Survey Pass (Stations 1-2)	Survey Pass (Station 3-6)	Survey Dates	Biologists	Station Numbers	Start Time	Start Temp (°F)	Start Wind (mph)	Start Skies	End Time	End Temp (°F)	End Wind (mph)	End Skies
March 1 to March 15	1	NA	3/10/25	Ryan Quilley Hayley Milner (trainee)	1, 2	07:39	50	1	sunny	08:45	58	1-3	sunny
March 16 to March 31	2	NA	3/21/25	Ryan Quilley Desiree Johnson (trainee)	1, 2	07:55	58	2	sunny	09:23	69	0-1	sunny
April 1 to April 15	3	1	4/11/25	Ryan Quilley Desiree Johnson (trainee)	1 – 6	07:07	65	0-1	sunny	09:20	88	0	sunny
April 16 to April 30	4	2	4/21/25	Ryan Quilley Tony Chasar (trainee)	1 – 6	18:22	87	2-5	sunny	20:04	73	4-9	sunny
	NA	3	4/25/25	Ryan Quilley Desiree Johnson (trainee)	3 – 6	07:05	61	3-7	sunny	08:56	68	8-10	sunny
May 1 to May 15	5	4	5/2/25	Ryan Quilley Tony Chasar (trainee)	1 – 6	07:02	68	0-1	sunny	08:46	73	4-6	sunny
	NA	5	5/8/25	Ryan Quilley Travis Cooper (trainee)	3 – 6	07:12	70	0	sunny	08:39	77	1-3	sunny
	6	6	5/14/25	Ryan Quilley Tony Chasar (trainee)	1 – 6	18:	87	3-5	sunny	20:01	79	0	sunny

RESULTS

Habitat assessment

A total of ten locations within the Survey Area were evaluated (Attachment A – Figure 3A). Eight of these locations were found to lack conditions required for breeding YRRA and BLRA; and included Sonoran desert creosote bush scrub, mesquite thickets, tamarisk thickets, alkali goldenbrush desert scrub, and arrowweed Scrub. The aforementioned habitat types lacked surface water or moist soils, and did not contain hydrophytic plant species such as cattail, California bulrush, common threesquare, spikerush, rushes, etc., that are indicators of potentially suitable habitat for both rail species and indicate consistently wet or inundated soils. Additionally, the steep banks of the AAC (in excess of 1:1 slope) which were fringed by a thin, but very thick band of phragmites, and rapidly transitioned to open water depths in excess of six to ten feet within the AAC channel were considered unsuitable for both rail species; however, per the request of USFWS and CDFW on March 27, 2025, this narrow band of phragmites along the steep banks of the AAC was included as part of the Survey Area and resulted in an additional four Survey Stations.

Two locations were located along western edge of the Survey Area, approximately 100 feet from the Transmission Corridor within its 500-ft buffer, where it parallels the AAC, were determined to have suitable habitat for both rail species (Attachment A – Figures 3B and 4). These habitat patches consisted of a mixture of southern cattail (*Typha domingensis*), common threesquare (*Schoenoplectus pungens*), with an understory of dormant spike rush (*Eleocharis* sp.) and fringed by salt cedar (*Tamarix* sp.), and arrowweed (*Pluchea sericea*) with occasional California fan palm (*Washingtonia filifera*). The northern habitat patch totaled 1.05 acres of suitable habitat within the 500-ft buffer of the transmission corridor and connects to expansive suitable habitat to the west, beyond the Survey Area, that was not mapped during the Habitat assessment (Attachment A – Figure 3B). The southern habitat patch (Attachment A – Figure 3B) totaled 1.12 acres of suitable habitat and also connected to expansive suitable rail habitat to the west, beyond the Survey Area. Both of these locations were found to have moist or saturated soils, but lacked any surface water at the time of the habitat assessment. Typically, YRRA are known to prefer standing water within their breeding territories, therefore these two habitat patches were considered low-quality for YRRA breeding, but moderate-quality for foraging. As BLRA are known to use saturated soils and don't necessarily require inundation, these two areas were considered moderate-quality for BLRA breeding and moderate-quality for foraging. Furthermore, wetland communities along this portion of the AAC are known to be a result of water leaching from the canal and therefore are subject to seasonal and anthropogenic variations throughout the year. There is potential for these areas to become seasonally inundated during subsequent breeding seasons and therefore may provide more preferable breeding habitat for YRRA.

All habitat meeting criteria for suitability was considered "YRRA/BLRA Suitable Breeding Habitat", mapped, and shown on Attachment A – Figures 3B and 4. Representative photographs of suitable habitat associated with each station are provided in Attachment B – Photograph Pages.

Yuma Ridgway's Rail Detections

A single detection of Yuma Ridgway's rail was made during protocol presence/absence surveys for the Perkins Renewable Energy Project (Attachment A – Figure 4) outside the 500-ft buffer. A pair of Yuma Ridgway's rails were detected on Pass 6 from Survey Station 2 on May 14, 2025 in response to the "kek burr" call broadcast at the end of the survey period. The detection consisted of the "duet" call which is a series of overlapping "clatters", primarily used by a breeding pair of YRRA. The approximate location of this duetting pair was outside of the 500-foot Survey Area and approximately 740 feet west of the Survey Area (1240 feet from the Transmission Corridor). The pair was heard in a location of dense cattail marsh in significantly higher-quality habitat than that documented within the Project Survey Area. It is presumed that this area of cattail marsh contains standing water and therefore is preferrable for breeding YRRA, versus the habitat adjacent to Survey Station 2 evaluated within the Project Survey Area, that lacked standing water at the time of the habitat assessment. No other YRRA were detected during the six survey passes.

California Black Rail Detections

A total of three distinct California black rail detections were made during the six survey passes (Attachment A – Figure 4). A single BLRA was detected on Survey Pass 1 and 2 northwest of Survey Station 1 on March 10 and March 21, 2025. The third BLRA detection was made during Survey Pass 6, southwest of Survey Station 2, on May 14, 2025. California black rail detections adjacent to Survey Station 1 consisted of the more common "kicker" call and are generally accepted to be a male call. The detection adjacent to Survey Station 2, during Survey Pass 6, consisted of the more uncommon "growl" call, heard several times during the listening period. This call can often be made by an agitated female and may indicate nesting.

All the California black rail detections were outside of the 500-foot Survey Area (Attachment A, Figure 4):

- Survey Pass 1, Survey Station 1: 25 feet west of Survey Area (525 feet from Transmission Corridor)
- Survey Pass 2, Survey Station 1: 170 feet west of Survey Area (670 feet from Transmission Corridor)
- Survey Pass 6, Survey Station 2: 195 feet west of Survey Area (695 feet from Transmission Corridor)

Habitat in which BLRA were detected was similar to that described in the habitat assessment section above and consisted of narrow bands of cattail marsh, often with central portions dominated by common threesquare and fringed by dense to open arrowweed scrub with tamarisk interspersed. These areas do not appear to contain standing water; however, they were not evaluated on foot during the Habitat assessment, as they are beyond the Survey Area. The areas occupied by BLRA share connectivity with more expansive, suitable habitat to the west of the Survey Area described above in the habitat assessment section.

Complete survey data forms are included in Attachment C. Detections are summarized by Survey Pass in Table 3 below.

Other Special-Status Species – Incidental Observations

During protocol surveys, incidental observations of non-target avian species were recorded and are listed in Attachment D. Two special-status avian species were observed during surveys. The state-endangered Gila woodpecker was observed at 32.707674, -115.218772. This species was initially observed on April 21, 2025 and on subsequent surveys as the surveyors accessed the site at the AAC Drop 4. An adult Gila woodpecker pair was observed utilizing the irrigated courtyard and planted trees associated with several buildings on the north side of the AAC, outside Project site boundaries (Figure 5). Due to consistent observations of this pair during the breeding season and presence of suitable nesting habitat, this pair is likely nesting within the vicinity of Drop 4. This pair was observed 0.73 miles west of the nearest Project site features and were not observed associated with any habitat within the proposed Project boundary or survey buffers.

A lone male Yellow Warbler (CDFW Species of Special Concern) was observed foraging along the AAC on May 2, 2025 within the Survey Area at approximately 32.705084, -115.201955 (Figure 5). This male appeared to be foraging and likely moving through.

Table 4. Summary of Rail Detections

Survey Window	Survey Pass Number	Yuma Ridgway's Rail Detections		California Black Rail Detections	
		Individuals	Pair	Individuals	Pair
March 1 to March 15	1	0	0	1 (outside 500-ft buffer, near Station 1)	0
March 16 to March 31	2	0	0	1 (outside 500-ft buffer, near Station 1)	0
April 1 to April 15	3	0	0	0	0
April 16 to April 30	4	0	0	0	0
May 1 to May 15	5	0	0	0	0
	6	0	1 (outside 500-ft buffer, near Station 2)	1 (outside 500-ft buffer, near Station 2)	0
	Total	**0**	**1**	**3**	**0**

DISCUSSION

Yuma Ridgway's Rail

Yuma Ridgway's rails were not observed utilizing suitable habitat within the Survey Area at any point during protocol surveys (Attachment A – Figure 4). A single pair of Yuma Ridgway's rails were detected well outside the Survey Area, nearest to Survey Station 2.. Due to the lack of surface water observed during the habitat assessment, potentially suitable habitat identified within the Survey Area was considered low-quality and unlikely to support a breeding pair of YRRA; however, the emergent and freshwater cattail marsh portions of the Survey Area adjacent to Survey Stations 1 and 2, may provide suitable upland foraging areas for YRRA. In addition, during subsequent years where heavier precipitation occurs, and/or the AAC water levels are kept higher, there is potential for this area to become inundated and provide breeding habitat for YRRA. No suitable YRRA breeding habitat exists within the Transmission Corridor or Project Development Areas.

California Black Rail

California black rails were not observed utilizing suitable habitat within the Survey Area at any point during protocol surveys (Attachment A – Figure 4). A total of three individual California black rails were detected outside the Survey Area, nearest to Survey Stations 1 and 2... Moderate-quality breeding and foraging habitat exists within the Survey Area and this habitat is likely used seasonally by BLRA; however, more expansive and higher-quality habitat exists to the west of the Survey Area (Survey Stations 1 and 2). No suitable BLRA breeding habitat exists within the Transmission Corridor or Project Development Areas.

CONCLUSION

USFWS protocol presence/absence surveys for the federally endangered Yuma Ridgway's rail and the state-threatened California black rail were conducted by Blackhawk during the 2025 breeding season (March 1 to May 15). A Project-wide habitat assessment was conducted prior to protocol surveys and determined that approximately 2.17 acres of potentially suitable rail breeding habitat occurred within the 500-ft buffer of the Survey Area. The permitted biologist determined these areas to be low-quality for YRRA and moderate-quality for BLRA due to the presence of saturated soils and appropriate vegetation, but lacking any standing water preferred by YRRA. No potentially suitable YRRA or BLRA breeding or foraging habitat occurs within the Transmission Corridor or Project Development Areas (Attachment A – Figures 3B and 4).

During protocol surveys, neither YRRA nor BLRA were observed using the mapped suitable habitat within the Project Survey Area associated with Survey Stations 1 and 2 but instead were observed to the west of the Survey Area in higher-quality habitat consisting of more expansive and presumable inundated cattail marsh and arrowweed scrub. Due the geographical connectivity of potentially

suitable habitat and per observed conditions within the 500-ft buffer of the transmission corridor (adjacent to Survey Stations 1 and 2) to higher-quality habitat west of the Survey Area, there is potential for YRRA to utilize the 500-ft buffer of the transmission corridor for upland foraging only and there is potential for BLRA to utilize habitat within the 500-ft buffer of the transmission corridor near Survey Stations 1 and 2 for breeding and foraging.

SURVEYOR CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represents my work. If you have any questions regarding this report, please feel free to call me at 610-804-8916 or e-mail me at ryanq@blackhawkenv.com, and I will address all questions and concerns.

Sincerely,

Ryan Quilley
Senior Biologist
USFWS Permit TE-92462A-3
June 9, 2025

ATTACHMENTS

A: Figures

B: Photograph Pages

C: Data Forms

D: Observed Avian Species List

REFERENCES

Conway, C.J., W.R. Eddleman, S.H. Anderson, and L.R. Hanebury. 1993. Seasonal changes in Yuma clapper rail vocalization rate and habitat use. Journal of Wildlife Management 57:282–290.

Courtney J. Conway and Christina Sulzman. 2007. Status and habitat use of the California black rail in the southwestern USA. Wetlands 27:4:pp 987, 992–998.

Courtney J. Conway and Eamon J. Harrity. 2020. Satellite transmitters reveal previously unknown migratory behavior and wintering locations of Yuma Ridgway's rails. Journal Field Ornithology, 0(0):1-13, July 2020.

Courtney J. Conway and Kathryn M. Sliwa. 2022. Distribution and occupancy of Yuma Ridgway's rails within proposed geothermal development areas in Imperial Valley, California. Submitted to Jacobs Engineering Group. September 7, 2022. https://efiling.energy.ca.gov/GetDocument.aspx?tn=251679&DocumentContentId=86579

Eddleman, W.R. 1989. Biology of the Yuma Clapper Rail in the southwestern United States and northwestern Mexico. Report. U.S. Bureau of Reclamation. Yuma, Arizona.

Gould, G. 1975. Yuma clapper rail study - censuses and distribution. Wildlife Management Report 75-2. California Department of Fish and Game. Sacramento, California.

Hinojosa-Huerta, O., J.J. Rivera-Diaz, H. Iturribarria-Rojas, and A. Calvo-Fonseca. 2008. Population trends of the Yuma clapper rails in the Colorado River Delta, Mexico. Studies in Avian Biology 37:69–73.

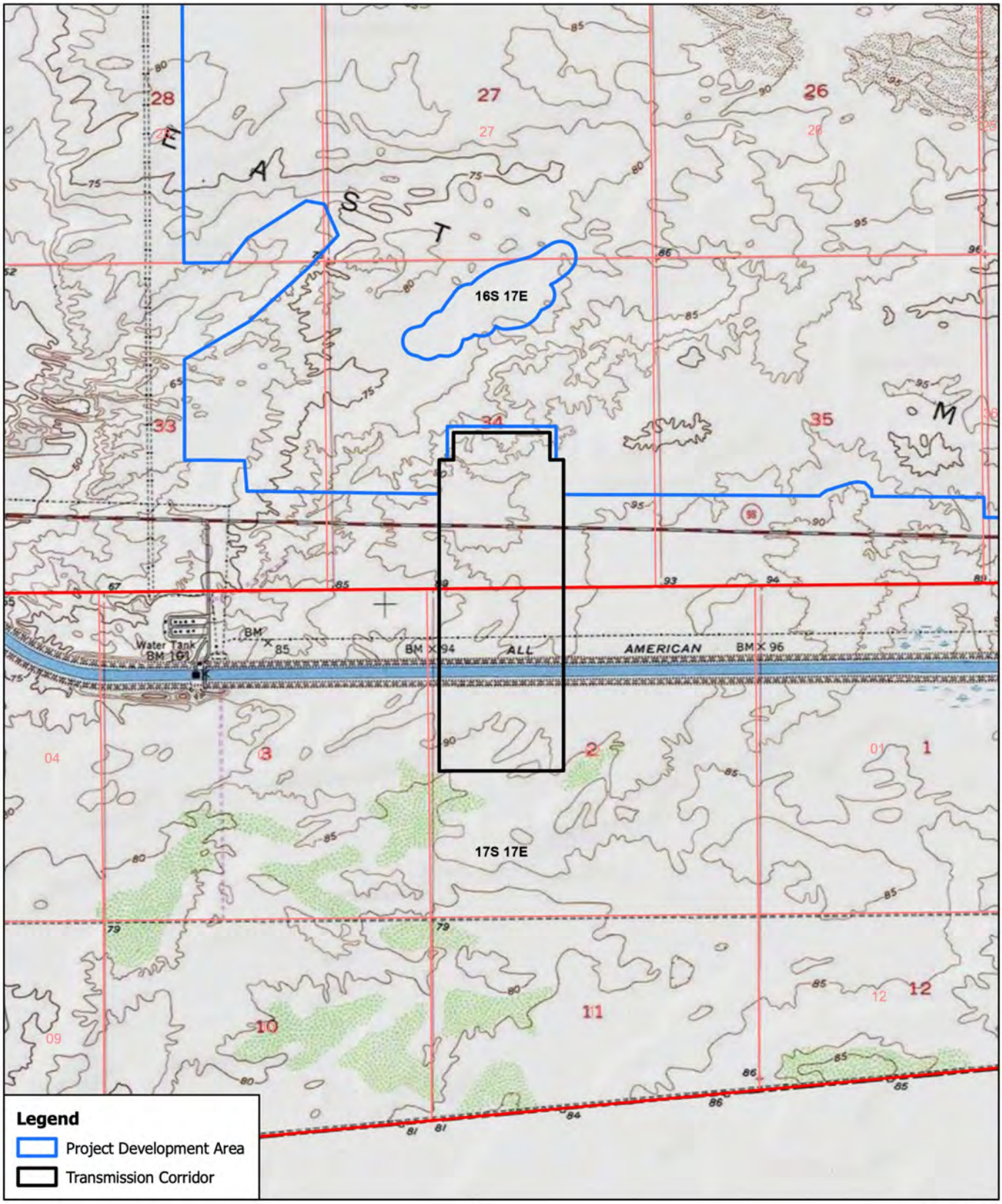
Ohmart, R.D., and R.E. Tomlinson. 1977. Foods of western clapper rails. Wilson Bulletin 89:332–336.

Repking, C.F., and R.D. Ohmart. 1977. Distribution and density of black rail populations along the lower Colorado River. Condor 79:486-489.

US Fish & Wildlife Service (USFWS). 2017. Yuma Ridgway's (Clapper) Rail (*Rallus obsoletus [longistrostris] yumanensis*) *californica californica*) Yuma Ridgway's Rail Survey Protocol for Project Evaluation. US Fish & Wildlife Service Arizona Fish & Wildlife Office. Southwest Region. August 3, 2017.

ATTACHMENT A

Figures



N

0 2,000

Feet

Figure 1

USGS Topographical Map

Midway Well NW USGS 7.5' Quad, Section 2 Township 17S Range 17E
Section 34 Township 16S Range 17E

Perkins Renewable Energy Project

Blackhawk Environmental

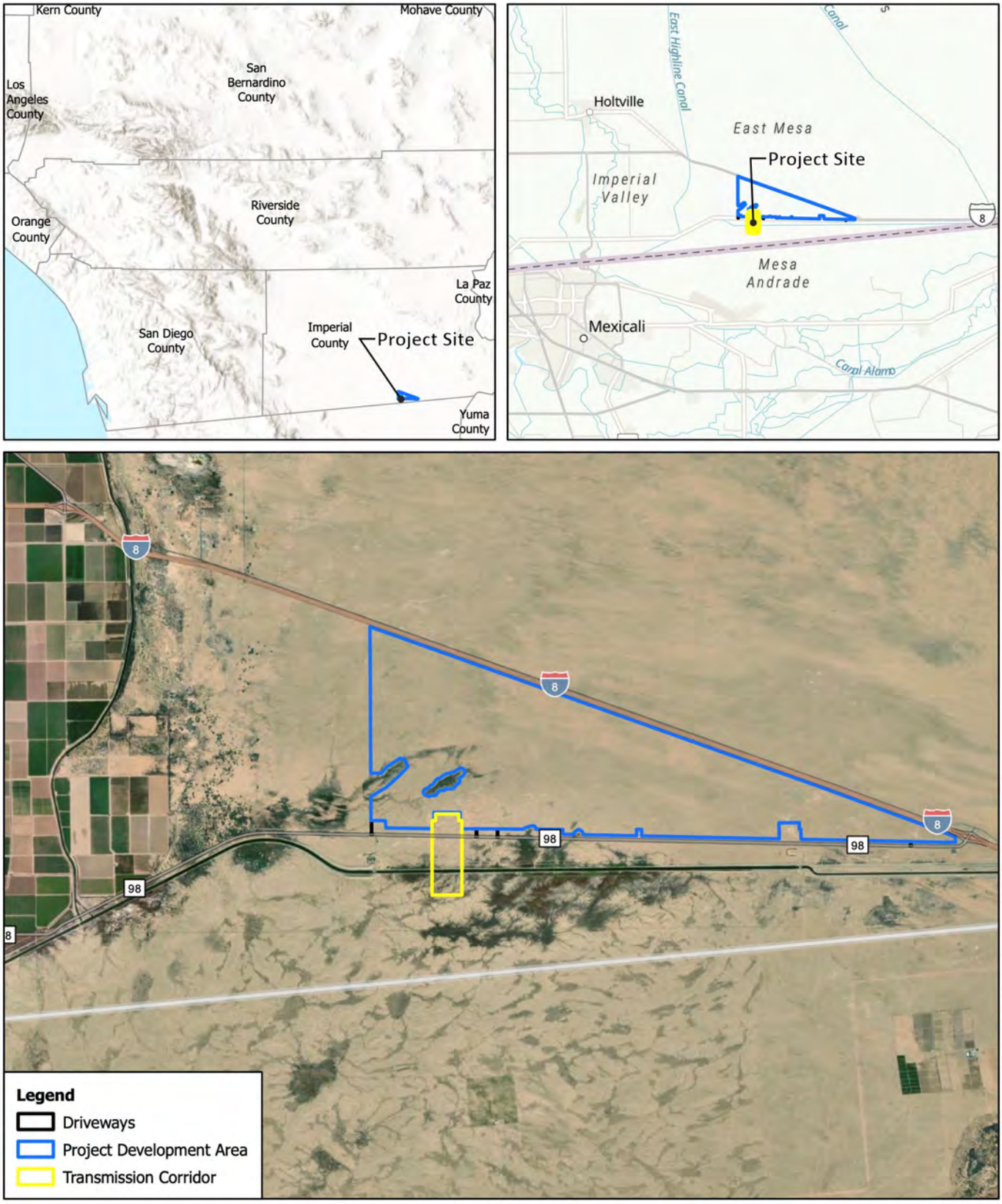


Figure 2
Site Vicinity

Perkins Renewable Energy Project

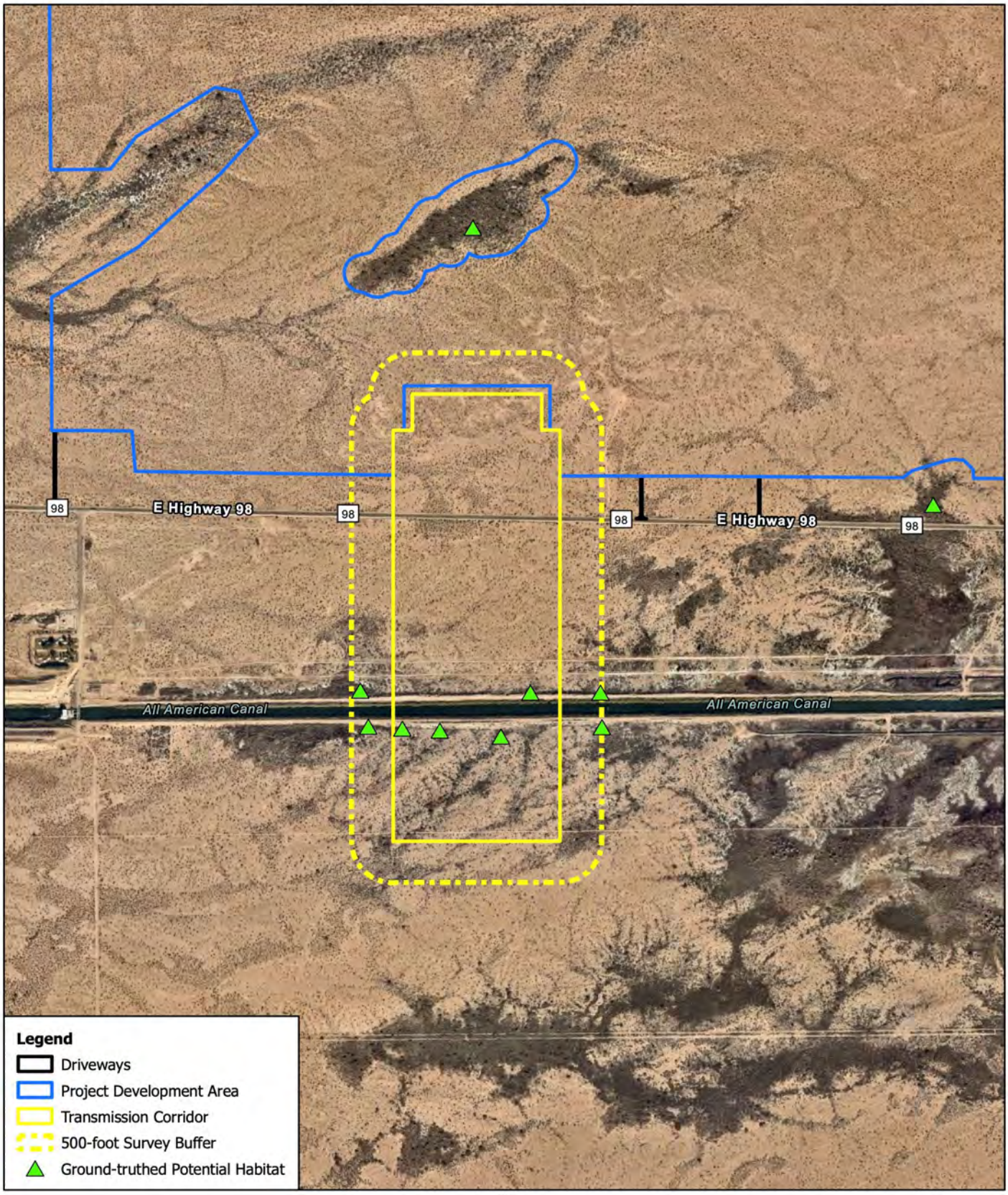


Figure 3A

Habitat Assessment

Perkins Renewable Energy Project

Blackhawk Environmental

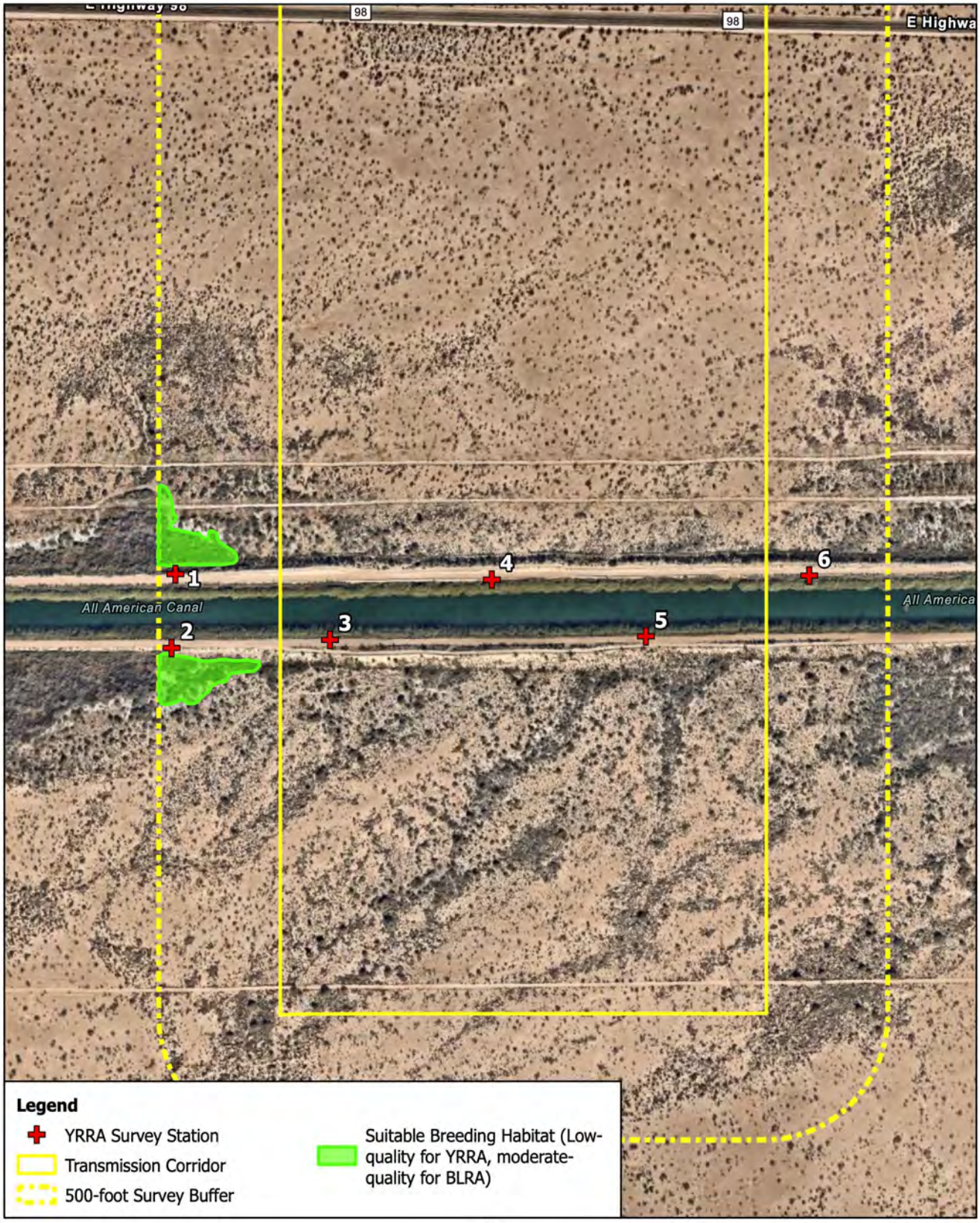


Figure 3B

Habitat Assessment

Perkins Renewable Energy Project

Blackhawk Environmental

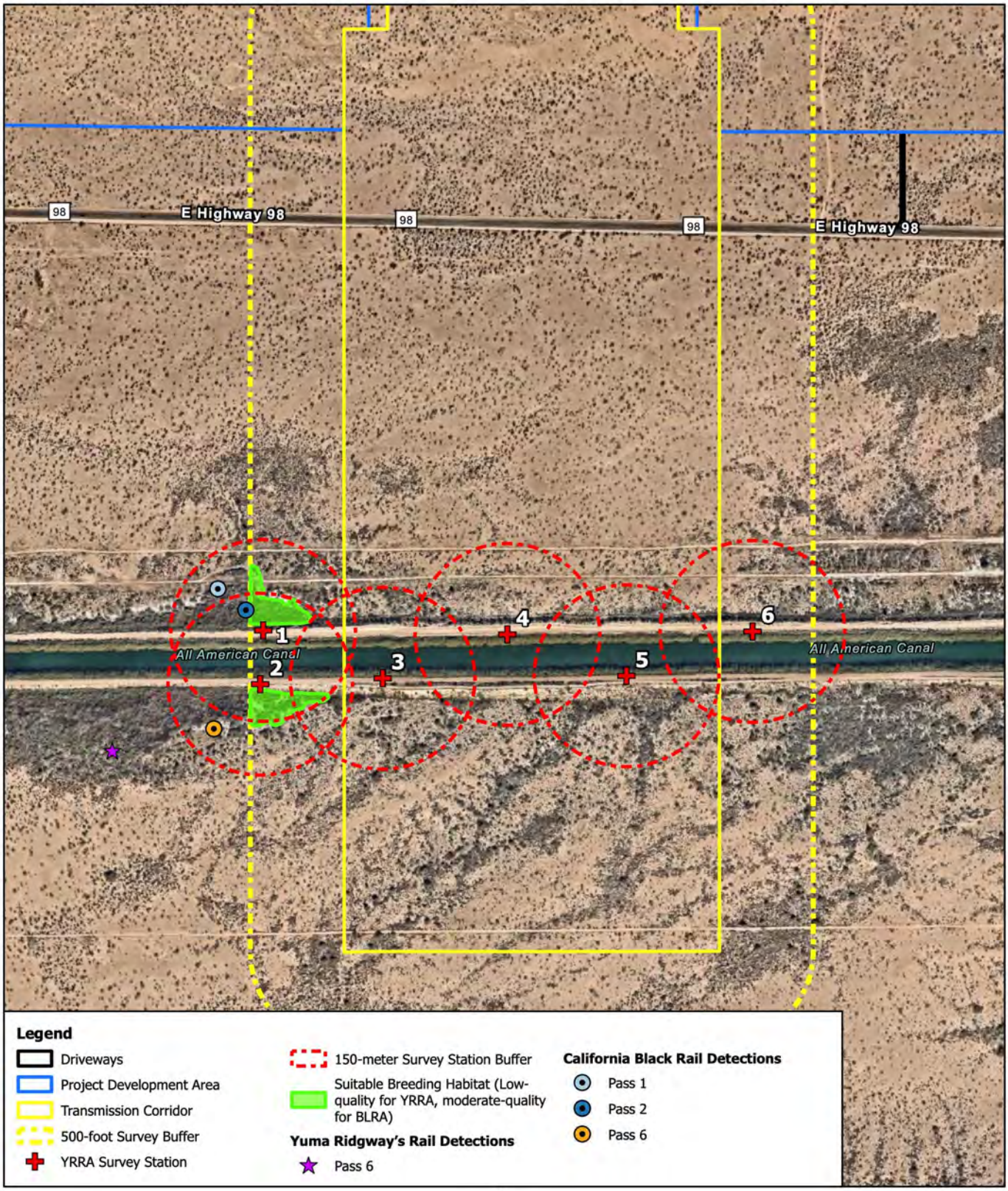


Figure 4

Survey Results

Perkins Renewable Energy Project

Blackhawk Environmental

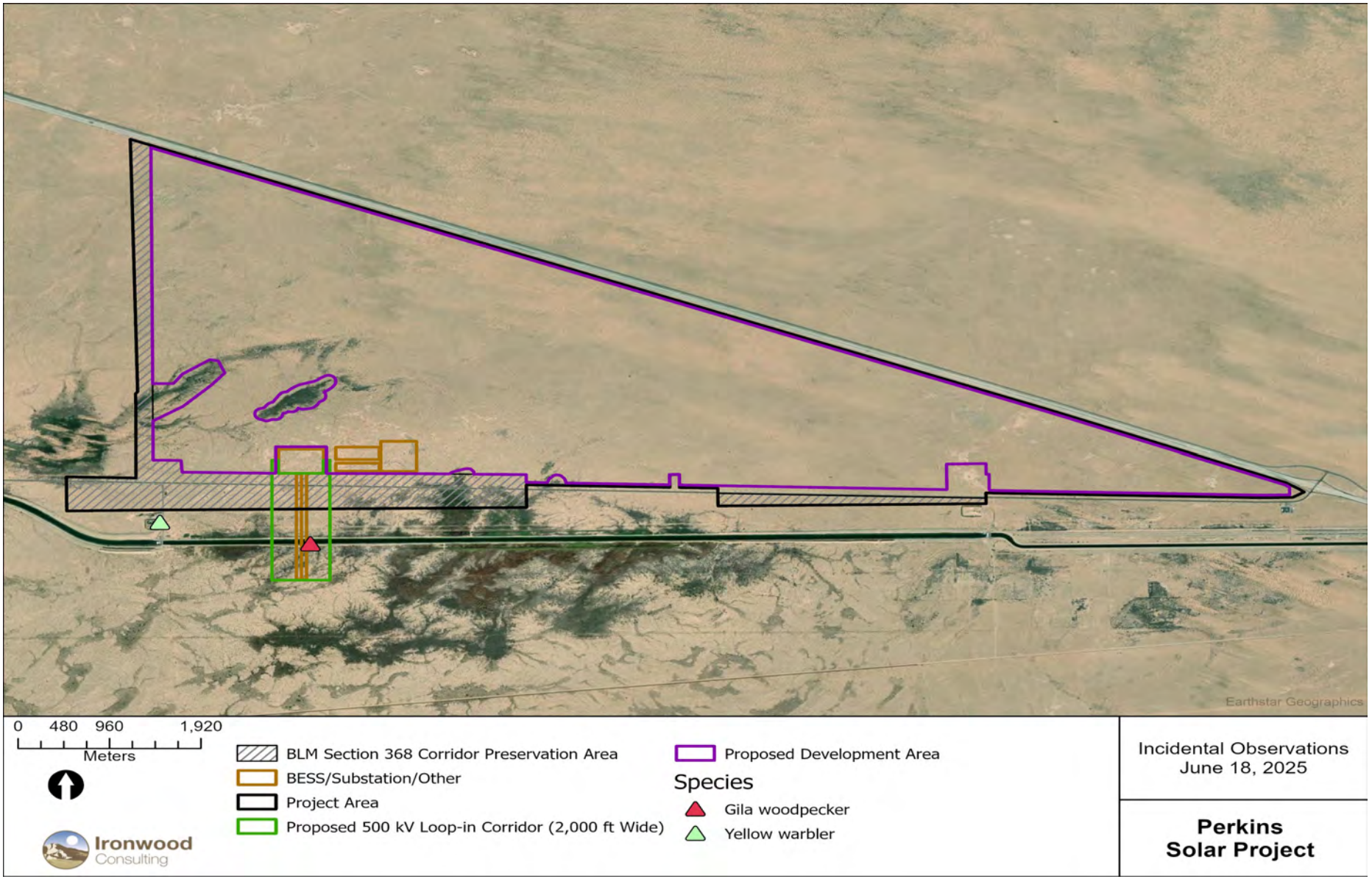


Figure 5. Incidental Observations

ATTACHMENT B

Photograph Pages

Photograph 1. Suitable rail habitat on the north side of the AAC at the far western edge of the Survey Area characterized as cattail marsh fringed by arrowweed and tamarisk scrub providing low-quality habitat for YRRA and moderate-quality habitat for BLRA.

Photograph 2. West-facing view of suitable rail habitat along AAC, just west of the Survey Buffer, near Survey Station 1, showing dense cattail/common threesquare marsh habitat providing low-quality habitat for YRRA and moderate-quality habitat for BLRA. BLRA were detected in this general area during Survey Pass 1 and 2 (outside of the Survey Area).

Photograph 3. Saturated soils (without standing water) observed within the Survey Area associated with Survey Station 1, leading to determination of low-quality YRRA habitat and moderate-quality BLRA habitat.

Photograph 4. Suitable rail habitat associated with Survey Station 2, with cattail marsh fringed by arrowweed and tamarisk scrub providing low-quality habitat for YRRA and moderate-quality habitat for BLRA. One BLRA BLRA were detected in this general area during Survey Pass 6 (outside of the Survey Area).

Photograph 5. Narrow band of phragmites along steep manmade edges of AAC determined to be unsuitable YRRA/BLRA habitat, included in protocol surveys at the request of CDFW and USFWS.

Photograph 6. Dry desert scrub habitat types not suitable for YRRA/BLRA.

Photograph 7. Dry desert scrub habitat types not suitable for YRRA/BLRA.

Photograph 8. Dry desert scrub habitat types not suitable for YRRA/BLRA.

ATTACHMENT C

Data Forms

Date (eg 10-May-04) : 5/8/15

Survey #: 5 (pts 3-6)

Name of marsh: AAK

Observer 1: RYAN GUILLORY

Observer 2: TRAVIS COOPER

List all non-focal species surveyed:

WIWA	COYE	WWDO
RWBL	CLSW	ABSO
YERD	GATO	

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Station #	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Avg Wind Speed (mph)	Background Noise	Species	Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	BLRA	BLRA	BLRA	BLRA	YRRA	YRRA	YRRA	YRRA	Outside Survey	Call Type(s)	Distance (meters)	Detected at previous point	Comments	ID Tag	Pair/Individual
4	0712	70	0	0	0	1	NO BIRD																				
6	0729	71	0	0	0	1	NO BIRD																				
3	0758	74	0	0	1	0	NO BIRD																				
5	0823	77	0	0	2	0	NO BIRD																				

Background noise: 0 no noise 1 faint noise 2 moderate noise (probably can't hear some birds beyond 100m)

3 loud noise (probably can't hear some birds beyond 50m) 4 intense noise (probably can't hear some birds beyond 25m)

Beaufort scale: 0 smoke rises vertically 1 wind direction shown by smoke drift 2 wind felt on face; leaves rustle

3 leaves , small twigs in constant motion; light flag extended 4 raises dust and loose paper; small

branches are moved 5 small trees with leaves sway; crested wavelets on inland water

Sky: 0 clear or a few clouds 1 partly cloudy or variable sky 2 cloudy or overcast 4 fog or smoke 5 drizzle 6 snow 8 showers

Call Type: C = clapper/clatter, B = duet, K = kek, B = kek-burr, KH = kek-hurrah, SK = squeek

ID Tag individual birds = use consecutive alpha codes (e.g. A, B, C ...) Pairs = matching alpha code with additional numeric assignment of individuals in pair (e.g. A1, A2; B1, B2...)

Species: NOBIRD (BE SURE TO WRITE NOBIRD IN THE SPECIES IF NO BIRDS DETECTED)

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Date (eg 10-May-04): 5/2/2025
Survey #: 5 (pt 1/2), 4 (pt 3-6)
Name of marsh: AAC
Observer 1: Ryan Quilley
Observer 2: Tony Chasar

List all non-focal species surveyed:

SOSP GAGU MODO CLSW BRBL YHAR GRRO BTGN
BHCO WWDO COYE VERD MWA GTGR BASW

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Station #	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Avg Wind Speed (mph)	Background Noise	Species	Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	BLRA	BLRA	BLRA	BLRA	YRRA	YRRA	YRRA	YRRA	Outside Survey	Call Type(s)	Distance (meters)	Detected at previous point	Comments	ID Tag	Pair/Individual
1	0702	68	0	0	1	1	NO BIRD																				
4	0721	71	0	0	1	1	NO BIRD																				
6	0738	69	0	0	2	1	NO BIRD																				
2	0757	74	0	1	3	0	NO BIRD																				
3	0815	77	0	2	6	0	NO BIRD																				
5	0832	73	0	2	5	0	NO BIRD																				

Background noise: 0 no noise 1 faint noise 2 moderate noise (probably can't hear some birds beyond 100m)
3 loud noise (probably can't hear some birds beyond 50m) 4 intense noise (probably can't hear some birds beyond 25m)
Beaufort scale: 0 smoke rises vertically 1 wind direction shown by smoke drift 2 wind felt on face; leaves rustle
3 leaves, small twigs in constant motion; light flag extended 4 raises dust and loose paper; small
branches are moved 5 small trees with leaves sway; crested wavelets on inland waters
Sky: 0 clear or a few clouds 1 partly cloudy or variable sky 2 cloudy or overcast 4 fog or smoke 5 drizzle 6 snow 6 showers
Call Type: C = clapper/clatter, D = duet, K = kak, B = kak-burr, KH = kak-hurrah, SK = squawk
ID Tag Individual birds = use consecutive alpha codes (e.g. A, B, C...) Pairs = matching alpha code with additional numeric assignment of individuals in pair (e.g. A1, A2, B1, B2...)
Species: NOBIRD (BE SURE TO WRITE NOBIRD IN THE SPECIES IF NO BIRDS DETECTED)
put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Date (eg 10-May-04) : 4/25/2025

Survey #: 3 (stations 3-6)

Name of marsh: MMC

Observer 1: Ryan Quigley

Observer 2: DESIREE JOHNSON

List all non-focal species surveyed:

COYE SOSP VERD MODO
GTGR BRBL CLSW BHCO

put an "S" in the appropriate columns if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Station #	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Avg Wind Speed (mph)	Background Noise	Species	Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	BLRA	BLRA	BLRA	BLRA	YRRA	YRRA	YRRA	YRRA	Outside Survey	Call Type(s)	Distance (meters)	Detected at previous point	Comments	ID Tag
3	0705	61	0	3	5	1	NO BIRD																			
5	0722	63	0	3	5	1	NO BIRD																			
4	0823	67	0	4	7	2	NO BIRD																			
6	0844	68	0	4	9	2	NO BIRD																			

Background noise: 0 no noise 1 faint noise 2 moderate noise (probably can't hear some birds beyond 100m)

3 loud noise (probably can't hear some birds beyond 50m) 4 intense noise (probably can't hear some birds beyond 25m)

Beaufort scale: 0 smoke rises vertically 1 wind direction shown by smoke drift 2 wind felt on face; leaves rustle

3 leaves , small twigs in constant motion; light flag extended 4 raises dust and loose paper; small

branches are moved 5 small trees with leaves sway; crested wavelets on inland waters

Sky: 0 clear or a few clouds 1 partly cloudy or variable sky 2 cloudy or overcast 4 fog or smoke 5 drizzle 8 snow 9 showers

Call Type: C = clapper/clatter, D = dust, K = kek, B = kek-burr, KH = kek-hurrah, SK = squeek

ID Tag individual birds = use consecutive alpha codes (e.g. A, B, C...) Pairs = matching alpha code with additional numeric assignment of individuals in pair (e.g. A1, A2; B1, B2...)

Species: NOBIRD (BE SURE TO WRITE NOBIRD IN THE SPECIES IF NO BIRDS DETECTED)

put an "S" in the appropriate columns if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Date (eg 10-May-04) : 4/21/25

Survey #: 4 (8:1/2), #2 (PM. 3-6)

Name of marsh: AAC Drop 4

Observer 1: RYAN QUILEY

Observer 2: TOM CHAJAR (Trainee)

List all non-focal species surveyed:

MODO	CLSW	LENI
AMCO	GRRO	COYE
GIWO	SOSP	

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Station #	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Avg Wind Speed (mph)	Background Noise	Species	Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	BLRA	BLRA	BLRA	BLRA	YRRA	YRRA	YRRA	YRRA	Outside Survey	Call Type(s)	Distance (meters)	Detected at previous point	Comments	ID Tag
2	1822	87	0	2	3	0	NO BIRD																			
3	1846	87	0	3	5	1	NO BIRD																			
5	1902	86	0	3	5	1	NO BIRD																			
1	1922	80	0	3	6	1	NO BIRD																			
4	1934	76	0	2	4	1	NO BIRD																			
6	1949	73	0	3	6	1	NO BIRD																			

Background noise: 0 no noise 1 faint noise 2 moderate noise (probably can't hear some birds beyond 100m)

3 loud noise (probably can't hear some birds beyond 50m) 4 intense noise (probably can't hear some birds beyond 25m)

Beaufort scale: 0 smoke rises vertically 1 wind direction shown by smoke drift 2 wind felt on face; leaves rustle

3 leaves , small twigs in constant motion; light flag extended 4 raises dust and loose paper; small

branches are moved 5 small trees with leaves sway; crested wavelets on inland waters

Sky: 0 clear or a few clouds 1 partly cloudy or variable sky 2 cloudy or overcast 4 fog or smoke 5 drizzle 6 snow 8 showers

Call Type: C = clapper/clatter, D = dust, K = kek, B = kek-burr, KH = kek-hurreh, SK = squawk

ID Tag Individual birds = use consecutive alpha codes (e.g. A, B, C...) Pairs = matching alpha code with additional numeric assignment of individuals in pair (e.g. A1, A2; B1, B2...)

Species: NOBIRD (BE SURE TO WRITE NOBIRD IN THE SPECIES IF NO BIRDS DETECTED)

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

SUNRISE: 0616

Date (eg 10-May-04): 4/11/2025
Survey #: 3, #1 for stations 3-6
Name of marsh: PERKINS - MARE
Observer 1: RYAN QUILLEN
Observer 2: DESIREE JOHNSON (TRAINEE)

List all non-focal species surveyed:

WCSP	SOSP	MODO	GRRO	BTGN
YERD	CLSW	CACW	NRSW	COGA
BHCO	BRBL	AMCO	ABTO	

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Station #	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Avg Wind Speed (mph)	Background Noise	Species	Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	BLRA	BLRA	BLRA	BLRA	YRRA	YRRA	YRRA	YRRA	Call Type(s)	Distance (meters)	Detected at previous point	Comments	ID Tag
1	0707	65	0	1	1	2	NO BIRD																		
4	0733	66	0	0	0	1	NO BIRD																		
6	0750	68	0	0	1	1	NO BIRD																		
2	0831	80	0	0	0	0	NO BIRD																		
3	0850	83	0	0	0	0	NO BIRD																		
5	0905	88	0	0	0	0	NO BIRD																		

Background noise: 0 *no noise* 1 *faint noise* 2 *moderate noise (probably can't hear some birds beyond 100m)*

3 *loud noise (probably can't hear some birds beyond 50m)* 4 *intense noise (probably can't hear some birds beyond 25m)*

Beaufort scale: 0 smoke rises vertically 1 wind direction shown by smoke drift 2 wind felt on face; leaves rustle

3 *leaves, small twigs in constant motion; light flag extended* 4 *raises dust and loose paper; small*

branches are moved 5 *small trees with leaves sway; crested wavelets on inland waters*

Sky: 0 *clear or a few clouds* 1 *partly cloudy or variable sky* 2 *cloudy or overcast* 4 *fog or smoke* 5 *drizzle* 6 *snow* 8 *showers*

Call Type: C = clapper/clatter, D = duet, K = kek, B = kek-burr, KH = kek-hurrah, SK = squewk

ID Tag Individual birds = use consecutive alpha codes (e.g. A, B, C...) Pairs = matching alpha code with additional numeric assignment of individuals in pair (e.g. A1, A2; B1, B2...)

Species: NOBIRD (BE SURE TO WRITE NOBIRD IN THE SPECIES IF NO BIRDS DETECTED)

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Date (eg 10-May-04): 3/21/25
Survey #: 2 (Pt. 1 & 2)
Name of marsh: AAL Drop 4
Observer 1: Ryan Quilley
Observer 2: Desiree Sotheron

List all non-focal species surveyed:

COYE	MAWR	RCKI	CACW	CLSW	YRWA
WCSP	AMCO	VERD	EUST	GTGR	RTHA
SOSP	NRSW	MODO	BRBL	BLPH	

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Station #	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Avg Wind Speed (mph)	Background Noise	Species	Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	BLRA	BLRA	BLRA	BLRA	YRRA	YRRA	YRRA	YRRA	Outside Survey	Call Type(s)	Distance (meters)	Detected at previous point	Comments	ID Tag
1	0755	58	0	1	2	1	BLRA					1	1	1	1	1	1	1	1	1		KICKER	30	N	BLRA broadcast stopped after initial detection	A
2	0908	69	0	0	1	1	NO BIRD																		BLRA "A" heard from this station	

Background noise: 0 no noise 1 faint noise 2 moderate noise (probably can't hear some birds beyond 100m)
3 loud noise (probably can't hear some birds beyond 50m) 4 intense noise (probably can't hear some birds beyond 25m)

Beaufort scale: 0 smoke rises vertically 1 wind direction shown by smoke drift 2 wind felt on face; leaves rustle
3 leaves, small twigs in constant motion; light flag extended 4 raises dust and loose paper; small branches are moved 5 small trees with leaves sway; crested wavelets on inland waters

Sky: 0 clear or a few clouds 1 partly cloudy or variable sky 2 cloudy or overcast 4 fog or smoke 5 drizzle 6 snow 8 showers

Call Type: C = clapper/clatter, D = duet, K = kek, B = kek-burr, KH = kek-hurrah, SK = squawk

ID Tag Individual birds = use consecutive alpha codes (e.g. A, B, C...) Pairs = matching alpha code with additional numeric assignment of individuals in pair (e.g. A1, A2; B1, B2...)

Species: NOBIRD (BE SURE TO WRITE NOBIRD IN THE SPECIES IF NO BIRDS DETECTED)

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Date (eg 10-May-04) : 3/10/2025

Survey #: 1 (Pts 1 & 2)

Name of marsh: AAC Drop #4

Observer 1: Ryan Quilley

Observer 2: Hayley Milner

Trainee

List all non-focal species surveyed:

COYE	MAWR	AMCO	BTGN
MODO	RCKI	RWBL	YRWA
SOSP	CLSW	NOMO	SORA
VERD	WCSP	CACW	VIRA

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Station #	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Avg Wind Speed (mph)	Background Noise	Species	Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	BLRA	BLRA	BLRA	BLRA	YRRA	YRRA	YRRA	YRRA	Call Type(s)	Distance (meters)	Detected at previous point	Comments	ID Tag
1	0739	50	0	0	1	1	BLRA						1					1	1	1	[illegible]	100	N	BLRA called at edge of playback	1
2	0828	58	0	1	3	1	NOBIRD																		

Background noise: 0 *no noise* 1 *faint noise* 2 *moderate noise (probably can't hear some birds beyond 100m)*

3 *loud noise (probably can't hear some birds beyond 50m)* 4 *intense noise (probably can't hear some birds beyond 25m)*

Beaufort scale: 0 smoke rises vertically 1 wind direction shown by smoke drift 2 wind felt on face; leaves rustle

3 *leaves , small twigs in constant motion; light flag extended* 4 *raises dust and loose paper; small*

branches are moved 5 *small trees with leaves sway; crested wavelets on inland waters*

Sky: 0 *clear or a few clouds* 1 *partly cloudy or variable sky* 2 *cloudy or overcast* 4 *fog or smoke* 5 *drizzle* 6 *snow* 8 *showers*

Call Type: C = clapper/clatter, D = duet, K = kek, B = kek-burr, KH = kek-hurrah, SK = squawk

ID Tag Individual birds = use consecutive alpha codes (e.g. A, B, C...) Pairs = matching alpha code with additional numeric assignment of individuals in pair (e.g. A1, A2; B1, B2...)

Species: NOBIRD (BE SURE TO WRITE NOBIRD IN THE SPECIES IF NO BIRDS DETECTED)

put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Date (eg 10-May-04): 5/14/25

Survey #: 6 (9th. 1-6)

Name of marsh: APK Drop 4

Observer 1: RYAN QUINLEY

Observer 2: TONY CHASAR (Trainee)

List all non-focal species surveyed:

COYE SOSP PTHA CLSW
MODO LENI GTGOR
WWDO BTGWN BHCO

put an "X" in the appropriate columns if the bird was seen, a "1" if the bird was heard, and "1.5" if both heard and seen

Station #	Start Time (military)	Temp (F)	Sky	Wind (Beaufort)	Avg Wind Speed (mph)	Background Noise	Species	Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	BLRA	BLRA	BLRA	BLRA	YRRA	YRRA	YRRA	YRRA	Outside Survey?	Call Type(s)	Distance (meters)	Detected at previous point	Comments	ID Tag	Pair/Individual
6	1812	87	0	2	4	1	NO BIRD																				
4	1840	85	0	1	3	0	NO BIRD																				
2	1858	82	0	1	3	0	NO BIRD																				
1	1922	81	0	0	1	0	BLRA						1	1	1		1					GROWL ↗	120		GROWL only – 5 times following 1st BLRA broadcast. In fringe of inland mesquite	1	I
							YRRA													1		D ↗	270		Pair duetting in distance during B broadcast, then silent	2A	P
							YRRA													1		D ↗	270		" " "	2B	P
3	1942	79	0	0	0	0	NO BIRD																				
5	2000	78	0	0	0	0	NO BIRD																				

Background noise: 0 no noise 1 faint noise 2 moderate noise (probably can't hear some birds beyond 100m)
3 loud noise (probably can't hear some birds beyond 50m) 4 intense noise (probably can't hear some birds beyond 25m)

Beaufort scale: 0 smoke rises vertically 1 wind direction shown by smoke drift 2 wind felt on face; leaves rustle
3 leaves, small twigs in constant motion; light flag extended 4 raises dust and loose paper; small
branches are moved 5 small trees with leaves sway; crested wavelets on inland waters

Sky: 0 clear or a few clouds 1 partly cloudy or variable sky 2 cloudy or overcast 4 fog or smoke 5 drizzle 6 snow 8 showers

Call Type: C = clapper/clatter, D = duet, K = kek, S = kek-burr, KH = kek-hurreh, SK = squeek

ID Tag: Individual birds = use consecutive alpha codes (e.g. A, B, C...) Pairs = matching alpha code with additional numeric assignment of individuals in pair (e.g. A1, A2; B1, B2...)

Species: NOBIRD (BE SURE TO WRITE NOBIRD IN THE SPECIES IF NO BIRDS DETECTED)

put an "X" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1.5" if both heard and seen

BLRA occurrence habitat: Small patches of TYPDOM surrounded by arrowweed, scattered TAMPAM w/ very sparse honey mesquite along fringes. Patchy common threesquare within TYPDOM.

YRRA occurrence habitat: Pair in distant portion of TYPDOM marsh to west of survey buffer. More expansive cattails and presumably standing water, surrounded by arrowweed scrub. This habitat generally connects w/ suitable habitat mapped within Project survey buffer.

ATTACHMENT D

Observed Avian Species List

AVES	BIRDS
ACCIPITRIDAE	**Hawks & Eagles**
Buteo jamaicensis	red-tailed hawk
ANATIDAE	**Ducks, Geese & Swans**
Anas platyrhynchos	mallard
APODIDAE	**Swifts**
Aeronautes saxatalis	white-throated swift
CAPRIMULGIDAE	**Goatsuckers**
Chordeiles acutipennis	lesser nighthawk
CARDINALIDAE	**Cardinals & Allies**
Piranga ludoviciana	western tanager
COLUMBIDAE	**Pigeons & Doves**
*Streptopelia decaocto**	Eurasian-collared dove
Zenaida asiatica	white-winged dove
Zenaida macroura	mourning dove
CUCULIDAE	**Cuckoos**
Geococcyx californianus	greater roadrunner
HIRUNDINIDAE	**Swallows**
Hirundo rustica	barn swallow
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow
FRINGILLIDAE	**Finches & allies**
Haemorhous mexicanus	house finch
ICTERIDAE	**New World Blackbirds, Orioles & allies**
Euphagus cyanocephalus	Brewer's blackbird
Molothrus ater	brown-headed cowbird
Quiscalis mexicanus	great-tailed grackle
MIMIDAE	**Mockingbirds & Thrashers**
Mimus polyglottos	northern mockingbird
ODONTOPHORIDAE	**New World Quails**
Callipepla gambelii	Gambel's quail
PARULIDAE	**Wood Warblers & relatives**
Cardellina pusilla	Wilson's warbler
Geothlypis trichas	common yellowthroat
Setophaga petechia◊	yellow warbler
Setophaga coronata	yellow-rumped warbler
PASSERELLIDAE	**New World Sparrows**
Melospiza melodia	song sparrow
Pipilo aberti	Abert's towhee
Zonotrichia leucophrys	white-crowned sparrow

PICIDAE	**Woodpeckers & allies**
*Melanerpes uropygialis***	Gila woodpecker
POLIOPTILIDAE	**Gnatcatchers**
Polioptila melanura	black-tailed gnatcatcher
RALLIDAE	**Rails**
Fulica americana	American coot
Gallinula galeata	common gallinule
*Laterallus jamaicensis californica***◊	California black rail
Porzana carolina	sora
Rallus limicola	Virginia rail
Rallus obsoletus yumanesis **◊	Yuma Ridgway's rail
REGULIDAE	**Kinglets**
ruby-crowned kinglet	*Regulus calendula*
REMIZIDAE	**Verdins**
Auriparus flaviceps	verdin
STURNIDAE	**Starlings**
*Sturnus vulgaris**	European starling
TROCHILIDAE	**Hummingbirds**
Calypte anna	Anna's hummingbird
TROGLODYTIDAE	**Wrens**
Campylorhynchus brunneicapillus	cactus wren
Cistothorus palustris	marsh wren
TURDIDAE	**Thrushes & Allies**
Agelaius phoeniceus	red-winged blackbird
TYRANNIDAE	**Tyrant Flycatchers**
Sayornis nigricans	black phoebe

** Non-native species*

*** Federal or State-listed species*

◊ CDFW Sensitive Species, USFWS Birds of Conservation Concern, Federal or State Watchlist and Federal and State Fully Protected

Attachment B.5 Revised Opt-in Application Biological Resources Section

4.2 Biological Resources

This section describes biological resources in and near the Project and the potential effects that the Project may have on biological resources. Section 4.2.1 discusses the environmental setting. Section 4.2.2 identifies potential impacts that may result from Project construction, operation (including maintenance), and decommissioning. Section 4.2.3 evaluates potential cumulative impacts on biological resources. Section 4.2.4 discusses mitigation measures to address impacts. Section 0 provides an overview of applicable federal, State, and local laws, ordinances, regulations, and standards and the Project's compliance therewith.

4.2.1 Environmental Setting

This section provides an overview of existing biological resource conditions in the Project area as further detailed in the Biological Resources Technical Report (BRTR) (dated February 2025 and available in Attachment B to Data Request 1 Data Response Set #3), ~~and~~ Jurisdictional Delineation (JD) report (~~Appendixces J.1 and J.2~~dated February 2025 and available in Attachment A to Data Request 1 Response Set #), and additional technical reports for resource surveys conducted after publication of the BRTR. The BRTR includes a detailed discussion of the methodologies used to conduct the biological resources assessment, including details on the literature review, field surveys, and species-specific analyses and surveys. This section also reviews data from a memorandum describing the results of a habitat assessment and protocol-level survey for Yuma Ridgway's rail (*Rallus obsoletus yumanensis*) and California black rail (*Laterallus jamaicensis coturniculus*) (Blackhawk Environmental 2025) and a memorandum for a monarch butterfly (*Danaus plexippus*) habitat assessment (Ironwood Consulting 2025). These memoranda provide detailed discussions of the survey methods, results, and conclusions for the habitat assessments and protocol-level surveys.

Methodology

Biological Study Area

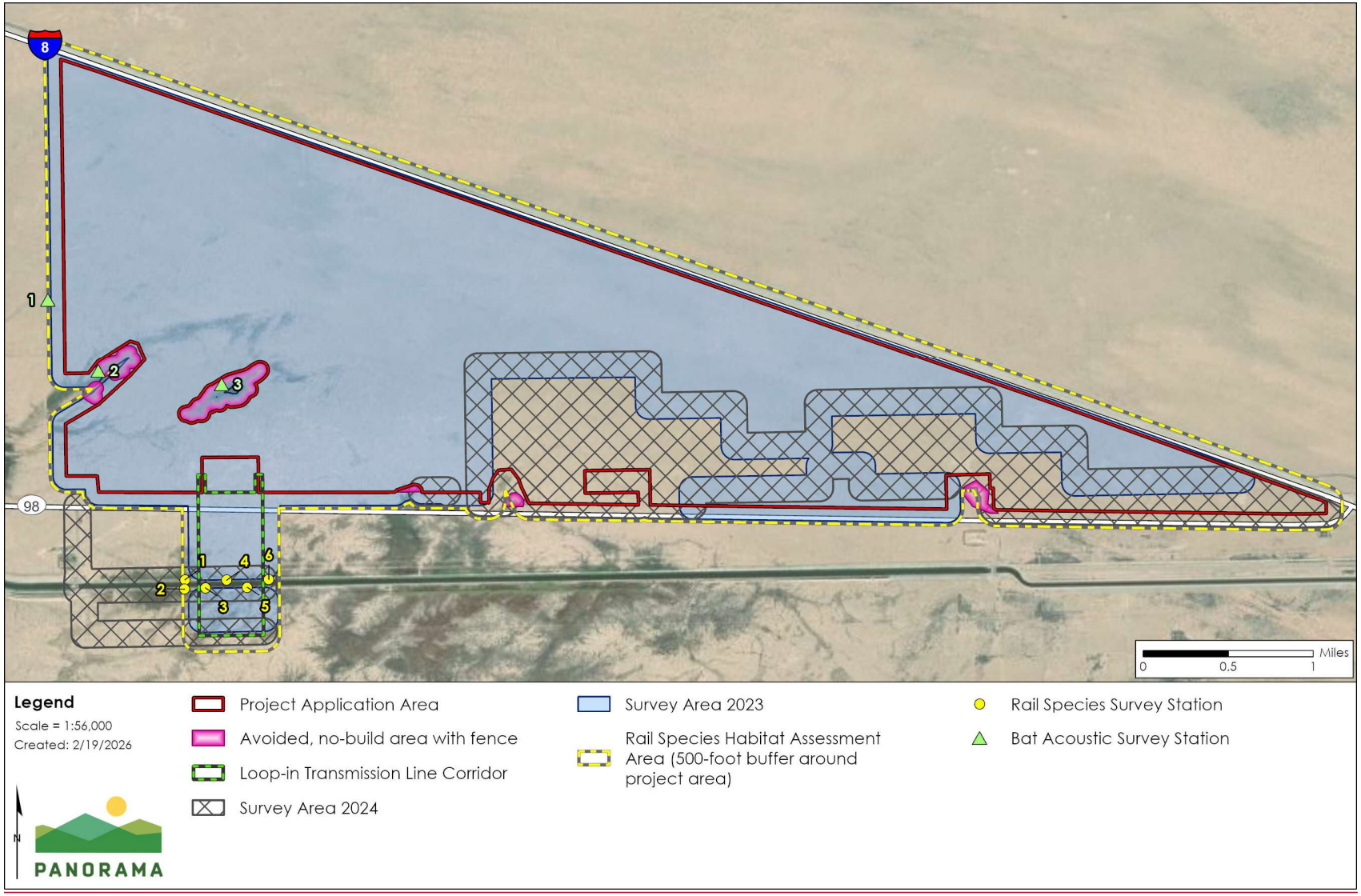
The *biological study area* (BSA) for the purpose of this application includes a 10-mile buffer from the Project Application Area for purpose of the literature review and a 1,000-foot buffer from the Project Application Area for the purpose of field surveys (with the exception of the portion of the Project that borders Interstate 8). The portion of the Project area on BLM-administered lands and a 150-meter buffer were surveyed in 2023 (referred to herein as the 2023 survey area (refer to Figure 4.2-1). Additional lands, including the private lands and Bureau of Reclamation (BOR) administered lands included in the Project, as well as an additional area extending out to the 1,000-foot buffer from the Project site, ~~will be~~were surveyed for biological resources in ~~the Spring of~~ 2024 (referred to herein as the 2024 survey area).

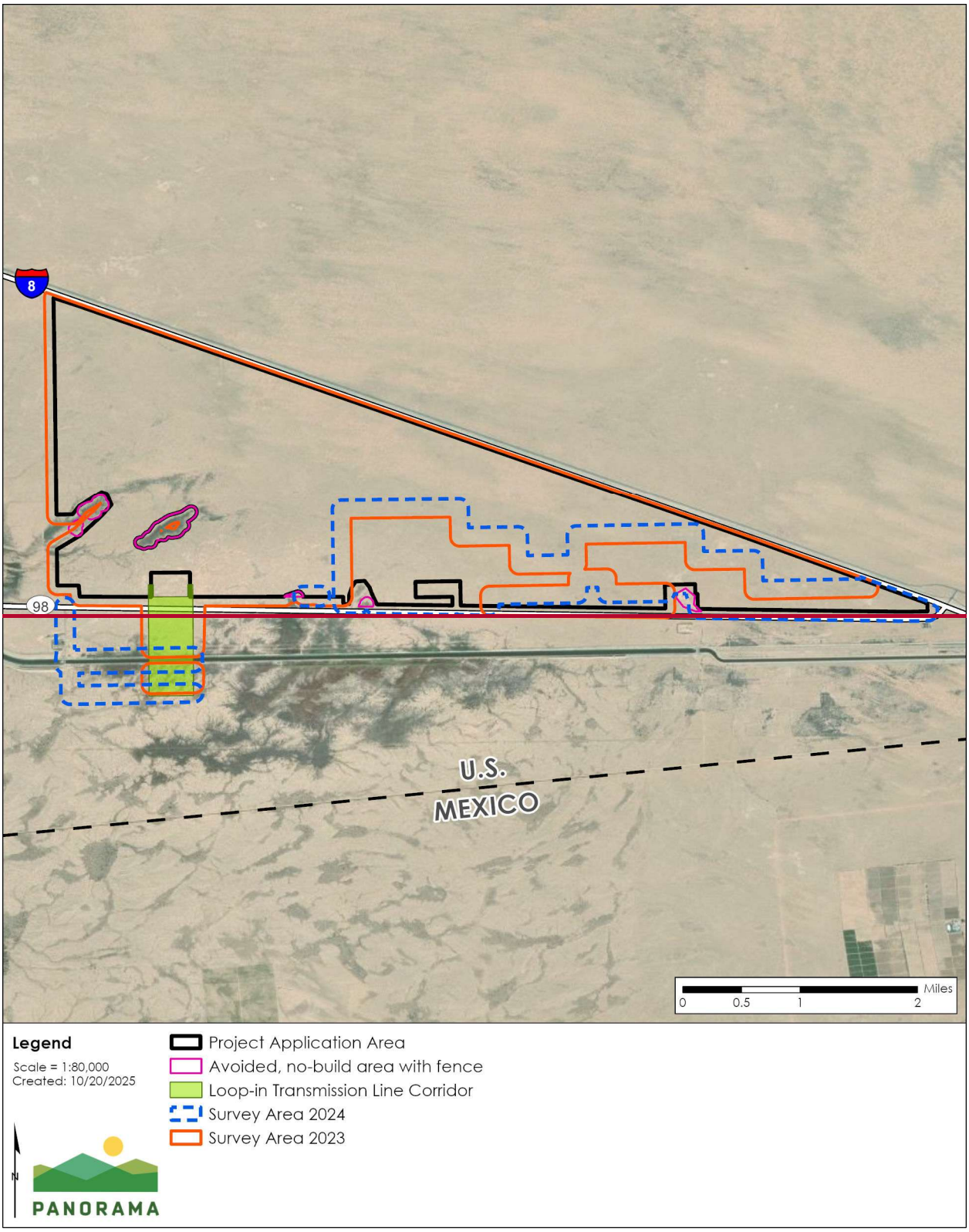
Literature Search

As detailed in the BRTR, Yuma Ridgway's and California black rail memo, and monarch butterfly memo, the following resources were reviewed for information on existing conditions relating to biological resources:

- National Agriculture Imagery Program (NAIP) aerial imagery
- National Wetlands Inventory (NWI) Wetlands Mapper (USFWS, n.d.)
- California Native Plant Society's (CNPS) Online Inventory of Rare and Endangered Plants of California (CPNPS, Rare Plant Program, n.d.)
- The Consortium of California Herbaria Jepson Interchange (Consortium of California Herbarium [CCH], n.d.)
- CDFW California Natural Diversity Database (CNDDB) (CDFW 2023b) and updated in December 2024.
- Calflora's What Grow's Here? Online database (Calflora, n.d.; 2023)
- The Manual of California Vegetation (MCV) online database (CPNPS, n.d.-a; Sawyer, Keeler-Wolf, and Evens 2009) and DRECP mapping (Conservation Biology Institute, n.d.)
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, n.d.)
- BLM California sensitive species list (BLM 2023)
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2023)
- California Department of Fish and Wildlife (CDFW) Special Animals List (CNDDB 2023)
- CDFW Biogeographic Information and Observation System (BIOS) (California Department of Fish and Wildlife (CDFW), n.d.-a)
- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper (U.S. Fish and Wildlife Service (USFWS) 2022)
- USGS National Hydrography Dataset (NHD) (USGS 2019)
- eBird: An online database of bird distribution and abundance (eBird, n.d.)
- High-definition aerial imagery
- Monarch butterfly habitat suitability models (Dilts et al. 2019; McIntyre et al. 2024)
- Western Monarch Crucial Habitat Assessment Tool (Western Association of Fish and Wildlife Agencies [WAFWA] 2019)

Figure 4.2-1 Survey Areas ~~(2023)~~





Source: (Ironwood 2023b)

Field Surveys

This section discusses the surveys performed ~~in 2023~~ for the Project. The specific surveys completed ~~in 2023~~ include the following:

- Special status plant surveys
- Full coverage wildlife surveys at 20-meter belt transects ~~throughout the 2023 survey area and 2024 survey area~~
- Burrowing owl surveys (breeding and non-breeding season surveys)
- Flat-tailed horned lizard surveys
- Avian point count surveys
- Aquatic resource delineation
- Bat surveys (acoustical surveys).
- Yuma Ridgway's rail and California black rail surveys (habitat assessment and protocol presence-absence surveys)
- Monarch butterfly habitat assessment

~~All s~~Surveys were conducted per DRECP Conservation Management Action (CMA) biological resources requirements for DFAs for each species within the recommended timing, including full-coverage rare plant and burrowing owl surveys, see Section 3 of the BRTR in Appendix J (BLM 2016). Surveys for bats involved acoustic monitoring in habitats that had good potential for high species richness. Burrowing owl surveys followed the guidance of both the 1993 California Burrowing Owl Consortium (CBOC 1993) Guidelines and 2012 CDFW Staff Report (CDFG 2012). Yuma Ridgway's and California black rail surveys followed the guidance of the USFWS Yuma Ridgway's Rail Survey Protocol for Project Evaluation (USFWS 2017). Any modifications are further explained within each individual sensitive species section below.

Special Status Plants

Focused special status plant surveys were conducted from March 21 to March 25, March 27 to 31, and April 1 to April 3, 2023, and from April 8 to April 12 and April 15 to April 16, 2024, when the majority of the rare plant species that have a potential to occur in the Project area are most likely to be flowering and identifiable (California Department of Fish and Game [CDFG] 2000). Botanists followed the intuitive controlled survey methodology of Whiteaker et al. (1998), using full-coverage 20-meter transects across the entire ~~2023 survey areas~~biological survey area. The ~~S~~survey methodology was consistent with the following guiding documents:

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

All surveyors were trained on diagnostic features and habitat notes of special status species that may occur, and each crew of surveyors included at least one highly experienced botanist. Prior

to the initiation of plant surveys in the spring, reference populations of special status plants were visited to ensure that timing for surveys was sufficient and that special status plant species that have the potential to occur would be identifiable. On March 20, 2023, populations of sand food (*Pholisma sonorae*) and giant Spanish needle (*Palafoxia arida* var. *gigantea*) were observed near Midway Campground in the Algodones Dunes. On March 26 and 27, 2023, populations of ribbed cryptantha (*Johnstonella costata [Cryptantha costata]*) were observed east of the Algodones Dunes. During plant surveys, botanists recorded all plant species observed, regardless of conservation status.

Special Status Wildlife

Full coverage wildlife surveys were conducted during the following periods:

- Spring surveys, full-coverage 20-meter transect ~~wildlife~~ surveys (burrowing owl ~~survey~~breeding season survey #1, avian counts, general wildlife): March 20 to April 3, 2023
- Burrowing owl breeding season survey #2 and flat-tailed horned lizard survey: May 15 to May 18, 2023
- Burrowing owl breeding season survey #3 and flat-tailed horned lizard survey: June 12 to June 15, 2023
- Burrowing owl breeding season survey #4 and flat-tailed horned lizard survey: June 29 to July 4, 2023
- Spring surveys, full coverage 20-meter transect surveys (burrowing owl breeding season survey #1, avian counts, general wildlife): April 8 to April 16, 2024
- Burrowing owl breeding season survey #2: May 22, 2024
- Bat habitat assessment: May 30 to May 31, 2024
- Burrowing owl breeding season survey #3: June 14 to June 15, 2024
- Bat acoustic survey #1: June 10 to June 15, 2024
- Burrowing owl breeding season survey #4: July 11, 2024
- Bat acoustic survey #2: July 25 to July 30, 2024
- Burrowing owl non-breeding season surveys #1 through #4: September through December, 2024
- Yuma Ridgway's rail and California black rail habitat assessment: February 28, 2025
- Yuma Ridgway's rail and California black rail protocol presence-absence surveys, passes 1 through 6: March 1 to May 15, 2025
- Monarch butterfly habitat assessment field survey: March 10 to March 15, 2025

Full-coverage wildlife surveys were conducted at 20-meter belt transects. Survey crews in the spring seasons consisted of experienced desert wildlife biologists with at least one botanist and one avian biologist per crew. Surveys were conducted by walking linear transects and visually searching for live individuals or sign of any sensitive species. All holes detected that may be inhabited by sensitive species as burrows or burrow complexes were carefully inspected for potential occupancy or sign of recent use. Special emphasis was placed on searching around the bases of shrubs and along the banks of shallow washes. Burrows were carefully examined, and

the wildlife species that may have been inhabiting them was attributed based on indicator signs within the burrow or near the mouth of the burrow.

All sign of desert kit fox and American badger was recorded, including live or dead individuals, scat, tracks, burrows, and burrow complexes. Activity and likely species usage for each burrow or complex was determined by the burrow size (larger burrows are more likely coyote or badger) and types of sign found at the burrow site. A burrow or complex was categorized as active if fresh tracks, scratches, or scat were found at the site. The presence of old scat in the absence of tracks, freshly dug dirt, or scratches was taken to indicate that a burrow or complex was inactive. All burrows and burrow complexes were mapped and attributed, when possible, to species. If a burrow could not be attributed to a species, the species was recorded as "canid," which includes desert kit fox, coyote, or domestic dog.

During wildlife surveys, biologists recorded all wildlife species observed regardless of conservation status. Common species were tallied at the end of each transect and recorded throughout each day by each crew.

Burrowing Owl

Breeding season (spring) and non-breeding season (fall/winter) surveys were conducted for burrowing owl. Full breeding-season surveys (including four survey rounds) were conducted in the spring of 2023 and 2024. One non-breeding season survey (including four survey rounds) was conducted in the fall/winter of 2024. Surveys followed the guidance of both the 1993 California Burrowing Owl Consortium (CBOC 1993) Guidelines and 2012 CDFW Staff Report (CDFG 2012) including baseline data collection and an assessment of site use by burrowing owl and ~~. One full-coverage survey was conducted during spring wildlife surveys, during the breeding season, which~~ were consistent with Phase II of the 1993 CBOC Guidelines and partially consistent with the 2012 CDFW Staff Report (Ironwood Consulting 2023). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (CBOC 1993; CDFG 2012). The first breeding season survey round of each year followed the complete survey protocol and the following three breeding season survey rounds followed a modified protocol approved by CDFW. These modifications are described in more detail below. The non-breeding season survey also involved a modified approach similar to the modified breeding season survey rounds that was focused on burrow inspections and area searches.

The first ~~burrowing owl~~breeding season survey round of each year was conducted at 20-meter spacing, which provided a greater level of coverage than the 30-meter spacing recommended in the 1993 CBOC Guidelines and was consistent with the 20-meter spacing recommended in the 2012 CDFW Staff Report. All burrows detected during wildlife surveys were assessed for wildlife occupancy to ensure detection of any special status species, including burrowing owl that may have been occupying a burrow. The 20-meter transect spacing also increased the likelihood of flushing live burrowing owls during the survey. All sign of burrowing owl, including individuals, feathers, tracks, whitewash, pellets, and suitable burrows were recorded if present. An additional 150 meters of buffer around the BLM administered lands within the

Project Application Area was also surveyed following guidance of the 2012 CDFW Staff Report. ~~Supplemental surveys on BOR administered lands and private lands within the Project site will be completed in 2024.~~

The subsequent three breeding season survey rounds included re-visiting all previously detected burrows to check for any change in burrowing owl sign, and any new detections of burrowing owl sign was noted. Any new burrows observed during these burrow checks were added to the next check. The burrow checks were timed according to the intervals defined in the 2012 CDFW Staff Report recommendations, with at least 3 weeks passing between each session of burrow checks.

Yuma Ridgway's Rail and California Black Rail

A habitat assessment was conducted to identify potential habitat for Yuma Ridgway's rail and California black rail within the Project Application Area, loop-in line transmission corridor, and BAAH switchyard area, plus a 500-foot survey buffer around these areas. The habitat assessment first involved a desktop analysis wherein high-definition aerial imagery, maps of vegetation communities, and personal knowledge of the area was reviewed to identify potential wetland and densely vegetated areas that could provide suitable habitat for these rail species. The desktop analysis was followed by a field survey during which the potential wetland and vegetated areas identified by the desktop analysis were assessed for specific habitat requirements for these species. These requirements included habitat patch size, water level, soil moisture, vegetation composition and density, slope, and thatch density. After an assessment of these requirements was completed, the habitat was determined either suitable or not suitable for the rail species. A conservative approach was taken wherein all habitat meeting the requirements for either species was considered suitable for both species.

Protocol-level presence-absence surveys were later conducted in the areas of suitable habitat determined by the habitat assessment. Survey stations were established adjacent to the suitable habitat areas following guidelines provided in the USFWS Yuma Ridgway's Rail Survey Protocol for Project Evaluation (USFWS 2017). Per the protocol, survey stations were established no less than 150 meters apart and no more than 200 meters apart and each station was situated so that all suitable habitat areas within the survey area were effectively covered by a 200-meter radius circular plot. Initially, two survey stations (stations 1 and 2) were established to cover the suitable habitat identified by the habitat assessment. Later, four additional survey stations (stations 3 through 6) were added at the request of USFWS along the narrow band of phragmites along the banks of the All-American Canal. The stations were positioned within the interface of suitable habitat and upland habitat and oriented to focus listening and call broadcast on areas likely to support the target rail species.

The protocol-level presence-absence survey methodology included six survey passes conducted within five survey windows. A survey pass was considered a complete listening and call broadcast survey at each established survey station within a given survey window. Because of the later addition of stations 3 through 6, the USFWS and CDFW approved the completion of the 6 survey passes within survey windows 3, 4, and 5. The complete details of when each pass

was completed for each station may be found in the Project's rail species survey report (Blackhawk Environmental 2025). Surveys were conducted during suitable weather conditions. Morning surveys were conducted beginning at sunrise and extending to no more than three hours after sunrise; evening surveys were performed beginning no more than two hours before sunset and extending a maximum of 30 minutes after sunset. During each survey pass, listening and call broadcast periods were performed at each survey station according to the protocol. However, the protocol was also adapted to include broadcast of California black rail calls as well as Yuma Ridgway's rail calls. Additional detail on the listening and call broadcast sequence is also provided in the Project's rail species survey report (Blackhawk Environmental 2025). Rail detections were recorded with a unique identifying number, their GPS location, and other data, including whether the bird was in a pair.

Flat-tailed Horned Lizard

Survey recommendations for the flat-tailed horned lizard include surveys through the active season (April to September) covering a minimum of 10 hours of surveys per 260 hectares (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). Flat-tailed horned lizard surveys within the Project Application Area were conducted from May 15 through May 18, 2023, and April 8 through April 16, 2024 ~~May through July~~ and were modified with 20- to 30-meter belt transects throughout the entirety of the Project Application Area, conforming to and exceeding requirements of a minimum of 10 hours survey time per each 260 hectares (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003) by conducting a total of ~~520~~ 430 hours of surveys over the ~~5,822 acre~~ 2023 and 2024 survey areas. All flat-tailed horned lizard sign (e.g., live individuals, carcasses, scat, tracks, ant hills the species depends on for forage) were mapped and recorded (Ironwood Consulting 2023).

Avian Counts

Avian counts were conducted during each full-coverage, 20-meter transect wildlife survey in the spring of 2023 and 2024. Each survey team consisted of a minimum of one avian biologist who was exclusively tasked with tallying all avian observations. The avian biologist walked with each survey team in the morning, from the start of each survey until about 10:00 am but earlier if weather conditions were unfavorable for avian detection (i.e., high wind). After these avian counts, the avian biologist would continue to note any incidental wildlife species observed while also continuing to participate in any ongoing survey.

Bats

A habitat assessment for bats was conducted in the spring of 2024 by a bat specialist and an assistant with a combination of meandering pedestrian transects in best habitats within the Project site and driving within and around the Project site perimeter inspecting nearby structures within 5 miles identified in aerial imagery. Project site features such as trees and man-made structures were visually inspected with binoculars for live bats and evidence of bats such as guano and oil stains, which indicate long-term use for roost sites.

Acoustic bat surveys were conducted in the late spring (June 10-14, 2024) and early summer (July 25-29, 2024) that would best capture the highest diversity of bat activity in the area

(Vizcarra 2011, Williams et al 2006) and recommended by renowned desert bat expert Pat Brown (personal communication by B. Vizcarra April 13, 2024). For each session of acoustic surveys, survey periods consisted of five consecutive evenings to capture the maximum number of species that occur on or near the Project site based on a standard that has been developed for the region (Moreno et al. 2000). Three survey stations were established in habitat that had the highest likelihood for detection of bats, as shown on Figure 4.2-1. One of these stations was located within creosote bush scrub (station 1) and two were located within desert dry wash woodland adjacent to the development area (stations 2 and 3).

A bat specialist and an assistant set up acoustic survey equipment at each station consisting of Anabat II detectors equipped with zero-crossing analysis interface modules (ZCAIM) to record echolocation calls of bats, consistent with other surveys conducted along the lower Colorado River (Brown 2013). These devices were mounted on 6-foot poles and deployed at the three stations. Anabat detectors were inspected daily for functionality with daily downloads and were retrieved at the end of the five-day survey session.

Call analysis was conducted using Analook software and by manual inspection of individual calls by bat specialist Bea Vizcarra. Static files (noise not attributed to bats) were discarded, and acoustic files attributed to bats were visually analyzed and matched to the call characteristic classifiers. Call identification used the main parameters of characteristic frequency and slope - slope variation dictates the shape of the call, and characteristic frequency limits the range of probabilities to species bandwidths (Corben 2006). To aid identification, voucher call collections from libraries of reference calls and multiple manuals were used for comparison (Corben 2006, Blair and Haskew 2005, Szewczak 2024).

Monarch Butterfly

A habitat suitability assessment for monarch butterfly was conducted to determine whether there was breeding and/or overwintering habitat in the Project Application Area and the quality of that habitat. The initial phase of the habitat suitability assessment included a review and synthesis of existing literature and resources. Three existing habitat suitability models were reviewed, including the Western Monarch Crucial Habitat Assessment Tool created by the Western Monarch Working Group (Dilts et al. 2019; McIntyre et al. 2024; WAFWA 2019) to determine the quality of the habitat within the Project Application Area and the importance of the habitat to the broader monarch butterfly population. Documented monarch butterfly breeding locations provided by the Western Monarch Milkweed Mapper (Western Monarch Milkweed Mapper, n.d.) were reviewed to determine the proximity of the closest known locations to the Project Application Area and help assess potential for breeding within the Project Application Area.

Field surveys were conducted in areas identified as having the highest potential for water accumulation and where monarch butterfly host plants, milkweed species (*Asclepias* spp.), are most likely to occur. These areas were determined with the use of high definition aerial imagery prior to the surveys. Sixteen areas were identified for surveys. These areas were surveyed by qualified botanists between March 10 and March 15, 2025, which was during the period when

annual plants were still identifiable. Twenty-meter belt transects were used to survey the areas. The locations of milkweed plants were documented. A list of nectar plants suitable for monarch foraging was produced for each survey area. Other notes on habitat suitability were recorded, including the presence of invasive plant species.

Following the literature review and field surveys, a habitat evaluation was conducted using a habitat evaluator tool created by the Monarch Joint Venture called the Roadside Monarch Habitat Evaluator (Monarch Joint Venture, n.d.). Data from the field surveys were input into this tool to develop habitat suitability scores for the Project Application Area for booth breeding and overwintering habitat.

Aquatic Resource Delineation

Wetlands potentially subject to USACE jurisdiction were delineated based on the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). The limits of non-wetland waters potentially subject to State or federal jurisdiction were determined following the methods outlined in *U.S. Army Corps of Engineers Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (OHWM Field Guide) (Lichvar and McColley 2008), the California Energy Commission's (CEC's) Mapping Episodic Stream Activity (MESA) protocols *as described in Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plant*s (Brady and Vyverberg 2014), and the CDFW's traditional definition of bed, channel, or bank as referenced in section 1602(a) of the California Fish and Game Code. The MESA protocols were developed to assist with delineation of streams in dryland environments, specifically within the arid and semi-arid Mojave, Sonoran, Great Basin, and eastern Sierra regions of California, to facilitate project permitting in compliance with California Fish and Game Code (CEC, n.d.)

Ironwood specialists conducted an initial field investigation (survey) for aquatic resources, including wetlands and other waters, from July 23 to July 25, 2022 (2022 site visit). During the 2022 site visit, wetlands were delineated in areas that are now avoided by the Project. Ironwood conducted additional delineations between April 1 and April 4, 2023, where aquatic resources were noted during the initial surveys. On April 25 and 26, 2024, Ironwood conducted additional surveys for aquatic features by traversing the additional project areas on private land and BOR-managed lands within the 2024 survey area. On April 30, 2024, Ironwood surveyed the areas potentially impacted by widening access roads to access the loop-in line corridor south of the solar site for aquatic features.

Existing Conditions

Topography and Geography

The Project Application Area is located within the Sonoran Desert of Southern California. The Project Application Area is bounded by power lines to the west, high-voltage transmission lines to the south, and an Interstate Highway to the north and east. A designated Area of Critical Environmental Concern (ACEC) is located north of the Project Application Area and separated

from the Project Application Area by Interstate 8 (I-8). The southern Project boundary includes the All-American Canal, Highway 98, the Tamarisk Long Term Visitor Area, and the U.S.–Mexico border. Land to the west of the Project Application Area consists of undeveloped open space, with an irrigated agricultural region further west of the open space. The topography of the Project Application Area is fairly flat and generally slopes downward at a gradient of less than 1 percent toward the northwest. Ground elevations of the Project Application Area range from approximately 85 feet (26 meters) in the northwest corner of the Project Application Area to 125 feet (38 meters) in the southeast corner of the Project Application Area (Ironwood Consulting 2023).

Watershed and Drainages

The Project Application Area is located within the Colorado River Hydrologic Region (HR). The Colorado River HR covers approximately 13 million acres (20,000 square miles) in southeastern California and is the most arid HR in California, with annual precipitation averaging less than 4 inches (WRCC 2022).

The Project Application Area is in the Southern Mojave-Salton Sea subregion of Hydrologic Unit Code (HUC) 18 Hydrologic region, which is a closed desert basin. The Project Application Area is located within the Deer Peak Watershed with East Highline Canal to the west, Coachella Canal to the east, and the All-American Canal bisecting the loop-in transmission corridor on the southern end of the Project Application Area. According to data from the National Hydrography Dataset (USGS 2019), two small, discontinuous, intermittent streams (one of which forks) occur on the western side of the Project Application Area. These intermittent streams correspond to vegetated drainage swales, likely with moderately deep ground water, but appeared to lack surface flow.

Vegetation and Other Land Cover

The dominant vegetation communities and land cover types within the BSA are summarized in Table 4.2-1, below.

Table 4.2-14.2-1 Vegetation Communities and Land Cover Types

Vegetation community	Summary description and sensitivity
Sonoran creosote bush scrub	Occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote bush (Larrea tridentata) scrub habitat of the Colorado Desert (Holland 1986). Sonoran creosote bush scrub is the dominant vegetation community throughout most of the Project Application Area. Sonoran creosote bush scrub is not designated as a sensitive plant community.
Microphyll woodland/desert dry wash woodland	Characteristic of desert washes and dominated by mesquite (Prosopis glandulosa) thickets. Holland (1986) describes this community as an open to relatively densely covered, drought-deciduous, microphyll (small compound leaves) riparian scrub woodland, often supported by braided wash channels that change following each surface flow event. Microphyll woodland/desert dry wash woodland is a sensitive vegetation community with a rarity rank of S3

Vegetation community	Summary description and sensitivity
Alkali goldenbush desert scrub	Occurs in moist or seasonally dry flats, and margins of intermittently saturated vegetated swales, with alkali goldenbush (Isocoma aradenia) and mesquite as the dominant vegetation. Alkali goldenbush desert scrub is a sensitive vegetation community with a rarity rank of S3 (CDFW 2023).
Arrow weed thickets	Occurs near seasonally flooded washes and stream borders, with arrow weed (Pluchea sericea) as 2 percent or more of absolute cover. In the Project Application Area, arrow weed thickets occur within the loop-in transmission lines on the southern edge of the All-American Canal. Arrow weed thickets are a sensitive vegetation community with a rarity rank of S3 (CDFW 2023a).
Common reed marsh	Characterized by greater than 2 percent absolute cover of common reed (Phragmites australis) and is sometimes considered invasive along waterways and wetlands. Common reed march is not a sensitive community.
Tamarisk thicket	Dominated by tamarisk (Tamarix ramosisima) and considered invasive along waterways. Tamarisk thickets are not a sensitive community.
Open water	Open water is present within the developed All-American Canal channel
Urban	Developed area; not sensitive

Wetlands and Riparian Areas

~~Five~~ Seven types of potentially jurisdictional aquatic features were identified in the Project Application Area during aquatic resource delineation surveys. The potentially jurisdictional features and acreage within the 2023 and 2024 survey areas are summarized in Table 4.2-2, below. Detailed maps of the jurisdictional features within the Project Application Area are shown in ~~Appendix J.3~~the Project's Aquatic Resources Report (Ironwood Consulting 2024).

Drainage channels dominated by vegetation including tamarisk, honey mesquite, or alkali goldenbush occur on the western side of the Project Application Area. These vegetated swales contain groundwater close enough to the surface to support deeply rooted species such as tamarisk and mesquite. Smaller drainage channels on the slopes above the vegetated swales show evidence of episodic flow. The All-American Canal is a man-made irrigation canal located

Table 4.2-2~~4.2-2~~ Aquatic Resources within the 2023 and 2024 Survey Areas

Aquatic resource type	Acres ~~or length~~
Wetlands	3.44~~36~~
All-American Canal	6.16~~5.96~~
Non-vegetated wash (OHWM)~~Man-made depressions~~	0.41~~0.09~~
Non-vegetated wash (bank to bank)~~Drainage channel (bank to bank)~~	1.42~~1.45~~
Alkali goldenbush-dominated vegetated wash~~Mesic/riparian woodland (mesquite thickets)~~	134.67~~25.48~~

Microphyll Woodland/Desert Dry Wash Woodland~~Non-native mesic/riparian woodland (tamarisk thickets)~~	10.18~~13.32~~
Tamarisk-dominated vegetated wash	14.18
Arrowweed-dominated vegetated wash	2.21
Total	**172.67**

south of the Project Application Area. ~~Two man-made depressions may have held pooled water in the recent past, as evidenced by mud cracks and honey mesquite in the bottom of the depressions.~~ Riparian woodland, both native and non-native, occur along the All-American Canal and in the western region of the Project Application Area. Wetlands occur along both banks of the All-American Canal and are dominated by common reed, with a low cover of arrow weed.

Sensitive Biological Resources

This section discusses special status species and sensitive biological resources that occur or have a potential to occur in the BSA. Sensitive biological resources are those that meet the criteria defined by California Energy Commission (CEC) in California Code of Regulations (CCR) title 20, Appendix B, requirement 13(A) including the following:

- Areas of Critical Concern as defined by 20 CCR section 1201(c) (formerly 1201(d)), including but not limited to wildlife refuges, wetlands, thermal springs, endangered species habitats, and areas recognized by the California Natural Area Coordinating Council and the Governor's Office of Planning and Research
- Species of Special Concern, as defined by 20 CCR section 1201(t) (formerly 1201(u)), including but not limited to species designated pursuant to State and federal law and those rare and endangered plant species recognized by the Smithsonian Institution or the California Native Plant Society
- Species and habitats identified by local, State, and federal agencies as needing protection, including but not limited to those identified by the California Natural Diversity Database (CNDDB) or, where applicable, in local coastal plans or in relevant decisions of the California Coastal Commission
- Species listed under the State or federal Endangered Species Act
- Species identified as state Fully Protected
- Species covered by Migratory Bird Treaty Act (MBTA)
- Species receiving consideration during environmental review under California Environmental Quality Act (CEQA) Guidelines 14 California Code of Regulations (CCR) section 15380
- Locally significant species that are rare or uncommon in a local context such as a county or region or is so designated in local or regional plans, policies, or ordinances
- Plant species listed as rare under the California Native Plant Protection Act
- Established native resident or migratory wildlife corridors or wildlife nursery sites

Assessments for the potential occurrence of special status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB and other sources, species occurrence records from other sites in the vicinity of the BSA, previous reports for the Project, and the results of surveys of the BSA. The potential for each special status species to occur in the BSA was evaluated according to the following criteria:

- Present: Species was observed within the BSA during surveys
- High: Both a historical record exists of the species within the Project Application Area or its immediate vicinity (approximately 10 miles) and the habitat requirements associated with the species occur within the Project Application Area.
- Moderate: Either a historical record exists of the species within the immediate vicinity of the Project Application Area (approximately 10 miles) or the habitat requirements associated with the species occur within the Project Application Area.
- **Low:** No records exist of the species occurring within the Project Application Area or its immediate vicinity and/or habitats needed to support the species are of poor quality.

Special Status Species

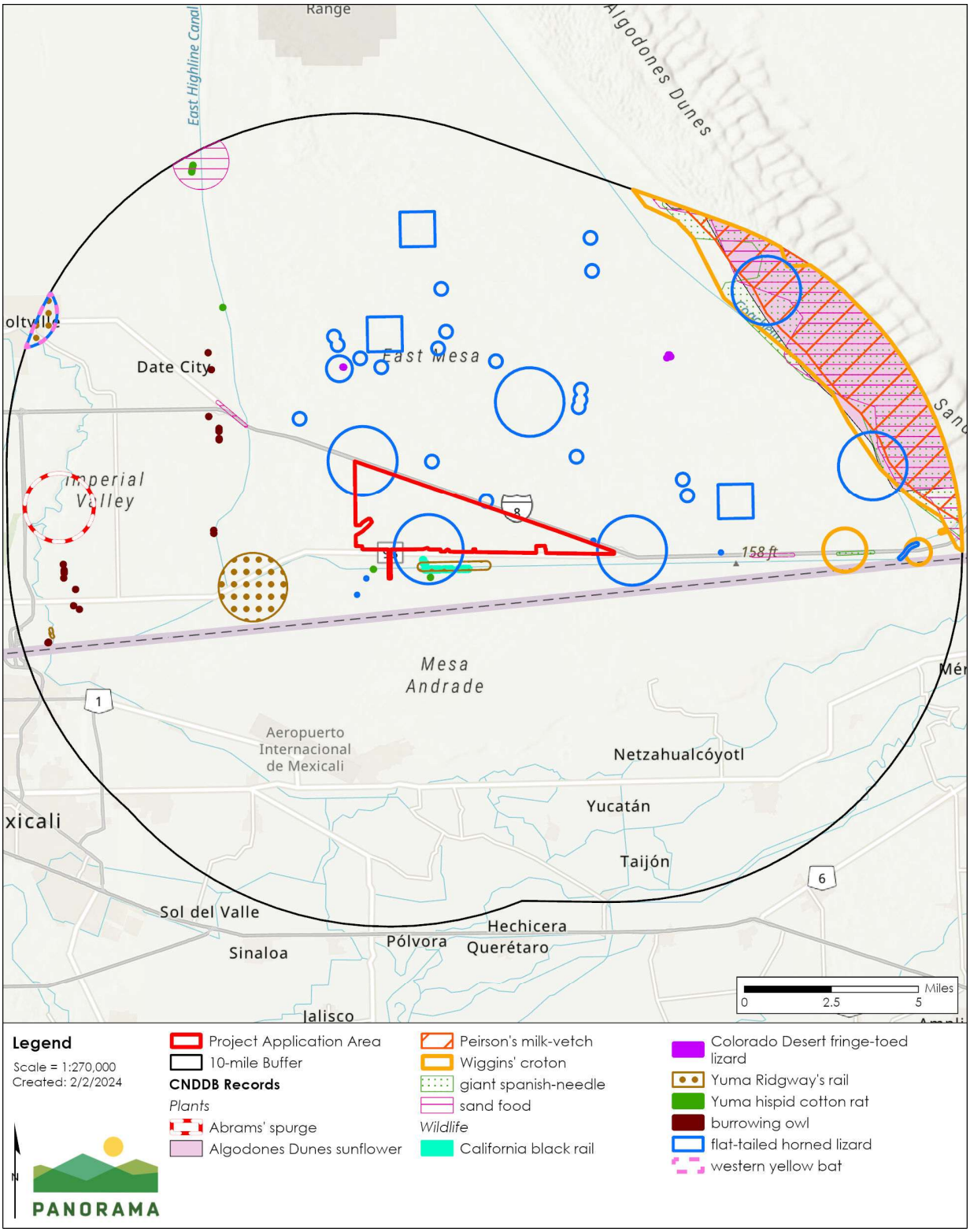
Special status species occurrences documented within 10 miles of the Project Application Area are shown in Figure 4.2-2. The probability of each species to occur on the Project Application Area is addressed in Appendix J.1-A (wildlife) and Appendix J.1-B (plants) of the BRTR (Appendix J.1). Detailed figures are provided in Appendix J.3.

Special Status Plant Species

Special status plants with a moderate to high potential to occur in the BSA and those observed during surveys are listed in Table 4.2-3.

Special status plant species ~~detected within the Project Application Area or~~ having moderate to high potential to occur in the Project Application Area based on the presence of suitable habitat, including seven plant species, are discussed in detail in Section 4.2 of the BRTR. One species, ribbed cryptantha, with a rank of 4.3 is listed in the BRTR; however, the species is common enough within the region that the species is not considered special status within the context of CEQA and is not discussed further in this section. Noteworthy invasive plant observations are summarized in Appendix J.1-C, Figure 12 of the BRTR (Appendix J.1). A comprehensive list of all plant species observed during surveys is included in Appendix J.1-D 2.

Figure 4.2-2 Special Status Species Occurrences within 10 Miles



Source: (Intersect Power 2023a; ~~)~~ California Department of Fish and Wildlife [~~(~~CDFW~~)~~ 2023)

Table 4.2-34.2-3 Special Status Plant Species with Potential to Occur in the Project Vicinity

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Pierson's milkvetch *Astragalus magdalenae* var. *Peirsonii*	FT SE 1B.2	Perennial herb; blooms from December to April. Occurs in sandy habitat and desert dunes, from 50 to 250 meters, with Sonoran desert scrub in San Diego, Riverside, Imperial, and Los Angeles counties.	Moderate across the Project Application Area	Not observed. Nearest record is 1.5 miles from the Project site.
Wiggin's croton *Croton wigginsii*	SR 2B.2	Perennial shrub; blooms from March to May. Occurs in sandy habitats and desert dunes, below 100 meters, with Sonoran Desert scrub in Imperial County.	Moderate across the Project Application Area	Not observed. Nearest record is 6 miles from the Project site.
Abram's spurge *Euphorbia abramsiana*	2B.2	Annual herb; blooms from September to November. Occurs in sandy, Mojavean desert scrub and Sonoran desert scrub, below 200 meters in Imperial, San Bernardino, San Diego, and Riverside counties	Low across the Project Application Area	Not observed. Nearest record is more than 10 miles from the Project site.
Algodones sunflower *Helianthus niveus* ssp. *Tephrodes*	SE 1B.2	Perennial herb; blooms from September to May. Occurs in sandy-Desert dunes-Sonoran desert scrub habitat below 100 meters, in Imperial, Riverside, and San Diego Counties.	Moderate across the Project Application Area	Not observed. Nearest record is 7 miles from the Project site.
Slender cottonheads *Nemacaulis denudata* var. *gracilis*	2B.2	Annual herb; blooms from January to May. Occurs in coastal dunes, desert dunes, and Sonoran desert scrub from 10 to 500 meters, in Imperial, Riverside, San Bernardino, and San Diego counties.	Moderate across the Project Application Area	Not observed. Nearest record is 15 miles from the Project site.
Giant Spanish needle *Palfixia arida* var. *gigantea*	1B.3	Annual or perennial herb, blooms from February to May. Occurs in sandy habitats, desert dunes and alkali sink, and Sonoran desert scrub below 610 meters in Imperial and Riverside counties.	High across the Project Application Area	Not observed. Nearest record is near Interstate 8, close to the Project site.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Sand food *Pholisma sonorae*	1B.2	Perennial shrub, blooms from April to May. Occurs in saline habitats and playa margins of Palen Dry Lake below 200 meters in Riverside County.	Moderate across the Project Application Area	Not observed. Nearest record is 5 miles from Project site.

Notes

[a] Conservation Status:

Federal

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

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

California Rare Plant Rank (CRPR)

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

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

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

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

CRPR 3 = Plants which need more information

CRPR 4 = Limited distribution (watch list)

CBR = Considered but rejected

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

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

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

California Endangered Species Act (CESA)

SR = State listed as rare

ST = State listed as threatened

SE = State listed as endangered

Special Status Wildlife Species

Special status animals with a moderate to high potential to occur within the Project Application Area and those observed during surveys are listed in Table 4.2-4, below. Presence or potential for denning or nesting sites as well as breeding habitat is also listed in Table 4.2-4 and further discussed in Section 4.1 and Appendix ~~J.1~~ A of the BRTR (February 2025). Population concentrations are depicted in ~~Appendix J.1 –~~ Figures 9 through 11 of the BRTR (February 2025).

Special status wildlife species observed within the Project Application Area or with moderate to high potential to occur based on the presence of suitable habitat are discussed in detail in Section 4.1 and Appendix ~~J.1~~ A of the BRTR, the Project's rail survey report (Blackhawk Environmental 2025), and the monarch butterfly habitat assessment (Ironwood Consulting 2025). ~~The results of wildlife surveys are summarized in Appendices J.1 C 1, 2, 3 and 5. A~~

~~comprehensive list of all wildlife species observed during surveys is included in Appendix J.1-D.~~

Table 4.2-~~4~~4.2-4 Special Status Wildlife Species with Potential to Occur in the Project Vicinity

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Invertebrates				
Western bumble bee *Bombus occidentalis*	SCE	Inhabits grasslands, shrublands, and urban grassy areas. Widely distributed throughout the western United States and Canada.	Moderate across Project Application Area	Not observed. Nearest CNDDB record is 22 miles from Project site.
Crotch's bumble bee *Bombus crotchii*	SCE	Inhabits grasslands and shrublands. Primarily occurs in California but range extends into Baja Mexico and Nevada.	Moderate across Project Application Area	Not observed. Nearest CNDDB record of observation 29 miles from Project site near the town of Brawley from 1948.
Monarch butterfly *Danaus plexippus*	FCT	Winter roosts are located in wind-protected tree groves with nectar and water sources nearby. Forage on milkweed (*Asclepias* spp.) and use them as larval hosts.	Foraging – moderate Breeding – low Overwintering – none	Nearest CNDDB record of observation 108 miles from Project site in 2014. May forage on milkweed that occur in the Project site. Roost and overwintering habitat not present onsite. Forage/larval habitat (milkweed) occurs onsite.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Reptiles				
Flat-tailed horned lizard *Phrynosoma mccalli*	SSC BLM-S	Typical habitat is sandy desert hardpan or gravel flats with scattered sparse vegetation of low species diversity. Most common in areas with a high density of harvester ants and fine windblown sand but rarely occurs on dunes. The historic range of this lizard is throughout most of the Colorado desert from the Coachella Valley south through the Imperial Valley and west into the Anza-Borrego desert, south to extreme NE Baja California, extreme SW Arizona, and NW Sonora, Mexico.	**Present** Suitable habitat across Project Application Area	One hundred live individuals observed on the Project site during surveys.
Colorado desert fringe-toed lizard *Uma notata*	SSC BLM-S	Inhabits sparsely vegetated arid areas with fine wind-blown sand, including dunes, flats with sandy hummocks formed around the bases of vegetation, washes, and the banks of rivers. Needs fine, loose sand for burrowing. Found in extreme southeast California in the Colorado Desert from the Salton Sea and Imperial sand hills east to the Colorado River, south to the Colorado River delta, and on into extreme northeastern Baja California. Ranges west as far as the east base of Borrego Mountain.	**Present** Suitable habitat only on Project site	One individual was observed on the Project site. Habitat on site is suitable for Colorado Desert fringe-toed lizards.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Birds				
Western burrowing owl *Athene cunicularia hypugaea*	SSC BLM-S BCC FOC	Typically found in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nesters that are dependent upon burrows made by other animals for nest shelters.	**Present** Suitable habitat in Project Application Area	Five live individuals and nine active burrows observed on Project site during surveys.
Swainson's hawk *Buteo swainsoni*	ST BLM-S (nesting) FOC	Require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Swainson's hawks typically nest in large native trees such as valley oak, cottonwood, walnut, and willow, and occasionally in non-native trees such as eucalyptus within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands.	**Present (flyover)** Forage habitat in Project Application Area Nesting – low	Two observations of flyovers were documented during surveys. No nests were observed. There are no CNDDB records in Imperial County, but historical observation from 1978 in Imperial County (eBird, n.d.).
Northern harrier *Circus hudsonius*	SSC BCC (nesting)	This species does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields.	Nesting – low Wintering or Migration – moderate in Project Application Area	Not observed. No CNDDB observations in Imperial County, but observations recorded recently in Salton Sea National Wildlife Refuge (eBird, n.d.).

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Southwestern willow flycatcher *Empidonax traillii extimus*	SE FE	Found primarily in dense riparian habitats with cottonwood/willow and tamarisk vegetation and microclimatic conditions dictated by local surroundings. Saturated soils, standing water, or nearby streams, pools, or cienegas are an important component of nesting habitat.	Nesting – low Migration – moderate	Not observed in Project site during surveys. Nearest CNDDB record is 34 miles from the Project site in 2004. No suitable nesting habitat is present onsite. Project site may be used for foraging during migration.
Prairie falcon *Falco mexicanus*	WL (nesting)	Occurs in annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Typically nests cliffs and bluffs.	Nesting – low Foraging – moderate in Project Application Area	Not observed. Nearest CNDDB record approximately 30 miles east of Project site and observed 35 miles east of Project Application Area in Winterhaven in 2021 (eBird, n.d.).
American peregrine falcon *Falco peregrinus anatum*	~~CFP~~ CDF-S (nesting)	Rare in the arid southwest, occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures.	Nesting – low Foraging – moderate in Project Application Area	Not observed. No CNDDB records in Imperial County but observed east of the Project Application Area, at Brock Research Center, in 2011 (eBird, n.d.).
Loggerhead shrike (Nesting) *Lanius ludovicianus*	SSC (nesting)	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats.	**Present** Foraging in Project Application Area	Eleven observations on Project site during surveys. No nests were observed.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Black-tailed gnatcatcher *Polioptila melanura*	WL	A year-round resident in southwestern United States and central and northern Mexico. In California, the black-tailed gnatcatcher is found in the southeast desert wash habitat from Palm Springs and Joshua Tree National Park south and along the Colorado River. It is now rare in eastern Mojave Desert north to the Amargosa River, Inyo County. This species nests primarily in wooded desert wash habitat but also occurs in creosote scrub habitat during the non-breeding season.	**Present** Foraging in Project Application Area Nesting – moderate across Project Application Area	Eight observations recorded on the Project site during surveys
California black rail *Laterallus jamaicensis coturniculus*	ST CFP BLM-S	Small populations occur in the freshwater marshes of the Colorado River.	Moderate within BAAH and loop-in corridor, along All-American Canal Nesting – low	~~Not observed.~~Three were observed within suitable habitat along the All-American Canal just over 500 feet west of the loop-in corridor. ~~Occupied habitat in freshwater marsh east of loop-in transmission corridor. They may fly over the Project site, but N~~no nesting or foraging habitat exists within the Project site, but they may fly over the Project site.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Ridgway's (Yuma Ridgway's) rail *Rallus obsoletus yumanensis*	SE CFP FE	In California, nests in freshwater marshes and wetlands along the lower Colorado River, the Coachella Canal, the Imperial Valley, and the upper end of the Salton Sea at the Whitewater River delta and Salt Creek.	Moderate within BAAH and loop-in corridor, along All-American Canal Nesting – low	~~Not observed.~~A pair was observed within suitable habitat along the All-American Canal approximately 1,000 feet west of the loop-in corridor. ~~Occupied habitat in freshwater marsh east of transmission line corridor. They may fly over the Project site, but N~~no nesting or foraging habitat exists within the Project site, but they may fly over the Project site.
Bank swallow *Riparia riparia*	ST BLM-S (nesting)	A neotropical migrant found primarily in riparian and other lowland habitats in California west of the deserts during the spring–fall period. Uses holes dug in cliffs and riverbanks for cover. Will also roost on logs, shoreline vegetation, and telephone wires.	Nesting – low Migration – moderate within BAAH and loop-in corridor, along All-American Canal	Not observed. No CNDDB records in Imperial County, but observed in the Salton Sea in 2023 (eBird, n.d.). No suitable nesting habitat.
Bats				
Pallid Bat~~Western yellow bat~~ *Antrozous pallidus~~Lasiurus xanthinus~~*	BLM-S~~SSC~~ ~~WBWG-H~~	Roost in rock crevices and caves, mines, rock piles, and tree cavities. Forage for prey over open ground in grassland, shrub-steppe, and dry forest ecotones. Foraging habitat occurs onsite; roosting habitat may be available in tree cavities in adjacent desert dry wash woodlands.~~Recorded below 600 m (2000 ft.) in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. This species occurs year-round in California.~~	Roosting – low Foraging – moderate~~Moderate for foraging and roosting across Project Application Area~~	Not observed, but potentially detected in acoustic surveys. Nearest record is approximately 20 miles from the Project site.~~Not observed. Several CNDDB records 10 miles from the Project site.~~

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
California leaf-nosed bat *Macrotus californicus*	SSC BLM-S	Occurs in Sonoran and Mojave desert scrub. Uses buildings and bridges as night roosts, but depend on mines or caves for roosting and overwintering. Forage in vegetation along dry washes and in vegetated areas. No suitable roosting habitat occurs onsite, but foraging habitat is present in the form of adjacent dry wash woodlands and other vegetated areas onsite.	Roosting – low Foraging – **present**	Not observed, but detected in acoustic surveys. Nearest record is approximately 17 miles from the Project site.
Arizona myotis *Myotis occultus)*	SSC	Predominately found in Sonoran desert scrub with creosote bush, brittlebush, palo verde, and cacti. Roosts in caves, tunnels, mine shafts, under bridges, and sometimes in buildings within a few miles of water. No suitable roosting habitat occurs onsite, but foraging habitat is present in the form of adjacent desert dry wash woodlands.	Roosting – none Foraging – low	Not observed. There is one record in Imperial County from 1910 and is typically only confirmed if observed or with genetic sampling. Likelihood of occurrence is low.
Yuma myotis *Myotis yumanensis*	BLM-S	Prefers to inhabit cliffs and rocky walls, buildings, and abandoned cliff swallow mud nests; rarely roosts in caves or mines. Forages on insects in proximity to standing water. No suitable roosting habitat occurs onsite, but suitable foraging habitat occurs in the adjacent desert dry wash woodlands.	Roosting – none Foraging – moderate	Not observed, but potentially detected in acoustic surveys. Nearest record is approximately 35 miles from Project site.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Cave myotis *Myotis velifer*	BLM-S	Found in desert scrub, desert succulent shrub, desert wash, and desert riparian habitats. Tend to forage near riparian vegetation. Roosts in caves and mines and occasionally buildings in the summer. No suitable roosting habitat occurs onsite, but foraging habitat is present in the adjacent desert dry wash woodland areas.	Roosting – none Foraging – moderate	Not observed, but potentially detected in acoustic surveys. Nearest record is approximately 20 miles from the Project site.
Western yellow bat *Lasiurus xanthinus*	SSC WBWG-H	Found in arid regions in riparian, desert riparian, desert wash, and palm oasis habitats. Roosts and feeds in palm oases and riparian habitats. Roosts primarily in trees in riparian habitats. Suitable foraging and roosting habitat is available in the desert dry wash woodlands adjacent to the Project site.	Roosting – low Foraging – moderate	Not observed or detected in acoustic surveys. Nearest record of western yellow bat 10 miles from the Project site.
Mammals				
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	SSC	Occur along the Colorado River, in grass and agricultural areas near irrigation waters, and wetlands and uplands with dense grass and herbaceous plants.	Moderate within BAAH and loop-in corridor, along All-American Canal	Occurrences are located near the freshwater marsh habitat associated with the All-American Canal within the loop-in corridor of the Project site.
Burro deer *Odocoileus hemionus eremicus*	CPGS FOC	Occur in early to intermediate successional stages of most forest, woodland, and brush habitats. Prefer a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and free water.	High across Project Application Area	No live individuals detected. Scat, tracks, and carcass observed during surveys. Burro deer may use site to access All-American Canal.
American badger *Taxidea taxus*	SSC	Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils.	Moderate in Project site	No individuals or sign observed on site; suitable habitat is present.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Desert kit fox *Vulpes macrotis*	~~FE~~ ~~ST~~ FOC	Lives in annual grasslands or grassy open stages of vegetation dominated by scattered brush, shrubs, and scrub. Cover provided by dens they dig in open, level areas with loose-textured, sandy, and loamy soils.	Present in Project site	No live individuals detected. One active burrow and multiple inactive burrows were observed during surveys.

Notes

[b] Conservation Status:

Federal

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

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

FCT = Proposed for federal listing as a threatened species

BCC = Fish and Wildlife Service: Birds of Conservation Concern

FSS = United States Forest Service Sensitive

State

SSC = State Species of Special Concern

CFP = California listed as Fully Protected

SE = State listed as endangered

ST = State listed as threatened

SCE = State candidate for endangered listing

WL = State watch list

CPF = California Protected Furbearing Mammal

CPGS = California Protected Game Species

CDF-S = California Department of Forestry and Fire Protection Sensitive

Bureau of Land Management

BLM-S = BLM sensitive

FOC = DRECP Focus and Planning Species

Western Bat Working Group (WBWG)

H = Imperiled or at high risk of imperilment

M = Warrant closer evaluation, more research, and conservation actions

L = Most of the existing data support stable populations

**Species not detected during surveys may have the potential to occur in the Project Application Area in the future

Sensitive Natural Communities and Critical Habitat

Plant communities are considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance. Vegetation rarity ranking is based on a rank calculator developed by NatureServe. According to the CDFW Vegetation Program, alliances with state ranks of S1 to S3, as well as certain additional associations specifically noted as sensitive, are considered to be

imperiled and, thus, potentially of special concern. Three sensitive natural communities: microphyll woodland/desert dry wash woodland, alkali goldenbush desert scrub, and arrow weed thickets all occur within the BSA and have a state rarity rank of S3 (CDFW 2023a). Microphyll woodland and alkali goldenbush desert scrub occur in the southwest portion of the Project site. Alkali golden scrub and arrow weed thickets occur in the southern portion of the loop-in transmission lines corridor, along the All-American Canal. Detailed descriptions of these communities and their locations are in the BRTR (Appendix J.1).

No USFWS-designated Critical Habitat occurs within the BSA (USFWS 2015).

Wildlife Movement

Wildlife movement corridors, or *habitat linkages*, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

Habitats within a linkage are not necessarily the same as those being linked. Rather, the linkage needs only contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species during periods of movement among areas of suitable habitat. Typically, habitat linkages are contiguous strips of natural areas though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending on the species, a linkage may require specific minimum physical characteristics (e.g., rock outcroppings, specific vegetation cover) to function as an effective wildlife corridor and allow those species to traverse the linkage. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a relatively short period of time.

Data from the CDFW Biographic Information System (BIOS) (CDFW, n.d.-a) and the California Essential Habitat Connectivity Project (CDFW 2010c) were accessed to analyze wildlife movement. The BSA is not located within an identified wildlife movement corridor or linkage (CDFW 2010c; n.d.-a). Imperial County is located within the Pacific Flyway, and the Salton Sea and surrounding agricultural areas are important stop overs for birds migrating from Mexico to Canada. While the Imperial Valley contains important habitat for migratory birds, the BSA, with the exception of the All-American Canal, does not contain agricultural areas or water features that are important for migratory birds.

Habitat Conservation Plans

There are no local, regional, or state conservation planning areas located within the BSA (CDFW, n.d.).

4.2.2 Impact Analysis

Potential direct and indirect impacts to biological resources were evaluated to determine the permanent and temporary effects of Project construction, operation and maintenance (O&M), and decommissioning activities.

Methodology

Impacts result from project-related activities that destroy, damage, alter, or otherwise affect biological resources. This may include injury or mortality to plant or wildlife species, effects on an animal's behavior (e.g., frightening off an animal by construction noise) as well as the loss, modification, or disturbance of natural resources or habitats. Impacts are either direct or indirect, and either permanent or temporary. This section includes a brief overview of the types of impacts analyzed in this section.

Direct impacts involve a direct physical change in the environment which is caused by a project and occur at the same time and place (CEQA Guidelines, section 15358.) Direct impacts may include injury, death, and/or disturbance of special-status species if present in the work areas or vicinity. Direct impacts may also include direct physical changes to the environment such as dust, noise, and traffic, or the destruction of vegetation communities necessary for special-status species breeding, feeding, or sheltering.

Indirect impacts are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. (CEQA Guidelines, section 15358.) Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems. (*Id.*) Specific examples of indirect impacts could include colonization by invasive species (particularly weedy plant species that outcompete native plant species), or dust drifting out of disturbance areas and covering native plants, thereby decreasing their photosynthetic capacity.

Permanent impacts are those that result in the long-term or irreversible loss of biological resources. For example, construction of a new electrical substation, which would result in a large, developed, and fenced property where native vegetation may have existed before would be a permanent impact.

Temporary impacts are those that are reversible over time, with or without implementation of mitigation measures. Examples include the generation of fugitive dust and noise during Project construction, trimming or crushing vegetation that will regrow following Project construction, and removed vegetation that will be actively restored. These temporary impacts are anticipated to last during Project construction and shortly thereafter; however, the biological resources are anticipated to return to baseline conditions after Project construction.

Impact Evaluation Criteria

The following threshold criteria, as defined by the CEQA Guidelines Environmental Checklist (Appendix G of the CEQA Guidelines), were used to evaluate potential impacts on biological

resources. Based on these criteria, the Project would have a significant impact on biological resources if it would:

- 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;
- 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 CDFW or USFWS;
- Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, any marsh, vernal pool, or coastal habitat) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

Analysis of Impacts to Vegetation and Habitats

Analyses of impacts to special status plant and wildlife species, as discussed below in Impact BIO-1, rely on an understanding of the amount and types of vegetation impacted by the Project. Table 4.2-5 details the vegetation types within the Project Application Area and the acreage of impact expected for each vegetation type.

Table 4.2-5~~4.2-5~~ Acres of Project Impacts to Vegetation and Mitigation Ratios

Vegetation Type	Solar Facility (Permanent)	BAAH Substation (Permanent)	Loop-in Line (Permanent)	Loop-in Line (Temporary)	Mitigation Ratio[b]
Alkali goldenbrush desert scrub[a]	81.3	0	1.5	1.4	1:1
Arrowweed scrub	0	0	0.6	0	1:1
Mojave creosote bush scrub[a]	5,912.2	35.2	4.9	14.7	1:1
Tamarisk thickets	0	0	0.9	0	1:1
Total	**5,993.5**	**35.2**	**7.8**	**16.2**	1:1

[a] Western burrowing owl and flat-tailed horned lizard mitigation is nested within the mitigation for this vegetation community.

[b] All impacts are mitigated at a 1:1 ratio for the DRECP.

Table 4.2-5 also shows the species requiring compensation under CEQA and the habitats that they utilize. The DRECP and Flat-Tailed Horned Lizard Management Plan both require a 1:1 compensation ratio for impacts to vegetation or to flat-tailed horned lizard habitat. Burrowing owl will share the same mitigation ratio.

Impact BIO-1

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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? *(Less than significant)*

Special Status Plant Species

Suitable habitat of sandy substrate and creosote bush scrub exists on the Project Application Area for Pierson's milk vetch, Wiggin's croton, Algodones sunflower, ribbed cryptantha, slender cottonheads, giant Spanish needle, and sand food. There is marginal habitat in the Project Application Area for Abram's spurge, due to the fine sand on a majority of the Project Application Area. Focused surveys for spring blooming special status plant species were conducted in the spring of 2023, and none of these plant species were observed during focused surveys. Abram's spurge is expected to have a low potential for occurrence due to types of soils onsite and the nearest record being more than 10 miles away. Due to its low potential for occurrence, fall plant surveys were not conducted for this species in the Project Application Area.

Direct Impacts – Project Site Components

Because no special status plants occur on BLM administered lands within the Project Application Area or within a buffer from BLM-administered lands, based on surveys to date, the Project would not impact special status plants on BLM-administered lands and therefore impacts would be considered less than significant under CEQA.

Surveys for special status plants have not yet been completed on private lands and BOR administered lands; surveys for special status plants will be completed on private lands and BOR administered lands in the spring of 2024. If a special status plant were to occur on private lands or BOR lands, direct impacts on special status plant could occur during construction, operation, or decommissioning and those direct impacts on special status plants would be considered significant under CEQA. Once surveys have been completed on the private lands and BOR lands, the Application will provide a survey report that would include an analysis of impacts to special status plants, if present, and proposed mitigation measures as needed.

Direct Impacts – BAAH Switchyard

Because no special status plants occur on the BAAH switchyard or within a buffer, the BAAH switchyard would not impact special status plants on BLM-administered lands and therefore impacts would be considered less than significant under CEQA.

Direct Impacts – Loop-in transmission lines
Because no special status plants occur on the loop-in transmission lines or within a buffer, the loop-in transmission lines would not impact special status plants on BLM-administered lands and therefore impacts would be considered less than significant under CEQA.

Indirect Impacts – Project Site Components
Potential indirect impacts on special status plants during construction, operation, or decommissioning could include the introduction or spread of invasive plant species or fugitive dust (during construction and decommissioning) that could outcompete sensitive species or degrade habitat. Because no special status plant species are known to occur in the Project Application Area o, indirect impacts on special status plants are unlikely to occur. Due to the absence of special status plant populations in proximity to the project, indirect impacts on special status plants would be considered less than significant under CEQA.

Because special status plant species have not yet been completed for the entire 1-mile area surrounding the Project Application Area, there is a potential for indirect impacts to special status plant species within 1 mile of the Project Application Area. The Project would adhere to BMP-20 to minimize dust impacts, and BMP-33, and PDF BIO-4 to minimize potential impact related to invasive species spread. Because the Project would minimize impacts on special status species that may occur within 1 mile of the Project Application Area, indirect impacts on special status plants would be less than significant.

Indirect Impacts – BAAH Switchyard
Potential indirect impacts on special status plants during construction, operation, or decommissioning of the BAAH switchyard could include the introduction or spread of invasive plant species or fugitive dust that could outcompete sensitive species or degrade habitat. Because no special status plant species are known to occur in the BAAH switchyard, indirect impacts on special status plants are unlikely to occur. Due to the absence of special status plant populations in proximity to the Project, indirect impacts on special status plants would be considered less than significant under CEQA.

Because special status plant species have not yet been completed for the entire 1-mile area surrounding the Project Application Area, there is a potential for indirect impacts to special status plant species within 1 mile of the Project Application Area. The Project would adhere to BMP-20 to minimize dust impacts, and BMP-33, and PDF BIO-4 to minimize potential impact related to invasive species spread. Because the Project would minimize impacts on special status species that may occur within 1 mile of the Project Application Area, indirect impacts on special status plants would be less than significant.

Indirect Impacts – Loop-in transmission lines
Potential indirect impacts on special status plants during construction, operation, or decommissioning of the loop-in transmission lines could include the introduction or spread of invasive plant species or fugitive dust that could outcompete sensitive species or degrade habitat. Because no special status plant species are known to occur in the loop-in transmission

lines, indirect impacts on special status plants are unlikely to occur. Due to the absence of special status plant populations in proximity to the Project, indirect impacts on special status plants would be considered less than significant under CEQA.

Because special status plant species have not yet been completed for the entire 1-mile area surrounding the Project Application Area, there is a potential for indirect impacts to special status plant species within 1 mile of the Project Application Area. The Project would adhere to BMP-20 to minimize dust impacts, and BMP-33, and PDF BIO-4 to minimize potential impact related to invasive species spread. Because the Project would minimize impacts on special status species that may occur within 1 mile of the Project Application Area, indirect impacts on special status plants would be less than significant.

Direct Impacts on Special Status Wildlife Species – Project Site Components

Western bumble bee and Crotch's bumble bee

The western bumble bee and Crotch's bumble bee were not observed during Project surveys. Some suitable foraging habitat occurs within the Project Application Area since some of the plant families associated with western bumble bee and Crotch's bumble bee nectar sources occur on the Project Application Area. While suitable habitat on the Project site occurs, the active agriculture and developments adjacent to the Project site could lower habitat suitability with the potential use of pesticides. Ground nesting habitat is unlikely, due to the predominantly sandy substrate in the Project Application Area, but could be found in abandoned rodent burrows or bird nests (Hatfield et al. 2012).

Direct impacts to western bumble bee and Crotch's bumble bee that may forage in or migrate through the BSA are not expected, as these non-resident individuals would be able to avoid any sources of disturbance during construction, operation, or decommissioning. The project could impact a nest of western bumble bee or Crotch's bumble bee if one were to establish on the site at the time of construction. Western bumble bee and Crotch's bumble bee may be directly impacted by loss or degradation of foraging habitat due to removal of nectar source plants. The Project would implement CMAs LUPA-BIO-1, LUPA-BIO-2, and LUPA-BIO-3, which require protocol surveys, biological monitoring, and resource setbacks, if nests are encountered (see Appendix D.2 for the full text of the CMAs). The Project would implement CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2, which require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project. Because the Project would compensate for impacts on western bumble bee and Crotch's bumble bee habitat, the direct impacts on western bumble bee and Crotch's bumble bee would be less than significant.

Monarch butterfly

Monarch butterfly was not observed incidentally during Project surveys. Results of the habitat assessment showed that the Project Application Area contains moderate foraging habitat and low quality breeding habitat and does not contain overwintering habitat. Existing habitat suitability models indicated that the habitat within the Project Application Area is of low quality for monarch butterfly and does not have regional or local importance for monarch butterfly populations (Dilts et al. 2019; McIntyre et al. 2024; WAFWA 2019). Field surveys

confirmed the presence of foraging habitat (nectar producing plants) and breeding habitat (milkweed plants) within the Project application. One milkweed species, rush milkweed (*Asclepias subulata*), was found onsite. The closest breeding records were over 60 miles from the Project Application Area near Palm Springs and Cleveland National Forest (Western Monarch Milkweed Mapper, n.d.). Because of the low diversity of milkweed and forage plant species as well as other factors, such as the presence of invasive plant species and the proximity to agricultural areas that likely use pesticides that degrade habitat quality, the Roadside Monarch Habitat Evaluator tool resulted in a habitat evaluation of low to moderate likelihood for breeding within the Project Application Area.

Direct impacts to monarch butterfly that may forage in or migrate through the area are not expected, as these non-resident individuals would be able to avoid any sources of disturbance during construction due to the slow-moving vehicles, operation, or decommissioning. Monarch butterfly may be directly impacted by loss or degradation of foraging and breeding habitat due to removal of milkweed plants. The Project would implement CMAs LUPA-BIO-1 and LUPA-BIO-2, which require protocol surveys and biological monitoring. The Project would implement CMA LUPA-BIO-COMP-1, which requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project. Because the Project would compensate for impacts on monarch butterfly, the direct impacts on monarch butterfly would be less than significant.

Flat-tailed horned lizard and Colorado desert fringe-toed lizard

Flat-tailed horned lizards and Colorado desert fringe-toed lizards occur in the Project Application Area and could nest or forage within all Project areas, including the PV panels, BESS, substation, breaker and a half, and loop-in transmission corridor. During surveys, one hundred live flat-tailed horned lizard individuals, six carcasses, two hundred seventy-seven tracks, and one hundred ninety-six scat were observed. One live Colorado desert fringe-toed lizard was observed during surveys on the Project Application Area.

Because flat-tailed horned lizards and Colorado desert fringe-toed lizards occur on the Project Application Area, construction, operation and maintenance, or decommissioning activities could cause injury or mortality of individuals of both species from destruction of occupied burrows and/or active nest sites, vegetation removal, vehicle traffic, and open trenches that could entrap individuals. The species may also be subject to direct impacts due to the loss or degradation of breeding and foraging habitat in work areas resulting from vegetation clearing and ground disturbance. These direct impacts to flat-tailed horned lizards and Colorado desert fringe-toed lizards would be considered significant under CEQA without mitigation.

The Project would implement CMA LUPA-BIO-IFS-10, which requires compliance with the current Flat-Tailed Horned Lizard Rangewide Management Strategy (RMS); CMA LUPA-BIO-COMP-1, which requires habitat compensation for flat-tailed horned lizard in compliance with the RMS; LUPA-BIO-5, which requires reduced vehicle speed and long-term impact reductions to lizards; and LUPA-BIO-14 requiring covering of steep wall excavations and trenches to reduce risk of entrapment of a lizard. The text of these CMAs is set forth in full in Appendix D.2.

-In addition, the Applicant has proposed PDF BIO-1, which requires biological monitoring by trained flat-tailed horned lizard monitors; PDF BIO-2, which includes worker environmental awareness training with special emphasis on flat-tailed horned lizard and Colorado desert fringe-toed lizard; and PDF BIO-5, which includes procedures for wildlife avoidance. The text of these PDFs is set forth in full in Appendix D.1. Because the Project would implement procedures for avoidance of flat-tailed horned lizard and Colorado desert fringe-toed lizard and would compensate for impacts on flat-tailed horned lizard habitat, the direct impacts on flat-tailed horned lizard and Colorado desert fringe-toed lizard would be less than significant with the implementation of CMAs and PDFs.

The Project would also implement CMA LUPA-BIO-IFS-10, which requires compliance with the current Flat-Tailed Horned Lizard Rangewide Management Strategy (RMS). CMA LUPA-BIO-COMP-1 would require habitat compensation for flat-tailed horned lizard at a 1:1 ratio in compliance with the RMS. Therefore, the compensatory mitigation ratio for impacts to flat-tailed horned lizard habitat would be 1:1.

Burrowing owl

Burrowing owls occur within the Project Application Area and could potentially nest or forage within all Project areas including the PV panels, BESS, substation, breaker and a half, and loop-in transmission corridor. During breeding season surveys, ~~Five~~ seven live individuals, ~~nine~~ thirteen active burrows, and two carcasses were observed ~~during surveys~~. During non-breeding season, two live individuals, forty-seven burrows with sign, and two areas of burrowing owl sign were observed.

Due to the presence of burrowing owls on the Project Application Area during surveys, it is assumed that burrowing owl would occur in the area during construction. Construction, operating and maintenance, or decommissioning activities in proximity to active burrows could directly impact individual burrowing owls or active nests through injury or mortality from collisions with Project vehicles or equipment; destruction of occupied burrows and/or active nest sites; and disturbance from increased vehicle traffic, noise at work sites, and human presence that could result in an interruption of normal behaviors or nest abandonment. Burrowing owls may also be subject to direct impacts due to the temporary loss or degradation of foraging and nesting habitat) in work areas resulting from vegetation mowing and ground disturbance. Direct impacts on any burrowing owls that occur in the Project Application Area and direct vicinity of the Project would be considered significant under CEQA without mitigation.

The Applicant proposes to implement BLM CMAs on the entire Project Application Area. CMA DFA-BIO-IFS-1 requires clearance surveys for burrowing owls no less than 14 days prior to ground disturbance. CMA LUPA-BIO-IFS-12 and LUPA-BIO-IFS-13 require biological monitoring to ensure avoidance of occupied burrows and a 200-meter setback to minimize disturbance and passive exclusion and relocation for any burrows that cannot be avoided. If burrowing owls cannot be avoided, LUPA-BIO-IFS-14 allows for translocation of burrowing owls in coordination with CDFW. The Nesting Bird Management Plan (NBMP) (Appendix M.2)

and Bird and Bat Conservation Strategy (BBCS) (Appendix M.1) also contain procedures to reduce potential impacts on burrowing owl during construction and operation. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation for any impacts to birds. PDF BIO-6 includes implementation of the BBCS. Because the CMAs, NMBP, BBCS, and PDFs define procedures to avoid direct impacts on burrowing owls, translocation would only occur if avoidance is not possible, and the CMAs define procedures for habitat compensation that would offset habitat loss for burrowing owl, impacts on burrowing owl would be less than significant with implementation of the CMAs and PDFs.

Additionally, due to the presence of burrowing owl and the petition to list the burrowing owl as threatened or endangered under CESA, the Project has provided Incidental Take Permit Applications for the solar site and the BAAH substation which include proposed minimization and mitigation measures that would bring the project's impact to burrowing owls to less than significant.

Loggerhead shrike and Black-tailed gnatcatcher

Loggerhead shrike and black-tailed gnatcatchers occur within the Project Application Area and could potentially nest or forage within all Project areas including the PV panels, BESS, substation, breaker and a half, and loop-in transmission corridor. Surveys and avian counts within the BSA documented eleven observations of live loggerhead shrike individuals and eight observations of live black-tailed gnatcatcher individuals.

If loggerhead shrike and black-tailed gnatcatcher are present in Project disturbance areas during construction, operation and maintenance, or decommissioning activities, individuals of the species may be directly impacted through injury or mortality resulting from collisions with Project vehicles or equipment; destruction of occupied and/or active nest sites; or disturbance from increased vehicle traffic, noise at work sites, and human presence that could result in an interruption of normal nesting or foraging behaviors or nest abandonment. During the Project operational period, the loop-in transmission lines, gen-tie line, and solar panels could result in collisions with loggerhead shrike and black-tailed gnatcatcher. The species may also be subject to direct impacts due to the loss or degradation of foraging habitat in work areas resulting from vegetation mowing or ground disturbance. Direct impacts on loggerhead shrike and black-tailed gnatcatcher would be considered significant under CEQA without mitigation.

The Project would implement an NBMP and a BBCS (Appendix M.2 and Appendix M.1, respectively) in compliance with CMA LUPA BIO-16, which include procedures for construction monitoring for nesting birds and avoidance of an active nest during construction, as well as long-term monitoring and adaptive management during operation. PDFs BIO-6 and BIO-7 require implementation of the BBCS and require flight diverters on Project transmission lines and other features to reduce the risk of bird collisions. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation required for any impacts to birds, including loggerhead shrike and black-tailed gnatcatcher. Because the CMAs, NMBP, BBCS,

and PDFs define procedures to avoid, minimize, and mitigate direct impacts on loggerhead shrike and black-tailed gnatcatcher, including requirements for habitat compensation that would offset habitat loss, impacts on loggerhead shrike and black-tailed gnatcatcher would be less than significant with implementation of the CMAs and PDFs.

Swainson's hawk

Two live Swainson's hawk individuals were observed in the BSA. The Project Application Area provides suitable foraging habitat during migratory season but does not contain nesting habitat for Swainson's hawk and is outside the species' breeding range.

Potential direct impacts to Swainson's hawk include loss of migratory foraging habitat and potential injury or mortality if an individual is struck or collides with Project components, including the loop-in transmission lines, gen-tie line, or PV panels, during a stopover. The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management, as well as requirements for bird diverters on the loop-in transmission lines and gen-tie line and design requirements to reduce collisions with Project facilities. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation required for any impacts to birds. Because the foraging habitat in the Project Application Area is regionally common and impacts would be offset through compensation, and because the Project includes design features to minimize collisions with Swainson's hawk, the impact on Swainson's hawk would be less than significant.

Northern harrier, prairie falcon, American peregrine falcon

No northern harriers, prairie falcons, or American peregrine falcons were observed in the Project Application Area during surveys or avian counts. The Project Application Area provides suitable foraging habitat but does not contain suitable nesting habitat for northern harrier, prairie falcon, or American peregrine falcon.

Direct impacts on northern harriers, prairie falcons, and American peregrine falcons include loss of foraging habitat and potential injury or mortality if an individual is struck or collides with Project components, including the loop-in transmission lines, gen-tie line, or PV panels. The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management, as well as requirements for bird diverters and project design requirements to reduce collisions with Project facilities. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation required for any impacts to birds, including northern harrier, prairie falcon, and American peregrine falcon. Because the foraging habitat in the Project Application Area is regionally common and impacts on foraging habitat would be offset through compensation, and because the Project includes design features to minimize collisions with northern harrier, prairie falcon, and American peregrine falcon, the impact on these species would be less than significant.

Southwestern willow flycatcher

Southwestern willow flycatcher was not observed onsite incidentally or during avian surveys, but could potentially forage within riparian areas present in Project site components and the loop-in transmission corridor. Microphyll woodland/desert dry wash woodland vegetation communities provide suitable foraging habitat for southwestern willow flycatcher and are located within the western portion of the Project site and a small section on the southern border. However, this vegetation community type has been mostly avoided in Project design and so direct impacts to Southwestern willow flycatcher as a result of habitat loss are not expected to be significant in these areas.

If southwestern willow flycatcher is present in or near the Project disturbance areas during construction, operation and maintenance, or decommissioning activities, individuals of the species may be directly impacted through injury or mortality resulting from collisions with Project vehicles or equipment or disturbance from increased vehicle traffic, noise at work sites, and human presence that could result in an interruption of normal foraging behaviors. During the Project operational period, southwestern willow flycatcher could collide with the loop-in transmission lines, gen-tie line, and solar panels.

The Project would implement a Nesting Bird Management Plan (Opt-in Application Appendix M.2) and a BBCS (Data Response Set 2 Attachment C.7) in compliance with CMA LUPA BIO-16, which include procedures for construction monitoring for birds and use of bird-compatible design standards for transmission and fencing where feasible, as well as long-term monitoring and adaptive management during operation. PDFs BIO-6 and BIO-7 require implementation of the BBCS and require flight diverters on Project transmission lines and other features to reduce the risk of bird collisions. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation required for any impacts to birds, including southwestern willow flycatcher. PDF AQ-1 would require a 15 miles per hour speed limit on unpaved areas within the site which would minimize wildlife collisions. Because the CMAs, NMBP, BBCS, and PDFs define procedures to avoid, minimize, and mitigate direct impacts on southwestern willow flycatcher, including requirements for habitat compensation that would offset habitat loss, impacts on southwestern willow flycatcher would be less than significant with implementation of the CMAs and PDFs.

Pallid bat

No pallid bats or roosts were observed during surveys in the Project Application Area. Pallid bat was also not detected during acoustic surveys. Roosting habitat may be present in tree cavities within the desert dry wash woodland stands adjacent to the Project area. Suitable foraging habitat includes desert scrub habitats and desert dry wash woodlands and is present throughout the Project Application Area. Development of the Project would lead to a loss of foraging habitat for pallid bat. Potential impacts to nurseries through loss of foraging habitat are unlikely to be significant because no trees large enough for roosting are present in the Project Application Area and no roosts were found in the large trees present in the forested areas adjacent to the Project. It is possible that pallid bats come to this area to forage from

roost/nursery sites that are farther away, but the provisions in CMA LUPA-COMP-1 to compensate for impacts to native habitat at a 1:1 ratio would offset the loss of foraging habitat resulting from the Project.

If pallid bats are present in or near disturbance areas during construction, operation and maintenance or decommissioning activities, the species may be directly impacted through injury or mortality of individuals resulting from collisions with Project vehicles or equipment and disturbance from increased vehicle traffic, noise at work sites, or human presence that could result in avoidance of foraging areas, an interruption of normal breeding behavior, or roost abandonment (of potential roosts outside the surveyed area). During operation, bats could collide with solar panels or other Project facilities while foraging in the area. The species may also be subject to direct impacts due to the loss or degradation of foraging habitat in work areas resulting from vegetation clearing or ground disturbance. Direct impacts to pallid bats would be considered significant under CEQA without mitigation.

The Project would implement a BBCS in compliance with CMAs LUPA-BIO-16 and LUPA-BIO-17, which includes bat monitoring and avoidance procedures as well as measures to reduce operational impacts on bats. CMA LUPA-COMP-1 also requires compensation for impacts to native vegetation and habitat at a 1:1 ratio. Because the Project would implement procedures to minimize impacts on bats and would provide compensatory habitat mitigation for impacts on foraging habitat, the impacts on pallid bat would be less than significant.

Western yellow bat

No western yellow bats or roosts were observed during surveys in the Project Application Area. Western yellow bat was also not detected during acoustic surveys. Suitable foraging habitat and roosting habitat is found in the Project Application Area within desert dry wash woodland. However, because the Project design plans to avoid the majority of desert dry wash woodland habitat, direct impacts to pallid bat roosting and foraging habitat should be less than significant. Impacts to nurseries as a result of loss of foraging habitat would also be less than significant.

If western yellow bats are present in or near disturbance areas during construction, operation and maintenance or decommissioning activities, the species may be directly impacted through injury or mortality of individuals resulting from collisions with Project vehicles or equipment~~; destruction of occupied roost sites;~~ and disturbance from increased vehicle traffic, noise at work sites, or human presence that could result in avoidance of foraging areas, an interruption of normal breeding behavior, or roost abandonment (of potential roosts outside of the surveyed area). During operation, bats could collide with solar panels or other Project facilities while foraging in the area. The species may also be subject to direct impacts due to the loss or degradation of foraging habitat in work areas resulting from vegetation clearing or ground disturbance. Direct impacts to western yellow bats would be considered significant under CEQA without mitigation.

The Project would implement a BBCS (Appendix M.1) in compliance with CMAs LUPA-BIO-16 and LUP-BIO-17, which includes bat monitoring and avoidance procedures as well and

measures to reduce operational impacts on bats. CMA LUPA-COMP-1 also requires compensation for impacts to native vegetation and habitat at a 1:1 ratio. Because the Project would implement procedures to minimize impacts on bats and would provide compensatory habitat mitigation for impacts on foraging ~~and nesting~~ habitat, the impacts on western yellow bat would be less than significant.

California leaf-nosed bat, Arizona myotis, Yuma myotis, and Cave myotis

Suitable roosting habitat for California leaf-nosed bat, Arizona myotis, Yuma myotis, and cave myotis species includes caves, mines, buildings, and cliffs, with each species having its own roosting habitat preferences. No suitable roosting habitat is present in the Project site and no roosts for these species were observed during surveys in the Project Application Area. All of these species use desert dry wash woodland for foraging, which is present in areas adjacent to the Project Application Area. Because the Project design plans to avoid the majority of desert dry wash woodland habitat, impacts to foraging habitat for these species would be less than significant. Impacts to nurseries as a result of loss of foraging habitat would also be less than significant.

During acoustic surveys, the California leaf-nosed bat was identified as present in the Project Application Area; Arizona myotis, Yuma myotis, and cave myotis were determined to be possibly present because of call recordings with similar attributes to their calls, but no calls could be definitely identified as those species. If these species are present in or near disturbance areas during construction, operation and maintenance or decommissioning activities, the species may be directly impacted through injury or mortality of individuals resulting from collisions with Project vehicles or equipment; destruction of occupied roost sites; and disturbance from increased vehicle traffic, noise at work sites, or human presence that could result in an interruption of normal breeding behavior or roost abandonment. During operation, bats could collide with solar panels or other Project facilities while foraging in the area. The species may also be subject to direct impacts due to the loss or degradation of foraging habitat in work areas resulting from vegetation clearing or ground disturbance; however, most of the desert dry wash woodland habitat is being avoided by Project design, so direct impacts to habitat would be less than significant

The Project would implement a BBCS in compliance with CMAs LUPA-BIO-16 and LUP-BIO-17, which includes bat monitoring and avoidance procedures as well as measures to reduce operational impacts on bats. CMA LUPA-COMP-1 also requires compensation for impacts to native vegetation and habitat at a 1:1 ratio. Because the Project would implement procedures to minimize impacts on bats and would provide compensatory habitat mitigation for impacts on foraging habitat, the impacts on California leaf-nosed bat, Arizona myotis, Yuma myotis, and cave myotis would be less than significant.

Burro deer

The Project Application Area is within range of burro deer, but no burro deer individuals were observed during Project surveys. Burro deer scat and tracks were observed throughout the 2023 and 2024 survey areas and one very old piece of carcass was observed. Burro deer likely move

through the Project Application Area to access the All-American Canal. Project activities would not restrict access to the All-American Canal and burro deer would be able to migrate around the Project Application Area to access the All-American Canal.

Direct impacts on burro deer that may forage in or migrate through the Project Application Area are not expected as these non-resident individuals would be able to avoid any sources of disturbance during construction, operation and maintenance, or decommissioning. Burro deer may be directly impacted by loss or degradation of foraging habitat; however, the habitat in the Project Application Area is common throughout the region, and loss of foraging habitat would not be expected to jeopardize a local or regional population of burro deer and would not be considered significant under CEQA; therefore, impacts would be less than significant.

American badger

No American badgers or active badger burrows were observed during Project surveys. There is suitable habitat for American badger throughout the Project Application Area.

If American badgers are present in disturbance areas or on access roads during construction, operation and maintenance, or decommissioning activities, there is potential for direct impacts including injury or death resulting from vehicle collision, damage or destruction of occupied burrows, disturbance from construction noise/vibration, or entrapment of individuals in excavation areas. Temporary direct impacts would result from loss or degradation of foraging habitat or harassment. Temporary direct impacts may also occur if disturbance at maternity dens resulting from construction noise/vibration or human presence negatively affects kit-rearing. Direct impacts on American badger would be considered significant under CEQA without mitigation.

CMAs LUPA-BIO-VEG-1 and LUPA-BIO-VEG-2 maintain vegetation for habitat and foraging. LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project. PDFs BIO-1 and BIO-2 require pre-construction biological monitoring and worker environmental awareness training. PDF BIO-3 minimizes vegetation and habitat impact through sensitive habitat delineation and avoidance while PDF BIO-5 avoids and minimizes impacts to wildlife through implementation of measures including: wildlife avoidance, minimized traffic and lighting impacts, avoidance of toxic substances, minimized noise and vibration, secured water and trash receptacles, and wildlife netting or exclusion fencing. Because the Project would implement CMAs and PDFs to minimize impacts to American badger individuals and habitat, the impact on American badger would be less than significant with implementation of the CMAs and PDFs.

Desert kit fox

There is suitable habitat for desert kit fox in the Project Application Area, but no desert kit foxes were observed during surveys. One active desert kit fox burrow and thirty-nine inactive burrows were observed during Project surveys. The number of burrows will likely change over time since kit fox distribution is dynamic and changes under natural conditions due to prey

availability and other environmental factors such as the presence of coyotes that prey on kit fox pups.

If desert kit foxes are present in disturbance areas or on access roads during construction, operation and maintenance, or decommissioning, there is potential for direct impacts, including injury or death resulting from vehicle collision or entrapment of individuals in excavation areas. Temporary direct impacts from damage or destruction of occupied burrows, disturbance from construction noise/vibration, entrapment of individuals in excavation areas, and loss or degradation of foraging habitat may also impact desert kit fox. Disturbance at maternity dens resulting from construction noise/vibration or human presence may also cause temporary direct impact by negatively affecting kit-rearing. Direct impacts to desert kit fox would be considered significant under CEQA without mitigation.

CMAs LUPA-BIO-VEG-1 and LUPA-BIO-VEG-2 maintain vegetation for habitat and foraging. LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project. PDFs BIO-1 and BIO-2 require pre-construction biological monitoring and worker environmental awareness training. PDF BIO-3 minimizes vegetation and habitat impact through sensitive habitat delineation and avoidance while PDF BIO-5 avoids and minimizes impacts to wildlife through implementation of measures including: wildlife avoidance, minimized traffic and lighting impacts, avoidance of toxic substances, minimized noise and vibration, secured water and trash receptacles, and wildlife netting or exclusion fencing. Because the Project would implement CMAs and PDFs to minimize impacts to desert kit fox individuals and habitat, the impact on desert kit fox would be less than significant.

Birds protected by the California Fish and Game Code and Migratory Bird Treaty Act
Common bird species and their nests were observed throughout the BSA and vicinity (Appendix J.1-C5), including species that occur as residents and breed in Imperial Valley. Native birds protected by the CFGC and the MBTA could potentially nest in the Project Application Area. Construction activity has the potential to temporarily directly impact nesting birds through the destruction of nests during vegetation clearing and reduced nesting success due to disturbance from Project activities. Potential direct impacts during Project operation include potential injury or mortality if an individual is struck or collides with Project components including the loop-in transmission lines, gen-tie line, or PV panels. Temporary direct impacts would result from the loss of foraging habitat during construction. Permanent loss of foraging habitat would result from development of Project components including buildings, PV panels, substation, breaker and a half, and loop-in transmission lines. Direct impacts to birds protected under the California Fish and Game code and MBTA would be considered significant under CEQA without mitigation

The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management and include requirements for bird diverters on the gen-tie and loop-in transmission lines to reduce collisions with Project components. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and

define additional mitigation required for any impacts to birds, including those protected by the MBTA. Because the foraging habitat in the Project Application Area is regionally common and impacts on foraging habitat would be offset through compensation, and because the Project includes design features to minimize collisions with migratory birds, the impact on these species would be less than significant.

Direct Impacts on Special Status Wildlife: Breaker-and-a-Half Switchyard
The direct impacts of the BAAH switchyard would be similar to and significant for purposes of CEQA, but because of its smaller footprint, less than, those described above for the Project site components. Because the Project would implement the BMPs, PDFs and CMAs described above for the Project Site Components, direct impacts on special status wildlife associated with the BAAH switchyard would be less than significant.

Direct Impacts on Special Status Wildlife: Loop-in Transmission Lines
The impacts described above for the Project components would apply to the loop-in transmission lines. Because the loop-in transmission would apply the same BMPs, PDFs and CMAs as all other Project components, the loop-in transmission lines impacts on the special status species discussed above would be less than significant. In addition, the special status species discussed below have the potential to occur within the All-American Canal, which the loop-in transmission corridor crosses and which the loop-in transmission lines will span.

California black rail and Yuma Ridgway's rail
~~No~~ Three California black rails ~~or~~ and one pair of Yuma Ridgway's rails were observed approximately 500 to 1,000 feet west of the loop-in transmission line corridor during ~~surveys or avian point counts in the loop-in transmission lines corridor and greater Project Application Area~~protocol-level surveys within suitable habitat along the All-American Canal. ~~For the California black rail, t~~There is no suitable foraging or nesting habitat for either species within ~~in~~ the loop-in transmission ~~survey~~ corridor, but suitable habitat is present within 500 feet of the corridor. Therefore, individuals may be observed within the corridor ~~incidentally~~ as flyovers.

~~There is habitat occupied by Ridgway's rail in a wetland area south of the All-American Canal, starting approximately 2,000 ft east of the Project's loop-in transmission lines corridor (Blackhawk Environmental 2020). Within the loop-in transmission corridor,~~The wetlands ~~occur~~occurring within the loop-in transmission corridor ~~only~~ along the banks of the All-American Canal ~~and these areas~~ are not considered suitable habitat for the target rail species for they are lined with mature stands of common reed (*Phragmites australis*), steeply sloped, and adjacent to water depths too deep for use ~~by Ridgway's rails~~ (Blackhawk Environmental 2020; 2025). No rail observations were made within these areas (Blackhawk Environmental 2025).~~There is no suitable nesting or foraging habitat for Yuma Ridgway's rail on, or within close proximity to, the Project site, but individuals may be observed incidentally as flyovers.~~

The loop-in transmission lines would span the All-American Canal and would not result in loss of any suitable habitat for California black rail or Yuma Ridgway's rail. Direct impacts on

California black rail and Yuma Ridgway's rail could occur from collisions with the loop-in transmission lines and would be considered significant under CEQA without mitigation.

The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management and require use of bird diverters to reduce collisions with Project components, including the loop-in transmission lines. Because there is no suitable foraging or nesting habitat for California black rRail or Yuma Ridgeway's rRail within~~, or in close proximity to,~~ the Project site, the Project would not impact habitat for these species~~. , and~~ Additionally, b~~b~~ecause the Project includes design features to minimize collisions with migratory birds, the impact on California black rRail and Yuma Ridgeway's rRail would be less than significant.

Southwestern willow flycatcher

Southwestern willow flycatcher was not observed onsite incidentally or during avian surveys but could potentially forage within riparian areas present in Project site components and the loop-in transmission corridor. Tamarisk thickets present in the transmission line corridor north and south of the All-American canal provide suitable foraging habitat for southwestern willow flycatcher.

The loop-in transmission lines would span the All-American Canal and would not result in loss of suitable habitat for southwestern willow flycatcher. Direct impacts on the species could occur from collisions with the loop-in transmission lines.

The Project would implement a BBCS in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management and require use of bird diverters to reduce collisions with Project components, including the loop-in transmission lines. Because the Project includes design features to minimize collisions with migratory birds, the impact on southwestern willow flycatcher would be less than significant.

Bank swallow

No bank swallows were observed during surveys or avian point counts in the loop-in transmission lines corridor and greater Project Application Area. There is suitable foraging habitat for bank swallow in the loop-in transmission lines corridor but no suitable nesting habitat. Direct impacts on bank swallow could occur from collisions with the loop-in transmission lines and would be considered significant under CEQA without mitigation. The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management and require use of bird diverters to reduce collisions with Project components, including the loop-in transmission lines. Because the foraging habitat in the loop-in transmission corridor is regionally common and habitat impacts would be offset through compensation, and because the Project includes design features to minimize collisions with migratory birds and would implement the CMAs described above, the impact on bank swallow would be less than significant.

Yuma hispid cotton rat

No Yuma hispid cotton rats were observed during surveys in the loop-in transmission lines corridor and greater Project Application Area. Suitable habitat for Yuma hispid cotton rat exists within the loop-in transmission corridor along the All-American Canal. The proposed loop-in transmission lines and poles would span, and therefore avoid, the All-American Canal and all suitable habitat areas for Yuma hispid cotton rat. Because the Project would avoid construction, operation and maintenance, or decommissioning activities within suitable habitat for Yuma hispid cotton rat, the Project impacts on Yuma hispid cotton rat would be less than significant.

Pallid bat

No pallid bats or roosts were observed during surveys in the Project Application Area. Pallid bat was also not detected during acoustic surveys in the Project Application Area. An acoustic survey station was not set up in the loop-in transmission line corridor because the loop-in transmission lines would span the All-American Canal and would not result in loss of suitable habitat for bat species.

Potential roosting habitat (large trees) in the desert dry wash woodland habitat within the loop-in transmission line corridor was examined and no trees large enough were found. Suitable foraging in the form of desert scrub habitats and desert dry wash woodlands is present throughout corridor and the All-American Canal provides a water source. Development of the loop-in transmission lines would not lead to a significant loss of foraging habitat for pallid bat due to the small footprint of the transmission line poles and revegetation of temporarily disturbed habitat after construction is completed. Additionally, the transmission lines would span the All-American Canal and would not result in loss of suitable habitat along the canal.

If pallid bats are present in or near disturbance areas during construction or decommissioning activities, the species may be directly impacted through injury or mortality of individuals resulting from collisions with Project vehicles or equipment and disturbance from increased vehicle traffic, noise at work sites, or human presence that could result in avoidance of foraging areas, an interruption of normal breeding behavior, or roost abandonment (of potential roosts outside of the surveyed area). During operation, direct impacts to pallid bat could occur from collisions with the loop-in transmission lines.

The Project would implement a BBCS in compliance with CMAs LUPA-BIO-16 and LUPA-BIO-17, which includes bat monitoring and avoidance procedures as well as measures to reduce operational impacts on bats. CMA LUPA-COMP-1 also requires compensation for impacts to native vegetation and habitat at a 1:1 ratio. Because the Project would implement procedures to minimize impacts on bats and would provide compensatory habitat mitigation for impacts on foraging habitat, the impacts on pallid bat would be less than significant.

Western yellow bat

No western yellow bats or roosts were observed during surveys in the Project Application Area. Western yellow bat was also not detected during acoustic surveys. An acoustic survey station was not set up in the loop-in transmission line corridor because the loop-in transmission lines

would span the All-American Canal and would not result in loss of suitable habitat for bat species.

Suitable foraging habitat and roosting habitat is found in the loop-in transmission line corridor in the form of desert dry wash woodland. Development of the loop-in transmission lines would not lead to a significant loss of foraging habitat for western yellow bat due to the small footprint of the transmission line poles and revegetation of temporarily disturbed habitat after construction is completed. Additionally, the transmission lines would span the All-American Canal and would not result in loss of suitable habitat along the canal.

If western yellow bats are present in or near disturbance areas during construction or decommissioning activities, the species may be directly impacted through injury or mortality of individuals resulting from collisions with Project vehicles or equipment and disturbance from increased vehicle traffic, noise at work sites, or human presence that could result in avoidance of foraging areas, an interruption of normal breeding behavior, or roost abandonment (of potential roosts outside of the surveyed area). During operation, direct impacts to western yellow bat could occur from collisions with the loop-in transmission lines.

The Project would implement a BBCS (Appendix M.1) in compliance with CMAs LUPA-BIO-16 and LUP-BIO-17, which includes bat monitoring and avoidance procedures as well and measures to reduce operational impacts on bats. CMA LUPA-COMP-1 also requires compensation for impacts to native vegetation and habitat at a 1:1 ratio. Because the Project would implement procedures to minimize impacts on bats and would provide compensatory habitat mitigation for impacts on foraging habitat, the impacts on western yellow bat would be less than significant.

California leaf-nosed bat, Arizona myotis, Yuma myotis, and Cave myotis

Suitable roosting habitat for these species includes caves, mines, buildings, and cliffs, with each species having its own roosting habitat preferences. No suitable roosting habitat is present in the loop-in transmission line corridor and no roosts for these species were observed during surveys. All of these species use desert dry wash woodland for foraging, which is present in parts of the transmission line corridor. Development of the loop-in transmission lines would not lead to a significant loss of foraging habitat for these bat species due to the small footprint of the transmission line poles and revegetation of temporarily disturbed habitat after construction is completed. Additionally, the transmission lines would span the All-American Canal and would not result in loss of suitable habitat along the canal.

During acoustic surveys in the Project Application Area, the California leaf-nosed bat was identified as present in the Project site; Arizona myotis, Yuma myotis, and cave myotis were determined to be possibly present because of call recordings with similar attributes to their calls, but no calls could be definitely identified as those species. An acoustic survey station was not set up in the loop-in transmission line corridor because the loop-in transmission lines would span the All-American Canal and would not result in loss of suitable habitat for bat species.

If these species are present in or near disturbance areas during construction or decommissioning activities, they may be directly impacted through injury or mortality of individuals resulting from collisions with Project vehicles or equipment and disturbance from increased vehicle traffic, noise at work sites, or human presence that could result in avoidance of foraging areas, an interruption of normal breeding behavior, or roost abandonment (of potential roosts outside of the surveyed area). During operation, direct impacts to these species could occur from collisions with the loop-in transmission lines.

The Project would implement a BBCS (Appendix M.1) in compliance with CMAs LUPA-BIO-16 and LUP-BIO-17, which includes bat monitoring and avoidance procedures as well as measures to reduce operational impacts on bats. CMA LUPA-COMP-1 also requires compensation for impacts to native vegetation and habitat at a 1:1 ratio. Because the Project would implement procedures to minimize impacts on bats and would provide compensatory habitat mitigation for impacts on foraging habitat, the impacts on California leaf-nosed bat, Arizona myotis, Yuma myotis, and cave myotis would be less than significant.

Indirect Impacts on Special Status Wildlife: Project Site

Indirect impacts on special status species include those impacts that would occur later in time or as an indirect result of the Project activities. Potential indirect impacts from Project construction, operation, and maintenance include the following:

- Introduction or spread of invasive plants as a result of weed seed being introduced to areas of disturbance or introduced to the area on Project construction equipment
- Fugitive dust settling on plants and causing degradation of habitat in or near the Project site
- Erosion and sedimentation indirectly affecting habitat for special status species in or near the Project site
- Runoff of hazardous materials causing degradation of habitat in or near the Project site during construction and operation
- Increased subsidies for predators

Due to the scale of the Project, indirect impacts could cause a significant impact on special status species under CEQA without mitigation. A Project-specific Integrated Weed Management Plan (Appendix M.5) has been prepared to address the impacts from invasive weed establishment. Several DRECP CMAs would reduce indirect impacts on special status species. LUPA BIO-6 defines requirements to minimize subsidies to predators. LUPA- BIO-7 defines requirements for restoration, including use of certified weed-free seed. LUPA-BIO-8 defines requirements for reclamation to avoid post-Project impacts on dust and sedimentation. Additionally, LUPA-AIR-5 requires development of a fugitive dust control plan (Appendix I.1) to mitigate impacts on air quality from fugitive dust. LUPA-BIO-10 defines requirements for weed management to reduce introduction of weeds during construction. LUPA-BIO-11 defines requirements for management of invasive species.

In addition, Applicant-proposed PDFs would further reduce indirect impacts. PDF BIO-4 requires an Integrated Weed Management Plan to prevent invasive weeds. PDF BIO-3 defines

measures to reduce impacts from hazardous materials. PDF BIO-8 defines requirements for stormwater BMPs that would be implemented during construction. In addition, the Project would need to comply with the requirements of the Construction General Permit, including preparation of a Project-specific Stormwater Pollution Prevention Plan (SWPPP). The Project would also implement a Hazardous Materials Business Plan and Spill Prevention Control and Countermeasures Plan to address potential impacts from hazardous materials. Due to implementation of the CMAs, PDFs, and Integrated Weed Management Plan, the indirect impact on special status species would be less than significant.

Indirect Impacts on Special Status Wildlife: BAAH switchyard

Indirect impacts on special status species from the BAAH switchyard would be the same as those for the Project site and would be significant under CEQA without mitigation, but on a much smaller scale due to the limited size of the BAAH switchyard. With implementation of the CMAs, PDFs, and Integrated Weed Management Plan described above, the indirect impact on special status species would be less than significant.

Indirect Impacts on Special Status Wildlife: Loop-in transmission lines

Indirect impacts on special status species from the loop-in transmission lines would be the same as those with the Project site and would be significant under CEQA without mitigation, but on a much smaller scale due to the limited ground disturbance of the loop-in transmission lines. With implementation of the CMAs, PDFs, and Integrated Weed Management Plan described above, the indirect impact on special status species would be less than significant.

Impact BIO-2

Would the project 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? *(Less than significant for Project Site, No impact for BAAH Switchyard and Loop-in Transmission Lines)*

Project Site Components

Riparian Areas

Mesic riparian woodland consisting of mesquite thickets was observed within the Project site along dry washes during Project surveys, as reflected in Table 4.2-2. The proposed Project fenceline was adjusted along the southern and western boundary to avoid and exclude areas of riparian vegetation containing mesquite thickets from development. An area of mesquite thickets occurs within the fenced portion of the Project site; however, the Project design has been adjusted to avoid development and set back from the riparian/mesquite thicket area. The riparian/mesquite thicket area would be staked for avoidance per the requirements of CMA LUPA-BIO-3 and PDF BIO-3 and would not be impacted by the Project development, as no construction, operation, maintenance, or decommissioning activities would occur in the area. Impacts would be less than significant under CEQA.

Sensitive Natural Communities

Sensitive natural community alkali goldenbush desert scrub occurs within the southwest portion of the Project Application Area and has a state rarity rank of S3 (CDFW 2023b). The

Project would include removal of vegetation from the Project site and would involve ground disturbance in the areas containing alkali goldenbush desert scrub. Potential indirect impacts on sensitive natural communities could occur during construction, operation and maintenance, or decommissioning from the introduction or spread of invasive plant species or fugitive dust that could outcompete sensitive natural communities or degrade habitat. These impacts would be significant under CEQA without mitigation.

LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project Application Area. This will include alkali goldenbush desert scrub. In addition, the Project would implement an Invasive Weed Management Plan (Appendix M.5) and CMA LUPA-BIO-PLANT-2 that would reduce indirect impacts on sensitive natural communities from invasive weeds or dust. CMAs LUPA-BIO-2 would require oversight of Project activities by a designated biologist and, along with LUPA-BIO-3, would require implementation of avoidance and setback measures for sensitive communities. Because the Project would compensate for habitat impacts and would implement CMAs and PDF-BIO-8 to minimize impacts to sensitive natural communities, the impact on sensitive natural communities would be less than significant.

Breaker-and-a-Half Switchyard

The BAAH switchyard does not contain any riparian habitat or sensitive natural communities. The BAAH switchyard would, therefore, avoid impacts on any riparian habitat or sensitive natural communities and no impact would occur.

Loop-in Transmission Lines

Riparian Habitat

Areas of riparian habitat and riparian vegetation communities, including mesquite thickets and tamarisk thickets, occur along the All-American Canal and in seepage areas within the loop-in transmission corridor. The loop-in transmission lines poles/structures would avoid the All-American Canal and any riparian vegetation along the All-American Canal. The structures would also be sited to avoid removal of any riparian vegetation communities per CMA LUPA-BIO-3. The transmission structures would also be sited to avoid any ephemeral drainage or other waters of the State. The loop-in transmission lines would, therefore, avoid impacts on any riparian habitat and no impact would occur.

Sensitive Natural Communities

Sensitive natural communities of Alkali goldenbush scrub and arrow weed thickets occur in the southern portion of the loop-in transmission lines corridor, along the All-American Canal. The loop-in transmission structures would span the All-American Canal and associated sensitive natural communities along the banks of the All-American Canal. The loop-in transmission structures will also be sited to avoid impacts on sensitive natural communities of alkali goldenbush scrub. The loop-in transmission lines would not require removal of any sensitive natural community and, therefore, would avoid impacts on sensitive natural communities and no impact would occur.

Impact BIO-3

Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? ***(Less than significant for Project Site and Loop-in Transmission Lines, No impact for BAAH Switchyard)***

Project Site Components

No State or federally protected wetlands occur within the Project site. Because no wetlands occur within the solar, BESS, or substation areas, the Project would avoid impacts on State or federally protected wetland areas.

The Project development would involve solar development within areas containing ephemeral drainage swales along the western portion of the Project site. The ephemeral drainage swales do not contain riparian vegetation or habitat and do not meet the criteria for wetlands but are considered waters of the State. Impacts to these areas would be potentially significant under CEQA.

Prior to development within the drainage swales, the Project would obtain a permit from the Colorado River Regional Water Quality Control Board for discharge of fill materials to waters of the State, and the CEC would incorporate into the Project's approval any conditions or other requirements identified through consultation with CDFW as being necessary to ensure project consistency with Fish and Game Code section 1600 et seq. In addition, the Project would implement PDF BIO-8 to reduce indirect impacts on waterways. Due to compliance with State requirements for impacts to waters of the State, the impacts on waters of the State would be less than significant.

Breaker-and-a-Half Switchyard

No State or federally protected wetlands occur within the BAAH switchyard or adjacent to it. Because no wetlands occur within the BAAH switchyard or adjacent to it, the Project would have no impact on State or federally protected wetland areas.

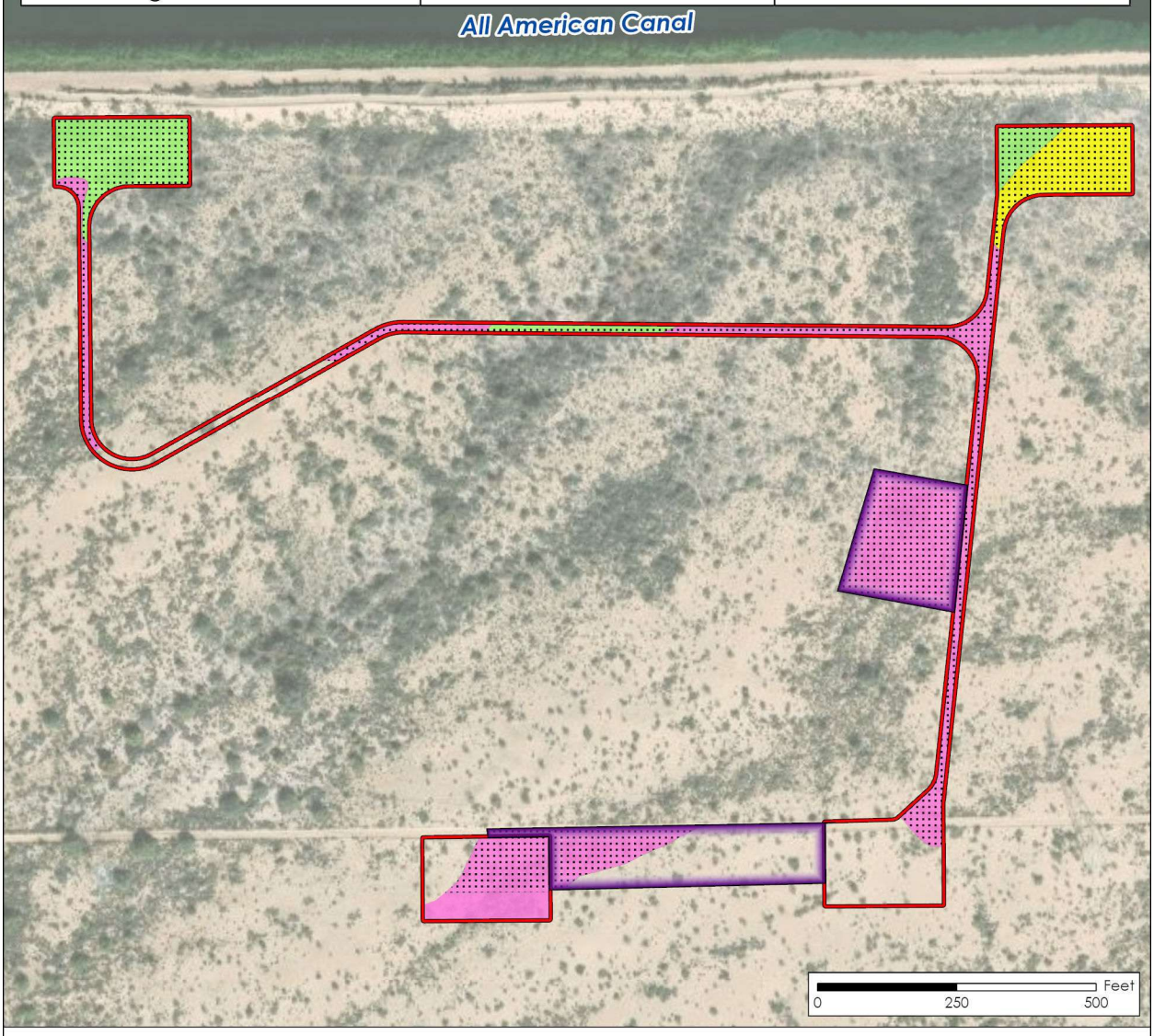
Loop-in Transmission Lines

Areas meeting the definition of *wetlands* occur along the All-American Canal. The wetland areas along the All-American Canal would be spanned by the loop-in-transmission lines, and the transmission structures would be located outside wetlands. Because the loop-in transmission lines would span all wetland areas, the loop-in transmission lines have no direct impact on State or federally protected wetlands. Due to the proximity of wetland areas, the loop-in transmission structures could result in indirect impacts to wetlands through sedimentation. PDF BIO-8 would reduce indirect impacts on waterways and the impact would be less than significant.

Figure 4.2-3 shows the loop-in line transmission disturbance areas, including permanent and temporary disturbance, in association with jurisdictional vegetation. No wetlands would be impacted by the Project. In addition, no work would occur within the All-American Canal.

Figure 4.2-3 Loop-in Line Transmission Disturbance and Jurisdictional Vegetation

Vegetation Community	Temporary Impact Acreage	Permanent Impact Acreage
Alkali goldenbrush desert scrub	1.4381	1.5138
Arrowweed scrub		0.5555
Tamarisk thickets		0.9400
Vegetated Swale	1.4381	2.7685



Legend
Scale = 1:3,800
Created: 1/7/2026

Permanent impact
Temporary impact

CDFW Jurisdictional Vegetation
Alkali goldenbrush desert scrub
Arrowweed scrub
Tamarisk thickets
Vegetated Swale

N
PANORAMA

Impact BIO-4

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 wildlife corridors, or impede the use of native wildlife nursery sites? *(Less than significant)*

Project Site Components

No regional wildlife linkages or corridors are mapped within the Project Application Area. The Project Application Area does not occur within a corridor that links between or among larger habitat areas on a regional basis and is not within any areas mapped as Essential Connectivity Areas by the California Essential Habitat Connectivity Project (CDFW 2010). The Project Application Area is bordered to the west by power lines, to the north and east by Interstate 8, and to the south by Highway 98, the All-American Canal, and the fenced U.S.–Mexico border. Local wildlife likely use the undeveloped habitats to the west and along the All-American Canal south of the Project site as well as the Algodones Dunes to the east of the Project Application Area for movement; however, Interstate 8 effectively blocks ground-dwelling species' movement in areas east and north of the Project Application Area. South of the Project application area, Highway 98, the All-American Canal, and the fenced U.S.–Mexico border blocks movement of species. Due to existing barriers to species migration in areas surrounding the Project, construction and operation of the Project would not create a significant barrier to ground-based wildlife movement. Impacts would be less than significant.

Imperial County is located within the Pacific Flyway, and the Salton Sea and surrounding agricultural areas are important stop overs for birds migrating from Mexico to Canada. While the Imperial Valley contains important habitat for migratory birds, the Project Application Area, with the exception of the All-American Canal, does not contain agricultural areas or water features that are important for migratory birds. The Project would introduce new transmission lines, PV panels, and other structures to the Project site, which could result in collisions with migratory birds flying over the Project Application Area, causing a potentially significant impact under CEQA. The Project would implement a BBCS (Appendix M.1), and PDFs BIO-6 and BIO-7 require implementation of the BBCS and flight diverters on Project transmission lines and other features to reduce the risk of bird collisions. Through proper implementation of the BBCS and measures to reduce impacts from bird collisions, the Project construction, operation and maintenance, and decommissioning activities would not substantially impact wildlife movement, and impacts would be less than significant.

The Project site contains native vegetation and soils that provide habitat for multiple species of native wildlife, including special status species discussed in Impact BIO-1, above. The removal of native vegetation and compaction of soils during construction, operation and maintenance, and decommissioning activities would impact native wildlife nursery sites for native wildlife that nest or breed in the area, causing a potentially significant impact under CEQA. The Project would implement LUPA CMA-BIO-COMP-1, which requires compensation for impacts to native vegetation and habitat at a 1:1 ratio, including compensation for flat-tailed horned lizard habitat. Due to compensation for impacts on habitat that could be used as native wildlife nursery sites, the impacts on native wildlife nursery sites would be less than significant.

Breaker-and-a-Half Switchyard

The BAAH switchyard is not within areas mapped as Essential Connectivity Areas (CDFW 2010). The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management. The impact of the BAAH switchyard on wildlife movement would be less than significant due to implementation of the BBCS, CMAs, and PDFs.

The BAAH switchyard would be located in undeveloped areas that could be used by native wildlife as nursery sites, including the native wildlife discussed in Impact BIO-1, and impacts on wildlife nursery sites could be potentially significant under CEQA. The BAAH switchyard would require removal of native vegetation within the location of those Project elements. CMA LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the BAAH. CMA LUPA-BIO-1 requires completion of pre-construction surveys and LUPA-BIO-4 requires establishment of appropriate buffers that would avoid impacts on wildlife and their young in this area. Due to compensation for impacts on habitats that could be used as native wildlife nursery sites and implementation of CMAs to avoid impacts on wildlife during construction, the impacts on native wildlife nursery sites would be less than significant.

Loop-in Transmission Lines

The loop-in transmission corridor is not within areas mapped as Essential Connectivity Areas (CDFW 2010). The All-American Canal contains water features that are important for migratory birds. The Project would not impact any water feature directly. However, the loop-in transmission lines would span the All-American Canal and could result in increased collisions with migratory birds. Impacts would be potentially significant under CEQA.

The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management, as well as requirements for bird diverters on the loop-in transmission lines to reduce collisions with Project facilities. The impact of the loop-in transmission lines would be less than significant due to implementation of the BBCS, CMAs, and PDFs.

The loop-in transmission lines would be located in undeveloped areas that could be used by native wildlife as nursery sites, including the native wildlife discussed in Impact BIO-1. Impacts on wildlife nursery sites could be potentially significant under CEQA

The loop-in-transmission poles would avoid impacts on nesting habitat for migratory birds along the All-American Canal. The transmission structures would require removal of native vegetation within the location of those Project elements.

CMA LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the loop-in transmission lines. CMA LUPA-BIO-1 requires completion of pre-construction surveys and LUPA-BIO-4 requires establishment of appropriate buffers that would avoid impacts on wildlife and their young in this area. Due to compensation for impacts on habitats that could be used as native wildlife nursery sites, and implementation of CMAs to

avoid impacts on wildlife during construction, the impacts on native wildlife nursery sites would be less than significant.

Impact BIO-5

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? *(Less than significant)*

The Imperial County General Plan (2016) contains policies for protection of biological resources. The General Plan contains the following policies for protection of biological resources:

- Provide a framework for the conservation and enhancement of natural and created open space which provides wildlife habitat values.
- Landscaping should be required in all developments to prevent erosion on graded sites and, if the area is contiguous with undisturbed wildlife habitat, the plan should include revegetation with native plant species.

The County programs for implementing the policies include identification of "Resource Areas" to conserve and enhance native vegetation and wildlife. The Project is within the range of flat-tailed horned lizard, which is defined as a Resource Area under the policy. The policy further requires that Projects within or in the vicinity of Resource Areas be designed to minimize adverse impacts on the biological resources the Resource Area was created to protect. The policy also accepts donations of land with high wildlife value and conservation of native habitat and through long-term protection. The policy further requires protection for riparian habitat and wetlands.

Project Site Components

As described in Impact BIO-1, the Project would result in impacts to occupied flat-tailed horned lizard habitat, resulting in a potentially significant impact under CEQA. CMA LUPA-BIO-COMP-1 requires specific compensation for flat-tailed horned lizard habitat per the guidance in the RMS. Because the Project would provide compensation for impacts to flat-tailed horned lizard habitat, the Project would comply with the Imperial County biological resource policy for protection of Resource Areas. As discussed in Impact BIO-2, the Project has been designed to avoid impacts to riparian habitat and wetlands. The Project would therefore not conflict with policies for protection of riparian habitat and wetlands. The Project would also implement CMA LUPA-BIO-7, which includes habitat restoration with native species. Due to implementation of CMAs LUPA-BIO-COMP-1 and LUPA-BIO-7, the Project would not conflict with any local policies protecting biological resources and, therefore, impacts would be less than significant.

Loop-in Transmission Lines

The loop-in transmission lines would be located in areas containing flat-tailed horned lizard habitat and designated as Resource Areas in the General Plan policies, resulting in a potentially significant impact under CEQA. The loop-in-transmission line would implement CMA-BIO-COMP-1, which requires specific compensation for flat-tailed horned lizard habitat per the requirements in the RMS. The loop-in transmission lines have been designed to avoid riparian areas and wetlands and would not conflict with policies for protection of riparian areas or wetlands. The loop-in-transmission line would also implement CMA LUPA-BIO-7, which

requires restoration with native species. Due to implementation of CMAs LUPA-BIO-COMP-1 and LUPA-BIO-7, the Project would not conflict with any local policies protecting biological resources and, therefore, impacts would be less than significant.

Breaker-and-a-Half Switchyard
The BAAH would be located in areas containing flat-tailed horned lizard habitat and designated as Resource Areas in the General Plan policies, resulting in a potentially significant impact under CEQA. The BAAH would implement CMA LUPA-BIO-7, which requires restoration with native species. Due to implementation of CMA LUPA-BIO-7, the Project would not conflict with any local policies protecting biological resources and, therefore, impacts would be less than significant.

Impact BIO-6

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? ***(Less than significant)***

Project Site Components
The Project Application Area is not located within any local, regional, or State conservation planning areas (CDFW, n.d.-b). Therefore, construction, operation and maintenance, and decommissioning of Project components would not conflict with any adopted HCP, NCCP, or other approved local, regional, or State HCPs. Impacts would be less than significant.

Breaker-and-a-Half Switchyard
The BAAH switchyard is not located within any local, regional, or state HCP or NCCP area. The BAAH switchyard would, therefore, not conflict with an HCP or NCCP. Impacts would be less than significant.

Loop-in Transmission Lines
The loop-in transmission corridor is not located within any local, regional, or state HCP or NCCP area. The loop-in transmission lines would, therefore, not conflict with an HCP or NCCP. Impacts would be less than significant.

4.2.3 Cumulative Impacts

Impacts of the Project would be considered cumulatively considerable if they would have the potential to combine with other past, present, or reasonably foreseeable future projects to become significant. A list of closely related past, present, and reasonably foreseeable future projects is provided in Table 4-1 and shown in Figure 4-1 in Chapter 4: Environmental Analysis. Due to the regional nature of biological resources, the scope of cumulative impact analysis includes all Projects in Imperial County, which includes over 24,000 acres of solar development.

Because the Project would cause no impact related to riparian habitats (Impact BIO-2) or State or federally protected wetlands (Impact BIO-3) nor would conflict with any Habitat Conservation Plan, Natural Community Conservation Plans, or other approved local, regional, or State habitat conservation plan (Impact BIO-6), the Project could not cause or contribute to

any significant impact on such resources. Accordingly, cumulatively, the Project would have no impact related to these biological resources, and they are not discussed further below.

Special Status Species

Project construction, operations and maintenance, and decommissioning could affect candidate, sensitive, or special status species in the Project Application Area (Impact BIO-1). Cumulative projects would have the potential to similarly impact special status species where those projects' activities occur in the presence or habitat of these species. The cumulative impact from the renewable energy projects proposed in the region is potentially significant. The Project's implementation of BMPs, PDFs, CMAs, and management plans and inclusion of compensatory habitat mitigation would avoid, minimize, or mitigate the Project's contribution to cumulatively significant impacts on special status species to less than considerable.

BAAH Switchyard

Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, with the Project's implementation of BMPs, PDFs, CMAs, and management plans and inclusion of compensatory habitat mitigation, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to special status species.

Loop-in Transmission Lines

Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, with the Project's implementation of BMPs, PDFs, CMAs, and management plans and inclusion of compensatory habitat mitigation, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to special status species.

Sensitive Natural Communities

Project construction, operations and maintenance, and decommissioning could affect sensitive natural communities in the Project Application Area (Impact BIO-2). Cumulative projects would have the potential to similarly impact sensitive natural communities where those projects' activities occur within the same sensitive natural communities. The cumulative impact on sensitive natural communities is potentially significant. Because the Project would compensate for habitat impacts through implementation of CMAs and PDFs, the Project's contribution to a cumulatively significant impact on sensitive natural communities would be less than significant.

BAAH Switchyard

Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, because the Project would compensate for habitat impacts through implementation of CMAs and PDFs, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to sensitive natural communities.

Loop-in Transmission Lines
Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, because the Project would compensate for habitat impacts through implementation of CMAs and PDFs, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to sensitive natural communities.

Migration

Project construction, operations and maintenance, and decommissioning activities could affect wildlife nursery sites, and wildlife movement and migration (Impact BIO-4). Cumulative Projects would have the potential to similarly impact wildlife nursery sites, movement, and migration where those projects' activities occur in the species' nursery habitat or movement corridors. The cumulative impact on migratory species and wildlife nursery sites is potentially significant. The Project would provide compensatory mitigation for impacts on habitats that could be used as native wildlife nursery sites consistent with the CMAs and BMPs. Due to implementation of the CMAs and BMPs, the Project's contribution to a cumulatively significant impact would be less than considerable.

Due to existing barriers to species migration in areas surrounding the Project, construction, operation, and maintenance of the Project would not create a significant barrier to ground-based wildlife movement. Through proper implementation of the BBCS and measures to reduce impacts from bird collisions, the Project construction, operation and maintenance, and decommissioning activities would not substantially impact wildlife movement. Because the Project can avoid, minimize, or mitigate these potential impacts, the Project's contribution to potentially significant cumulative impacts on wildlife nursery sites, movement, and migration would not be cumulatively considerable.

BAAH Switchyard
Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, because the Project would provide compensatory mitigation for impacts on habitats that could be used as native wildlife nursery sites consistent with the CMAs and BMPs, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to migration.

Loop-in Transmission Lines
Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, because the Project would provide compensatory mitigation for impacts on habitats that could be used as native wildlife nursery sites consistent with the CMAs and BMPs, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to migration.

4.2.4 Proposed Best Management Practices, Project Design Features, Conservation Management Actions, and Mitigation Plans

As part of the Project, the Applicant, and other entities involved in construction and operation, would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM.

Project Site Components

Best Management Practices and Project Design Features

The Project would implement the following BMPs and PDFs (Appendix D.1) related to biological resources:

- BMP-17 through BMP-24 (Biological Resources)
- BMP-26 through BMP-39 (Biological Resources)
- PDF BIO-1 through BIO-8 (Biological Resources)

CMAs

The Desert Renewable Energy Conservation Plan (DRECP) requires Conservation Management Actions (CMAs) for renewable energy projects. The following CMAs (Appendix D.2) apply to biological resources:

- LUPA-BIO-PLANT-1 and LUPA-BIO-PLANT-2 (Plants)
- LUPA-BIO-SVF-1 (Special Vegetation Features)
- LUPA-BIO-SVF-6 (Microphyll Woodland)
- LUPA-BIO-VEG-1 and LUPA-BIO-VEG-2 (Plant Material)
- LUPA-BIO-IFS-10 (Flat-tailed Horned Lizard)
- LUPA-BIO-IFS-12 through LUPA-BIO-IFS-14 (Burrowing Owls)
- LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 (Biological Resource Compensation)
- LUPA-BIO-1 through LUPA-BIO-6 (Biological Resources)
- LUPA-BIO-14 through LUPA-BIO-17 (Biological Resources)
- LUPA-BIO-RIPWET-1 (Riparian and Wetland)
- LUPA-BIO-RIPWET-3 (Riparian and Wetland)
- LUPA-DFA-VPL-BIO-COMP-1 (Biological Resource Compensation)

Mitigation Plans

The Project would implement the following mitigation plans relevant to biological resources:

- Fugitive Dust Control Plan (Appendix I.1)
- Bird and Bat Conservation Strategy (Appendix M.1)
- Nesting Bird Management Plan (Appendix M.2)
- Raven Management Plan (Appendix M.3)
- Wildlife Protection and Translocation Plan (Appendix M.4)
- Restoration and Integrated Weed Management Plan (Appendix M.5)
- Decommissioning and Revegetation Plan (Appendix M.6)

Breaker-and-a-Half Switchyard

The same BMPs, PDFs, CMAs, and mitigation plans that apply to the Project site components would apply to the BAAH switchyard.

Loop-in Transmission Corridors

The same BMPs, PDFs, CMAs, and mitigation plans that apply to the Project site components would apply to the 500 kV loop-in transmission lines.

4.2.5 Laws, Ordinances, Regulations, and Standards Compliance

Table 4.2-6~~4.2-5~~ Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Clean Water Act (33 USC § 1344)	Prohibits the discharge of dredged or fill material into the waters of the U.S. without a permit.	The Project is not anticipated to impact any waters of the U.S. The Project will avoid impacts on wetlands and the drainage swales and ephemeral waters in the Project Application Area are not directly connected to any traditionally navigable water. Refer to Section 4.2.1 and Appendix J.2.
Federal ESA (16 USC 1531 §§ et seq.)	Designates and protects federally threatened and endangered plants and animals and their critical habitat. Applicants for projects that could result in adverse impacts on any federally listed species are required to consult with and mitigate potential impacts in consultation with USFWS.	The Project would require federal authorization due to the majority of the Project being located on federal lands. The BLM will serve as the lead agency under NEPA and will be responsible for ESA compliance, including compliance with Section 7 consultation requirements of the ESA.
MBTA (16 USC §§ 703–711)	Protects all migratory birds, including nests and eggs.	A Nesting Bird Management Plan has been prepared for the Project, which defines procedures for monitoring and avoidance of active nests during Project implementation. The Nesting Bird Management Plan is provided in Appendix M.2. Refer to Section 4.2.2 for additional details.
Executive Order 12996: Management and General Public Use of the National Wildlife Refuge System	The mission of the National Wildlife Refuge System is to preserve a national network of lands and waters for the conservation and management of fish, wildlife, and plant resources of the U.S. for the benefit of present and future generations.	The Project is not located within or in proximity to a National Wildlife Refuge and would not impact any portion of the National Wildlife Refuge System

LORS	Applicability	Compliance
National Wildlife Refuge System Improvement Act of 1997	The legislation requires that a comprehensive conservation plan (also known as comprehensive management plan) be in place for each national wildlife refuge within 15 years after passage of this bill.	The Project is not located within or in proximity to a National Wildlife Refuge and would not impact any portion of the National Wildlife Refuge System.
Salton Sea Reclamation Act of 1998	Permit the continual use of the Salton Sea as a reservoir for irrigation drainage and reduce and stabilize the overall salinity of the Salton Sea; stabilize the surface elevation of the Salton Sea; reclaim, in the long term, healthy fish and wildlife resources and their habitats; and enhance the potential for recreational uses and economic developments of the Salton Sea.	The Project is approximately 35 miles from the Salton Sea and would not affect Salton Sea Restoration.
Lea Act (16 USC §§ 695–695c; 62 stat. 238)	Authorizes the Secretary of the Interior to acquire and develop waterfowl and other wildlife management areas in California, provided the state acquires equivalent acreage.	The Project is not located on or in proximity to a wildlife management area. The Project would not affect any wildlife management area.
Desert Renewable Energy Conservation Plan	Habitat Conservation Plan/Natural Community Conservation Plan and a Bureau of Land Management Land Use Plan Amendment covering both public and private lands across seven counties, including Imperial County.	The Project is located on BLM land within a DFA. The Project will implement all applicable CMAs under the DRECP as discussed in Section 4.2.4.

Table 4.2-7~~4.2-6~~ State Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
CESA (Fish and Game Code §§ 2050 et. seq.)	Species listed under this act cannot be "taken" or harmed, except under specific permit.	Species listed under the CESA that have the potential to occur in the Project Application Area and in proximity to the Project are addressed in Sections 4.2.1 and 4.2.2.

LORS	Applicability	Compliance
Title 14, CCR, Sections 670.2 and 670.5	Lists animals designated as threatened or endangered in California.	Species designated as threatened or endangered animals in California that could occur in the Project area are listed in Table 4.2-4 and impacts are addressed in Section 4.2.2.
California Public Ressources Code, division 15, chapter 6, section 25527	Prohibits placing facilities within ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value.	The Project is not located in an area protected by this code as discussed in Section 4.2.1.
Fish and Game Code §§ 3511, 4700, 5050, and 5515	Lists animal species that are Fully Protected in California	Fully Protected animal species that could occur in the Project Application Area are listed in Table 4.2-4 and impacts are addressed in Section 4.2.2.
Fish and Game Code §§ 3503 and 3503.5	States that 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. Section 3503.5 specifically protects birds of prey.	A Nesting Bird Management Plan has been prepared for the Project, which defines procedures for monitoring and avoidance of active nests during Project implementation. The Nesting Bird Management Plan is provided in Appendix M.2. Refer to Section 4.2.2 for additional details.
Fish and Game Code § 3513	Makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any migratory bird.	A Nesting Bird Management Plan has been prepared for the Project and defines procedures for monitoring and avoidance of active nests during Project implementation. The Nesting Bird Management Plan is provided in Appendix M.2. Refer to Section 4.2.2 for additional details.
Fish and Game Code §§ 1930 et seq.	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.	Impacts on riparian areas are discussed in Section 4.2.2. The Project has been designed to avoid impacts on microphyll woodland and Appendix J.2 includes an application for impacts on waters of the State.

LORS	Applicability	Compliance
Fish and Game Code §§ 2700 et seq.	Provides funding to the Wildlife Conservation Board and CDFW for acquisition, enhancement, restoration, and protection of areas that are most in need of proper conservation.	The Project is not located in or adjacent to an area protected by this code.
Fish and Game Code §§ 1900 et seq.	The Native Plant Protection Act lists threatened, endangered, and rare plants listed by the State.	The Project will include mitigation measures to reduce impacts to state threatened, endangered, or rare plants (refer to Section 4.2.2).
California Water Code Division 7, Porter-Cologne Water Quality Act	Establishes authorities of RWQCBs and SWRCB, which regulate discharge of waste in waters of the State through dredge or fill permitting.	The Project will adhere to SWRCB and RWQCB regulations for waters of the State and will procure the appropriate permits for Project activities.
Fish and Game Code §§ 1600 et seq.	The Lake and Streambed Alteration program requires notification of and permitting for any activities that may divert, alter, use material from or discharge material into any river, stream, or lake.	Pursuant to Assembly Bill 205 subsection 25545.1, the CEC retains exclusive permitting authority over matters that would normally rest with CDFW. Pursuant to Public Resources Code section 25545.5, the Applicant and CEC would collaborate with the CDFW on review of this Opt-in Application to ensure compliance with laws related to the protection of fish and wildlife resources. (refer to Impact BIO-3).

Table 4.2-8~~4.2-7~~ Local Laws, Ordinances, Regulations and Standards

LORS	Applicability	Section Discussed in the AFC
Imperial County General Plan, Conservation and Open Space Element	Identifies goals and policies to ensure the managed use of environmental resources, to conserve biological resources for future generations	Consistency with the General Plan Policies is discussed in Impact BIO-5.

4.2.6 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application has been updated and is provided ~~in Appendix E.1~~below. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2.

Pursuant to Assembly Bill 205 subsection 25545.1, the CEC retains exclusive permitting authority over matters that would normally rest with CDFW. Pursuant to Public Resources Code section 25545.5, the Applicant and CEC would collaborate with the CDFW on review of this Opt-In Application to ensure compliance with laws related to the protection of fish and wildlife resources.

Table 4.2-9 Updated Table E.1 Agency Contact List

Agency - title	Last Name	First Name	Contact	Mailing address
BLM – Assistant District Manager, California Desert District Office	Anderson	Brandon	bganderson@blm.gov (951) 697-5215	300 S. Richmond Rd. Ridgecrest, CA 93555
BLM – Program Manager CA State Office - Lands, Planning & Recreation Branch	Robledo	Nancy	lrobledo@blm.gov (916) 978-4400	2800 Cottage Way, Suite W1623, Sacramento, CA 95825
BLM – Field Manager, El Centro Field Office	Lohr	Matthew	mlohr@blm.gov (760) 337-4400	1661 S 4th St, El Centro, CA 92243
BLM – Deputy Field Manager, El Centro Field Office	Sahagun	Carrie	csahagun@blm.gov (760) 337-4400	1661 S 4th St, El Centro, CA 92243
BLM – Realty Specialist, El Centro Field Office	Riddell	Tristan	triddell@blm.gov (760) 337-4400	1661 S 4th St, El Centro, CA 92243
BLM – Archaeologist, California State Office	Fries	Eric	efries@blm.gov (916) 978-4400	2800 Cottage Way Suite W1623, Sacramento, CA 95825

Agency - title	Last Name	First Name	Contact	Mailing address
BLM – Archaeologist, California Desert District Office, Palm Springs-South Coast Field Office	Garcia-Herbst	Arleen E	agarciaherbst@blm.gov 760-833-7100	1201 Bird Center Drive, Palm Springs, CA 92262
BLM – Natural Resource Specialist, El Centro Field Office	Ramirez	Ismael N	iramirez@blm.gov (760) 337-4425	1661 S 4th St, El Centro, CA 92243
BLM – Project Manager, California Desert District Office, Palm Springs-South Coast Field Office	Toedtli	Matthew R	mtoedtli@blm.gov 760-833-7100	1201 Bird Center Drive, Palm Springs, CA 92262
BLM – Planning and Environmental Coordinator, El Centro Field Office	Rodriguez	Christian	crodriguez@blm.gov (760) 337-4400	1661 S 4th St, El Centro, CA 92243
BLM – Biologist, California Desert District Office, Palm Springs-South Coast Field Office	Massar	Mark	mmassar@blm.gov 760-833-7100	1201 Bird Center Drive, Palm Springs, CA 92262
California Department of Fish and Wildlife – Senior Environmental Scientist, Inland Desert Region	Ellsworth	Alisa	alisa.ellsworth@wildlife.ca.gov (760) 872-1173	3602 Inland Empire Blvd, Suite C-220, Ontario, CA 91764

Agency - title	Last Name	First Name	Contact	Mailing address
CDFW – Senior Environmental Scientist, Inland Deserts Region	Rodriguez	Magdalena	magdalena.rodriguez@wildlife.ca.gov (909) 844-2520	3602 Inland Empire Blvd, Suite C-220, Ontario, CA 91764
CDFW – Environmental Scientist, Inland Deserts Region	Rosales	Ashley	ashley.rosales@wildlife.ca.gov (760) 219-9452	3602 Inland Empire Blvd, Suite C-220, Ontario, CA 91764
California Department of Toxic Substances Control – Division Chief	Lorentzen	Wayne	wayne.lorentzen@dtsc.ca.gov (916) 255-3883	1001 I Street, P.O. Box 806, Sacramento, California 95812-0806
CA State Water Quality Control Board - Assistant Deputy Director for Water Quality	Crader	Phillip	phillip.crader@waterboards.ca.gov (916) 341-5455	1515 Clay St Suite 1400, Oakland, CA 94612
RWQCB – Senior Environmental Scientist, Colorado River Basin	Raub	Logan	logan.raub@waterboards.ca.gov (760) 776-8966	73-720 Fred Waring Drive, Suite 100, Palm Desert, CA 92260
Imperial County – Environmental Coordinator, Air Pollution Control District	Blondell	Curtis	curtisblondell@co.imperial.ca.us (442) 265-1800	801 Main Street, El Centro, CA 92243
Imperial County – Manager, Imperial County Air Pollution Control District, Planning, Rule Development and Monitoring	Soucier	Monica	monicasoucier@co.imperial.ca.us (442) 265-1800	801 Main Street, El Centro, CA 92243

Agency - title	Last Name	First Name	Contact	Mailing address
Imperial County – Administrative Analyst, County Executive Office	Lopez-Solis	Rosa	rosalopez@co.imperial.ca.us (760) 482-4506	801 Main Street, El Centro, CA 92243
Imperial County – Director, Planning & Development Services	Minnick	Jim	jimminnick@co.imperial.ca.us (442) 265-1736	801 Main Street, El Centro, CA 92243
Imperial County – Assistant Director, Planning & Development Services	Abraham	Michael	michaelabraham@co.imperial.ca.us (442) 265-1736	801 Main Street, El Centro, CA 92243
Imperial County – Planner II, Planning & Development Services	Jimenez	Evelia	ejimenez@co.imperial.ca.us (442) 265-1736	801 Main Street, El Centro, CA 92243
Imperial County – Planner II, Planning & Development Services	Quero	Gerardo	gerardoquero@co.imperial.ca.us (442) 265-1736	801 Main Street, El Centro, CA 92243
Imperial County – Planner I, Planning & Development Services	Valenzuela	Luis	luisvalenzuela@co.imperial.ca.us (442) 265-1736	801 Main Street, El Centro, CA 92243
Imperial County – Planner I, Planning & Development Services	Yee	Rocio	rocioyee@co.imperial.ca.us (442) 265-1736	801 Main Street, El Centro, CA 92243

Agency - title	Last Name	First Name	Contact	Mailing address
Imperial Irrigation District – Senior Water Resources Planner	Gamboa-Arce	Justina	jgamboaarce@iid.com (760) 339-9085	333 E. Barioni Boulevard, Imperial, CA 92251
Deputy Director, Military Aviation and Installation Assurance Siting Clearinghouse Office of the Assistant Secretary of Defense (Energy, Installations and Environment)	Beard	Robbin	robbin.e.beard.civ@mail.mil (571) 372-8414	3400 Defense Pentagon, Room 5C646, Washington, DC 20301 - 3400
U.S. Bureau of Reclamation – Supervisory Civil Engineer, Construction Services Group	Belous	Alexander G	abelous@usbr.gov (928) 343-8314	7301 Calle Agua Salada, Yuma, AZ 85364
U.S. Bureau of Reclamation – Manager Environmental Planning and Compliance Group	DeSantiago	Julian A	jdesantiago@usbr.gov (928) 343-8259	7301 Calle Agua Salada, Yuma, AZ 85364
U.S. Bureau of Reclamation – Deputy Area Manager, Yuma Area Office	Fulsome	Owen R	fulsome@usbr.gov (928) 343-8109	7301 Calle Agua Salada, Yuma, AZ 85364

Agency - title	Last Name	First Name	Contact	Mailing address
U.S. Bureau of Reclamation – Civil Engineer, Facilities Engineering Team	Gallardo	Erik J	gallardo@usbr.gov (928) 343-8118	7301 Calle Agua Salada, Yuma, AZ 85364
U.S. Bureau of Reclamation – Realty Specialist, Resource Management office, Lands Team	Lopez	Arturo	arturolopez@usbr.gov (928) 343-8148	7301 Calle Agua Salada, Yuma, AZ 85364
U.S. Bureau of Reclamation – Realty Officer, Resource Management Office, Lands Team	Pinnell	Anna M	apinnell@usbr.gov (928) 343-8514	7301 Calle Agua Salada, Yuma, AZ 85364
U.S. Bureau of Reclamation – Realty Specialist, Resource Management Office, Lands Team	Rodriguez	Francisco (Frank)	frankrodriguez@usbr.gov (928) 343-8141	7301 Calle Agua Salada, Yuma, AZ 85364
U.S. Bureau of Reclamation – Chief, Resources Manager Office	Wallis	Christopher (Chris)	cwallis@usbr.gov (928) 343-8215	7301 Calle Agua Salada, Yuma, AZ 85364
U.S. Bureau of Reclamation – Chief, Technical Support	Zaragoza	Vicente A	vzaragoza@usbr.gov (928) 343-8317	7301 Calle Agua Salada, Yuma, AZ 85364
U.S. EPA, Region IX, Environmental Review Branch	Plenys	Thomas	plenys.thomas@epa.gov (415) 972-3238	75 Hawthorne Street, San Francisco, CA 94105

Agency - title	Last Name	First Name	Contact	Mailing address
U.S. Fish and Wildlife Service – Wildlife Biologist, Palm Springs	Ronan	Noelle A	noelle_ronan@fws.gov (760) 322-2070	777 E. Tahquitz Canyon Way Suite 208. Palm Springs, CA 92262
U.S. Fish and Wildlife Service – Wildlife Biologist, Palm Springs	Sanzenbacher	Peter M	peter_sanzenbacher@fws.gov (760) 322-2070	777 E. Tahquitz Canyon Way Suite 208. Palm Springs, CA 92262
U.S. Fish and Wildlife Service – Visitor Services Manager, Palm Springs	James	Vincent	vincent_james@fws.gov (760) 322-2070	777 E. Tahquitz Canyon Way Suite 208. Palm Springs, CA 92262
U.S. Fish and Wildlife Service – Fish and Wildlife Biologist, Palm Springs	Kowalski	Kent	kent_kowalski@fws.gov (760) 322-2070	777 E. Tahquitz Canyon Way Suite 208. Palm Springs, CA 92262

4.2.7 References

Blackhawk Environmental. 2020. "Memo to Stacey Love, USFWS Regarding 5-Day Report for Yuma Ridgway's Rail and California Black Rail Presence Absence Survey Results for the Proposed Imperial Irrigation District All-American Canal Surface Seeparage Recovery Project, Imperial County, California." July 16.

Blackhawk Environmental. 2025. *Supplemental Memo Report for Yuma Ridgway's Rail and California Black Rail Presence Absence Survey Results for the Proposed Perkins Renewable Energy Project, Holtville, Imperial County, California*.

Brady, Ronald H., and Kris Vyverberg. 2014. *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants*. Energy Research and Development (500) Final Project Report. CEC-500-2014-013. California Energy Commission. https://www.energy.ca.gov/publications/2014/methods-describe-and-delineate-episodic-stream-processes-arid-landscapes.

Bureau of Land Management (BLM). 2016. *Desert Renewable Energy Conservation Plan Land Use Plan Amendment to the California Desert Conservation Area Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan*. BLM/CA/PL-

2016/03+1793+8321. https://eplanning.blm.gov/public_projects/lup/66459/133474/163144/DRECP_BLM_LUPA.pdf.

Bureau of Land Management (BLM). 2023. "BLM California Plant Special Status Species List." October 4.

Calflora. 2023. "Map Layer Help." Calfora, March 13. https://www.calflora.org/entry/help/layer-help.html.

Calflora. n.d. "What Grows Here?" Calflora. Accessed December 19, 2023. https://www.calflora.org/entry/wgh.html#srch=t&fmt=photo&inma=t&y=32.857&x=-115.4001&z=9.

California Burrowing Owl Consortium (CBOC). 1993. "Burrowing Owl Survey Protocol and Mitigation Guidelines."

California Department of Fish and Game (CDFG). 2000. "Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities." State of California, May 8. https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Environmental-Forms-and-Documents/Information-Resources-for-Environmental-Consultant/Biological/Botanical-Survey-Guidelines.pdf.

California Department of Fish and Game (CDFG). 2012. *Staff Report on Burrowing Owl Mitigation*. State of California, Natural Resources Agency.

California Department of Fish and Wildlife (CDFW). 2010. "Essential Connectivity Areas - California Essential Habitat Connectivity (CEHC) [Ds620]." Raster digital data. Using Arc GIS (12/19/2023), March 1. Image service. Last updated 12/14/2023. https://data-cdfw.opendata.arcgis.com/maps/CDFW::essential-connectivity-areas-california-essential-habitat-connectivity-cehc-ds620/about.

California Department of Fish and Wildlife (CDFW). 2023a. *California Natural Community List*. California Department of Fish and Wildlife (CDFW), June 1. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities.

California Department of Fish and Wildlife (CDFW). 2023b. *California Natural Community List*. California Department of Fish and Wildlife (CDFW), June 1. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities.

California Department of Fish and Wildlife (CDFW). 2023c. "California Natural Diversity Database." Spatial data. Accessed 11/13/2023, October 1. Exe. Available: https://wildlife.ca.gov/Data/CNDDB/Data-Updates.

California Department of Fish and Wildlife (CDFW). n.d.-a. "Biogeographic Information and Observation System (BIOS)." Map viewer. Accessed December 19, 2023. https://wildlife.ca.gov/Data/BIOS.

California Department of Fish and Wildlife (CDFW). n.d.-b. "California Department of Fish and Wildlife Natural Community Conservation Plans." Arc GIS Storymap. Accessed December 19, 2023. https://cdfw.maps.arcgis.com/apps/MapTour/index.html?appid=421d650df5c240b68f0b1fc683b08917.

California Energy Commission (CEC). n.d. "Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants." Accessed January 8, 2023. https://www.energy.ca.gov/publications/2014/methods-describe-and-delineate-episodic-stream-processes-arid-landscapes.

California Native Plant Society (CPNPS). 2001. *CNPS Botanical Survey Guidelines*. https://cnps.org/wp-content/uploads/2018/03/cnps_survey_guidelines.pdf.

California Native Plant Society (CPNPS), Rare Plant Program. n.d.-a. "A Manual of California Vegetation." Online Database. Accessed December 11, 2023. https://vegetation.cnps.org/.

California Native Plant Society (CPNPS), Rare Plant Program. n.d.-b. "Rare Plant Inventory." Using CNPS Rare Plant Invetory online edition, v9.5. Excel. Accessed December 19, 2023. https://rareplants.cnps.org/Home/.

California Natural Diversity Database (CNDDB). 2023. *Special Animals List*. California Department of Fish and Wildlife.

Conservation Biology Institute. n.d. "Maps." DRECP Gateway. Accessed January 8, 2024. https://drecp.databasin.org/maps/.

Consortium of California Herbarium (CCH). n.d. "Consortium of California Herbarium 2 Portal - Map Interface." Accessed December 19, 2023. https://www.cch2.org/portal/collections/map/index.php.

County of Imperial, Planning and Development Services Department. 2016. "Conservation and Open Space Element." In *Imperial County General Plan*.

Dilts, Thomas E., Madeline O. Steele, Joseph D. Engler, et al. 2019. "Host Plants and Climate Structure Habitat Associations of the Western Monarch Butterfly." *Frontiers in Ecology and Evolution* 7 (May). https://doi.org/10.3389/fevo.2019.00188.

eBird. n.d. "eBird: An Online Database of Bird Distribution and Abundance." Online database. Accessed December 19, 2023. https://ebird.org/hotspots.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Wetlands Research Program Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station.

Flat-tailed Horned Lizard Interagency Coordinating Committee. 2003. "Flat-Tailed Horned Lizard Rangewide Management Strategy: An Arizona-California Conservation Strategy." http://www.eebweb.arizona.edu/Courses/Ecol406R_506R/FTHLStrategy03.pdf.

Hatfield, Rich, Sarina Jepsen, Eric Mader, Scott Hoffman Black, and Matthew Shepherd. 2012. *Conserving Bumble Bees: Guidelines for Creating and Managing Habitat for America's Declining Pollinators*. Xerces Society for Invertebrate Conservation. https://www.xerces.org/sites/default/files/2018-05/12-028_01_XercesSoc_Conserving-Bumble-Bees-Guidelines_web.pdf.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. The Resources Agency, Department of Fish and Game (California). https://www.cal-ipc.org/docs/ip/inventory/pdf/HollandReport.pdf.

Ironwood Consulting. 2023. *Biological Resources Technical Report: East Mesa Solar Project*. Prepared for Aspen Environmental Group.

Ironwood Consulting. 2024. *Aquatic Resources Report: Perkins Renewable Energy Project*.

Ironwood Consulting. 2025. *Monarch Butterfly Supplement for Perkins Renewable Energy Project*.

Lichvar, Robert W., and Shawn M. McColley. 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual:* Defense Technical Information Center. http://www.dtic.mil/docs/citations/ADA486151.

McIntyre, Patrick J., Hannah Ceasar, and Bruce E. Young. 2024. "Mapping Migration Habitat for Western Monarch Butterflies Reveals Need for Public-Private Approach to Conservation." *Frontiers in Ecology and Evolution* 12 (November). https://doi.org/10.3389/fevo.2024.1460363.

Monarch Joint Venture. n.d. "Habitat Evaluator Tool." Accessed February 3, 2026. https://monarchjointventure.org/mjvprograms/science/roadside-habitat-for-monarchs/habitat-evaluator-tool.

Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. *A Manual of California Vegetation*. 2nd ed. California Native Plant Society Press. https://books.google.com/books?id=y40lAQAAMAAJ.

U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. US Army Corps of Engineers Engineer Research and Development Center.

U.S. Fish and Wildlife Service (USFWS). 2000. *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants*. https://www.fws.gov/media/guidelines-conducting-and-reporting-botanical-inventories-federally-listed-proposed-and.

U.S. Fish and Wildlife Service (USFWS). 2015. "Critical Habitat [U.S. Fish and Wildlife Service]." Geospatial data. Using Arc GIS (12/19/2023), January 1. Feature service. (Updated monthly). https://hub.arcgis.com/maps/fws::fws-hq-es-critical-habitat/about.

U.S. Fish and Wildlife Service (USFWS). 2017. *Yuma Ridgway's Rail Survey Protocol for Project Evaluation*.

U.S. Fish and Wildlife Service (USFWS). 2022. "USFWS Critical Habitat Mapper." December 9. https://ecos.fws.gov/ecp/report/table/critical-habitat.html.

U.S. Fish and Wildlife Service (USFWS). 2023. "Information for Planning and Consultation (IPaC) Resource List." December 14. Retrieved from: https://www.fws.gov/service/information-planning-and-consultation.

U.S. Fish and Wildlife Service (USFWS). n.d. "National Wetlands Inventory Wetlands Mapper." Map viewer. Accessed December 19, 2023. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

U.S. Geological Survey (USGS). 2019. "National Hydrography Dataset (NHD)." Using Arc GIS (September 14, 2023), February 28. Last update 04/03/2023. https://data.ca.gov/dataset/national-hydrography-dataset-nhd-archive.

USDA Natural Resources Conservation Service (NRCS). n.d. "National Cooperative Soil Survey (NCSS)." Vector digital data, raster digital data, tabular digital data. Using Web Soil Survey (WSS) (12/19/2023). Accessed December 19, 2023. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

Western Association of Fish and Wildlife Agencies (WAFWA). 2019. *Western Monarch Butterfly Conservation Plan: 2019-2026*.

Western Monarch Milkweed Mapper. n.d. "Sightings Map." Accessed February 3, 2026. https://www.monarchmilkweedmapper.org/app/#/combined/map.

Western Regional Climate Center (WRCC). 2022. "Western Regional Climate Center." https://wrcc.dri.edu.

Whiteaker, L., J. Henderson, R. Holmes, et al. 1998. "Survey Protocols for Survey & Manage Strategy 2: Vascular Plants." December. https://www.blm.gov/or/plans/surveyandmanage/files/sp-sp-va-vascularplants-v2-1998-12.pdf.

Attachment B.6 Monarch Butterfly Habitat Assessment

Ironwood Consulting

370 Alabama Street, Suite A
Redlands, CA 92373
(909) 798-0330
www.ironwoodbio.com

Memorandum

Date: April 11, 2025

To: Bureau of Land Management, US Fish and Wildlife Service, California Department of Fish and Wildlife

From: Ironwood Consulting, Inc.

Subject: Monarch Butterfly Supplement for Perkins Renewable Energy Project

INTRODUCTION

This memo has been prepared as a supplement to the Biological Resources Technical Report (Ironwood 2025) addressing concerns raised by the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW) regarding potential effects of the Perkins Renewable Energy Project (Project) to the monarch butterfly. A supplemental field survey documenting milkweed occurrence in select areas was conducted, with notations for nectar plants.

The Project has one milkweed species that occurs within the site boundaries, no incidental monarch observations, is located within low habitat suitability, and does not meet all the criteria for breeding and overwintering habitat as discussed further below. Development of the Project site would have a low to moderate impact on breeding and none for overwintering of the species. Some suggested mitigation measures are recommended below.

BACKGROUND

Monarch butterfly (*Danaus plexippus*) is a federal candidate to be classified as an endangered species and a BLM Sensitive Species that can be found throughout North America, including much of California. Potential breeding areas include a variety of habitats that support milkweed (*Asclepias spp.*). Female monarchs lay eggs primarily on milkweed plants, which provide an essential source of nutrition for larvae and chemical compounds that aid in deterring predators. Metamorphosis from egg to adult occurs over a period of approximately one month, depending on ambient temperature. Adults mate within a period of a few days following emergence and typically live between 2 to 5 weeks (WAFWA 2019). Mating begins in the spring and continues in generational succession through the summer as migration continues northward across the western states (WAFWA 2019). By fall, monarchs reach reproductive diapause and begin migration to overwintering sites. Although specific migration patterns are not well understood, it is generally thought to follow watercourses with riparian vegetation, which correlate with available water that supports adequate vegetation for roosting and sources of nectar (WAFWA 2019).

HABITAT SUITABLITY

A suitable habitat model has been developed for monarch butterflies within consideration of all associated milkweed species (except tropical milkweeds) using occurrence and breeding records from museums, citizen science efforts, and opportunistic data from federal and non-governmental organizations. Urban land cover types were positively associated with *Asclepias speciosa* (showy milkweed)*, A. subulata (*skeleton milkweed*), A. asperula (spider milkweed),* and *A. tubersoa (*butterfly milkweed*)* while riparian vegetation was positively associated with *A. subulata* (rush milkweed) and *A. asperula* (Dilts et al 2019). This model indicates that the Project site is located within low suitable habitat for monarch and milkweed, (Figure 1). The Dilts et al 2019 model, however, excludes other factors for habitat suitability consideration such as climate change, herbicide, and pesticide use.

Another model was developed focusing on the spring and fall migration stages of the monarch (McIntyre et al 2024). For the spring model, milkweed outputs for milkweed species diversity, temperature, precipitation, and climatic water deficits were most influential in the model. Milkweed diversity became increasingly important as an important predictor as the season progressed. For the fall model, nectar abundance with fall-flowering plants was an important predictor, while climatic water deficit, precipitation, and shrub cover were the most important ecological variables. A BLM-specific output for migrating monarchs in each BLM administrative unit was created with the model and highlighted the same areas as important in the Dilts et al 2019 model, although the former predicted medium suitability habitat in areas of the Sonoran Desert, whereas this model did not. In this model, the area of the Project site is not shown to have regional or local importance for both the spring and fall migration models (Figure 2).

The Western Monarch Working Group developed the Western Monarch Crucial Habitat Assessment Tool (CHAT) as a spatial representation for the *Western Monarch Butterfly Conservation Plan (*WAFWA 2019*).* The Western Monarch CHAT provides a ranked model to inform, conserve, and improve monarch habitat across the western United States. According to the CHAT model, the area where the Project site occurs is within areas of least crucial concern – these are relatively common and generally less limiting to monarch populations (Figure 3). The CHAT model is consistent with the previous two models (Figures 1 and 2). In addition, records of monarch for more breeding and overwintering, discussed further below, are consistent with the CHAT model for areas of crucial habitat for conservation.

Additionally, the Project site is within two miles of active agriculture with low plant diversity. South of the Project site is the All-American Canal and the US-Mexico Border. Pesticide and herbicide use on the Mexico side is unknown and less regulated. Pesticides and herbicides have been identified as one of the anthropogenic stressors negatively impacting monarchs. In a recent study within the California Central Valley, the largest cropped agricultural landscape in the western United States, pesticide contamination (some at lethal levels) was detected in milkweeds that were on farms and backyards of individuals that work closely with the Xerces Society for invertebrate conservation (Halsch et al 2020). Areas within two miles of the Project site are heavy with agricultural use and there is a high potential that there may be some pesticide and herbicide drift that occurs on the Project site, making the habitat less suitable for monarchs.

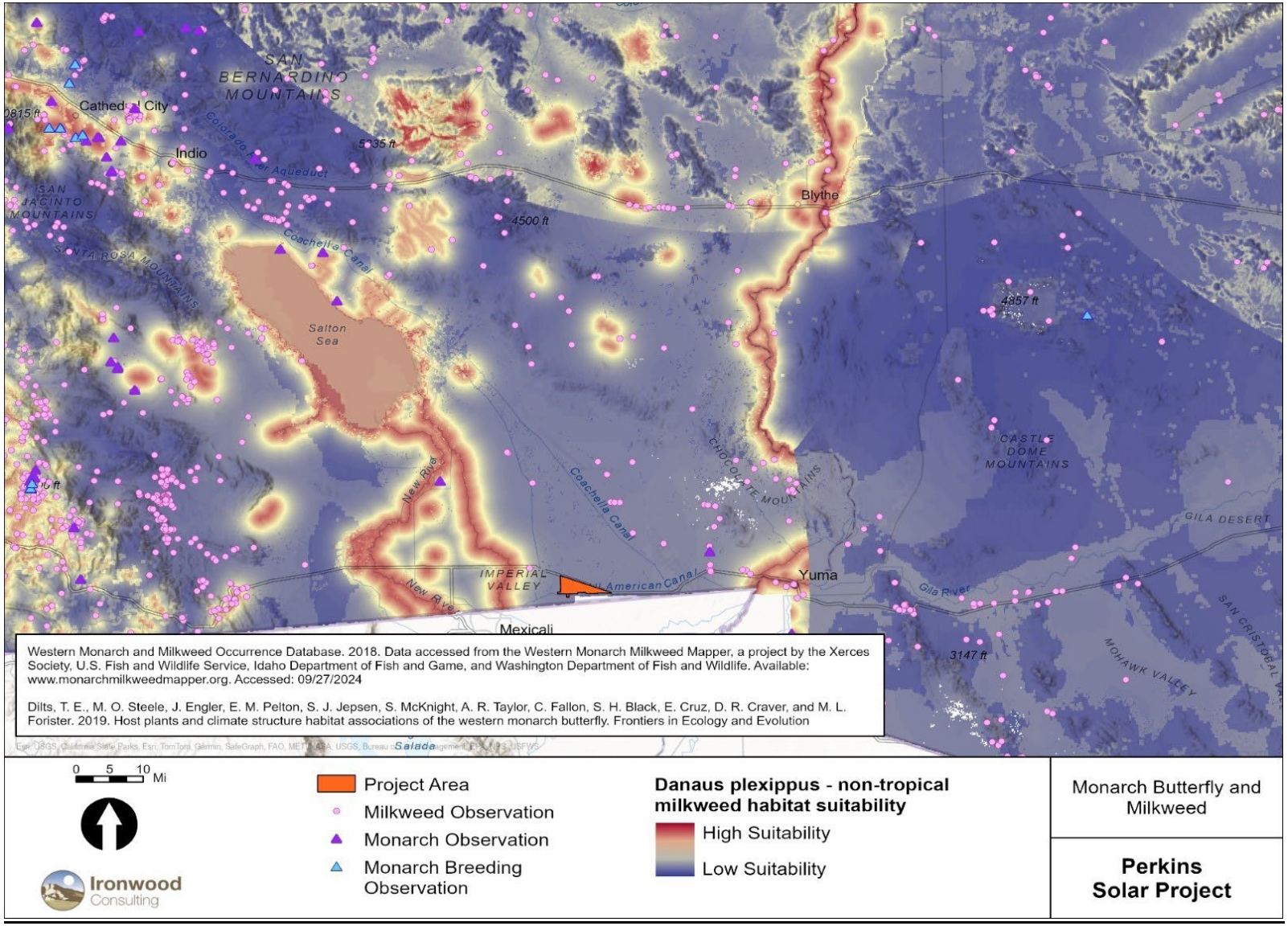


Figure 1. Monarch Butterfly and Milkweed Habitat Suitability

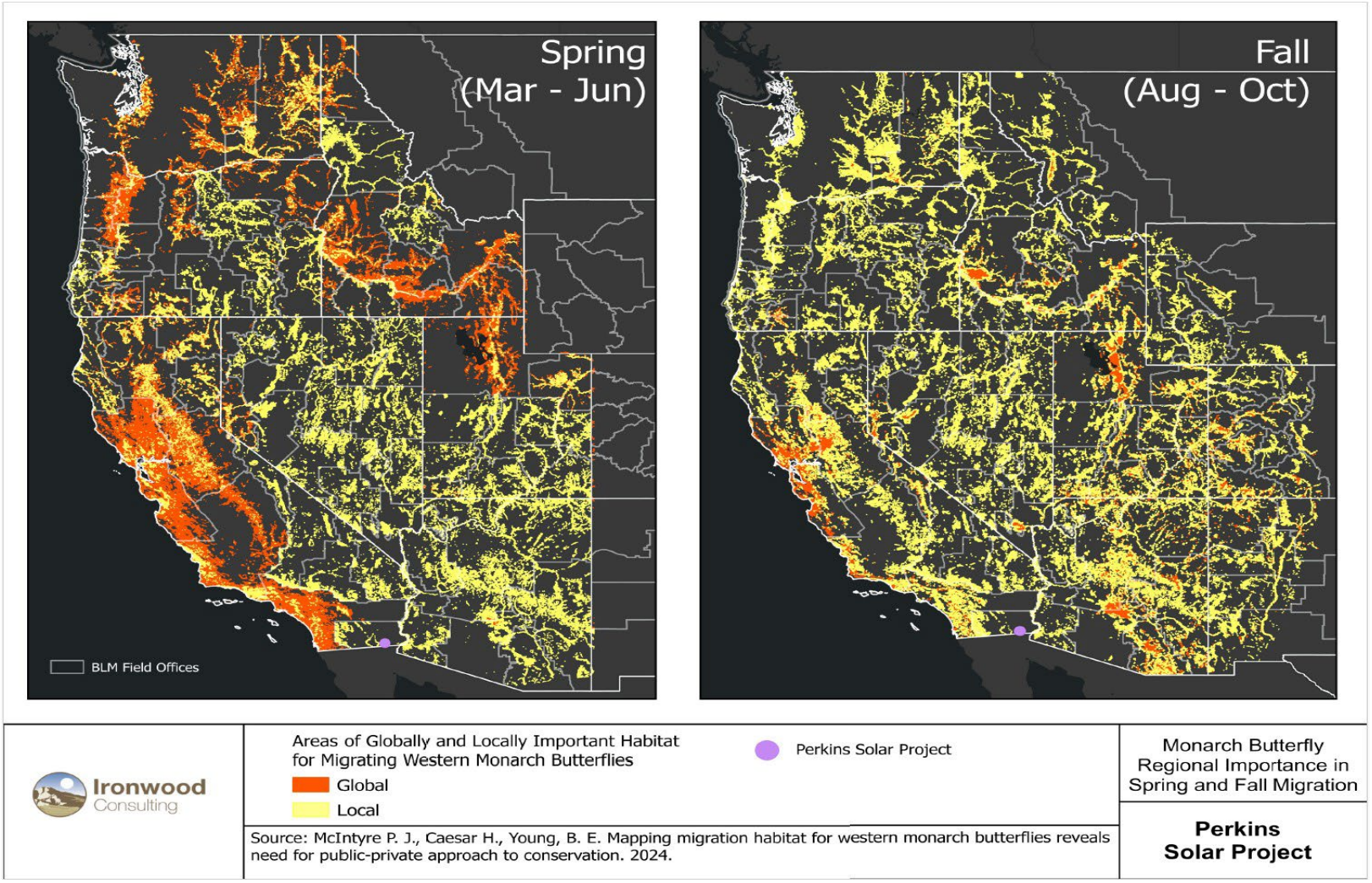


Figure 2. Monarch Butterfly Regional Importance in Spring and Fall Migration

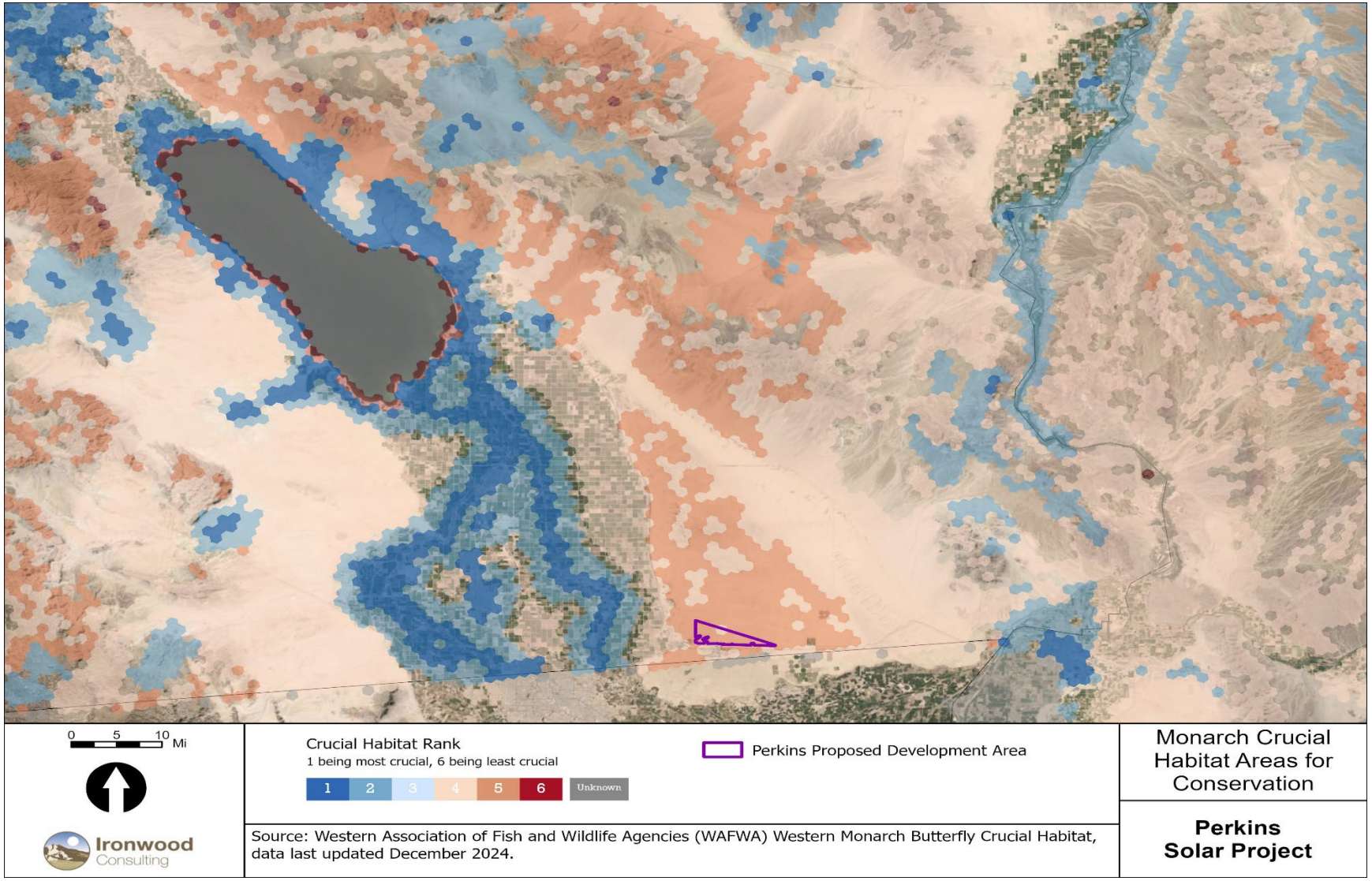


Figure 3. Monarch Crucial Habitat Areas for Conservation

BREEDING AND REPRODUCTION

Monarch butterfly larvae forage on milkweed and use them as larval hosts (Front, 2019), but adults have shown preference to oviposit/reproduce at sites with milkweed and high plant species diversity that provide more sources of nectar for energy. Sites with high milkweed densities alone did not have higher reproduction than sites with both milkweed and high nectar plant diversity. Ovipositing and nectaring occurred as milkweed decreased and plant species diversity increased (Kral-O'Brien et al 2020).

Breeding Records: The closest monarch breeding records are over 60 miles from the Project site near the Palm Springs area and Cleveland National Forest area (Figure 4[1]). These areas are consistent with high suitable habitat for monarchs and milkweed (Figures 1 and 2) and are ranked high for conservation within the CHAT model (Figure 3). Unlike the Project site, these areas likely have higher nectar plant density in residential and municipal areas due to the ornamental value of many nectar plants and availability of water or have a higher nectar plant density due to its protected status.

Supplemental Survey: Sixteen areas were identified for supplemental milkweed surveys selected by reviewing desktop aerials that had the highest potential for water accumulation where milkweed would most likely occur, and that would be the best representation of the vegetation communities on the Project site. The supplemental survey was conducted by qualified botanists between March 10-15, 2025, while annual plants were still identifiable, documenting all milkweed observed within the selected areas, conducting 20-meter belt transects documenting all milkweeds observed, and maintaining a list of potential nectar plants within those select areas as requested by BLM (communication on February 5, 2025).

All sixteen areas selected were positive for milkweed, but only one species of milkweed was observed – *A. subulata* (rush milkweed). The highest density of milkweed was in the southern area near Highway 98 and the transmission line corridor near the All-American Canal (Figure 5). Potential nectar plants observed in each area are summarized in Table 1. Non-nectar plants observed in each area are summarized in Table 2, and invasive plants observed in each area are summarized in Table 3. Outside of rush milkweed, two nectar plants *Baccharis sarothroides* (broom baccharis) and *B. sergiloides* (desert baccharis), were identified as nectar plants for monarchs in the California Xerces Society list of important nectar plants associated with monarchs[2]. However, while the genus is identified as to be likely attractive to monarchs, the species that occur on the Project site are not listed. Desert baccharis and broom baccharis also occur in limited areas in the transmission corridor consistent to their habitat preferences of sandy or gravelly washes, shallow drainages, and roadsides where water accumulation typically occurs (Jepson 2025).

Incidental Plants Observed: During rare plant surveys, a list of all plants observed were documented on the Project site (Ironwood 2025). Outside of the rush milkweed and the two baccharis species, no other plants on the Project site were identified as an important nectar plant for monarchs by Xerces Society. The plant diversity on the Project site is not high. There are also

[1] Western Monarch Milkweed Mapper

[2] https://xerces.org/sites/default/files/publications/19-046_01_MonarchNectarPlants_California_web-3pg.pdf

no rare plants that occur on the Project site, but there are several invasive plants that occur, depicted in Figure 6.

Habitat Evaluation: The Monarch Joint Venture created a habitat evaluator tool called the Roadside Monarch Habitat Evaluator[3] using the Rapid Assessment of Roadside Monarch Habitat and the Monarch Habitat Quality Calculator. The specific tool was not used during the supplemental survey per polygon, since the Project site is not a roadside, but information used for that tool was noted during the supplemental surveys for habitat quality and pulled from field notes after supplemental surveys were completed.

Within the Monarch Habitat Evaluator tool, breeding habitat accounts for 30% of its function, with milkweed abundance and number of species taken into account. Adult foraging habitat accounts for 25% of the weight function, while threats from adjacent land use, roads, and weeds account for another 25%. Management for herbicides and mowing is also taken into account, weighing the remaining 20% in this evaluator tool. However, this is not applicable to the Project site and would not count towards the weight. Habitat quality components within the habitat evaluator tool are summarized in Table 3.

Generally, potential blooming nectar plants for supplemental surveys in survey area polygons north of Highway 98 ranged from approximately 5-25% cover while polygons south of Highway 98, closer to the All-American Canal averaged approximately 25-50%. Invasive species cover was approximately 5% cover across polygons. Milkweed abundance varied between 6-10 individuals in some polygons while others had 26-50 individuals, but there was only one milkweed species. Adjacent land uses that could pose threats to monarchs in the polygons north of Highway 98 included natural habitat, Highway 98, Interstate 8 freeway, off-road vehicle roads, and powerline roads. Adjacent land uses within the southern polygons included the same lands uses (with the exception of Interstate 8 freeway), the All-American Canal and structures associated to it. Active agriculture is also within two miles of the Project site.

Although actual measurements to use the Roadside Monarch Habitat Evaluator were not collected per polygon during these supplemental surveys, the general habitat score for breeding and nectar availability would likely be moderate. Threats to the species adjacent to the Project site would likely score moderate to high, making the Project site less suitable for monarch and lowering the overall habitat quality.

Due to only one milkweed species occurring, two nectar plants important to monarchs that have limited distribution, low diversity of plants, moderate amount of invasive weeds observed, and proximity of threats to monarchs adjacent to the Project site, the likelihood of breeding and reproduction occurring on the Project site is low to moderate.

[3] https://monarchjointventure.org/mjvprograms/science/roadside-habitat-for-monarchs/habitat-evaluator-tool

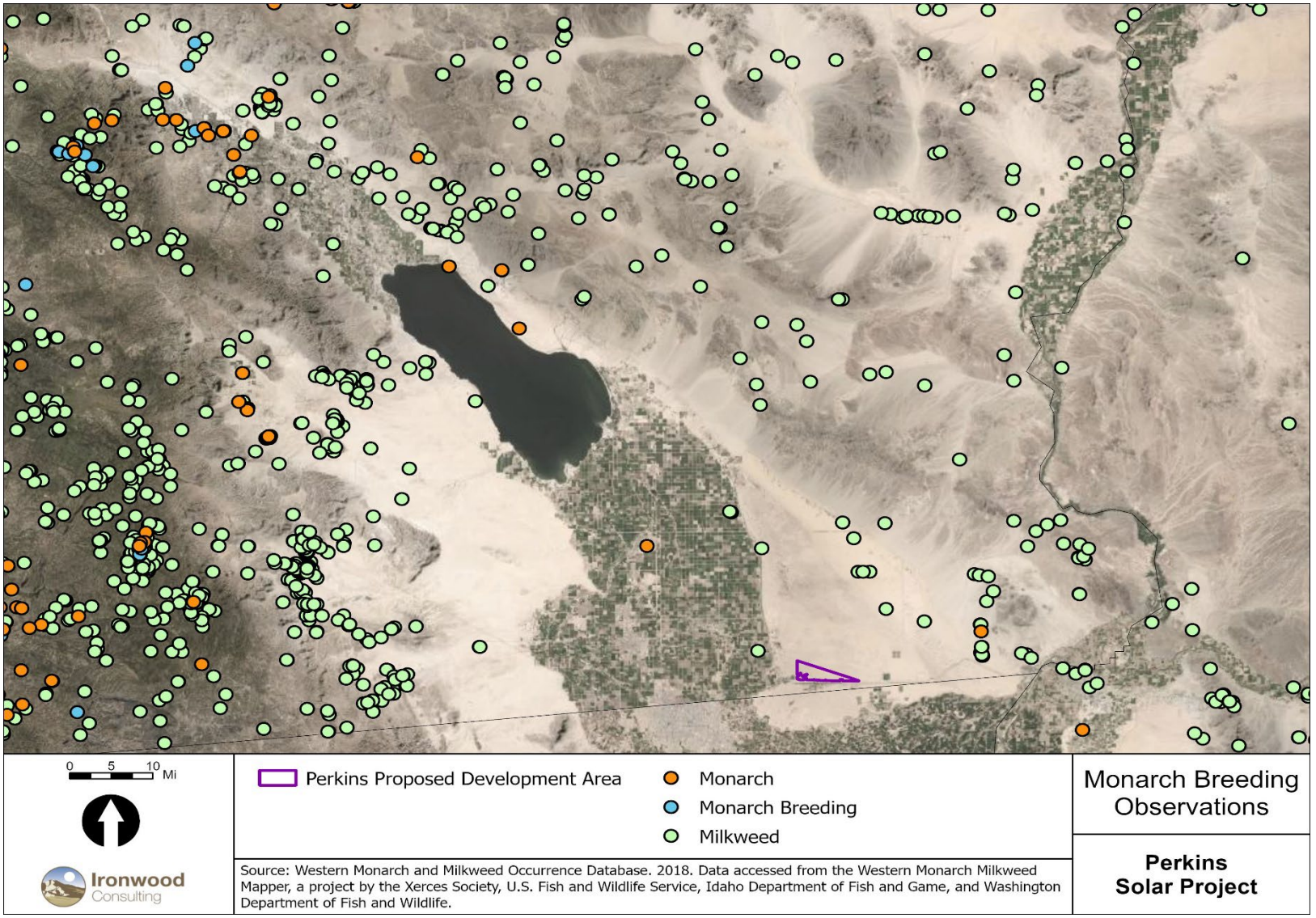


Figure 4. Monarch Breeding Observations

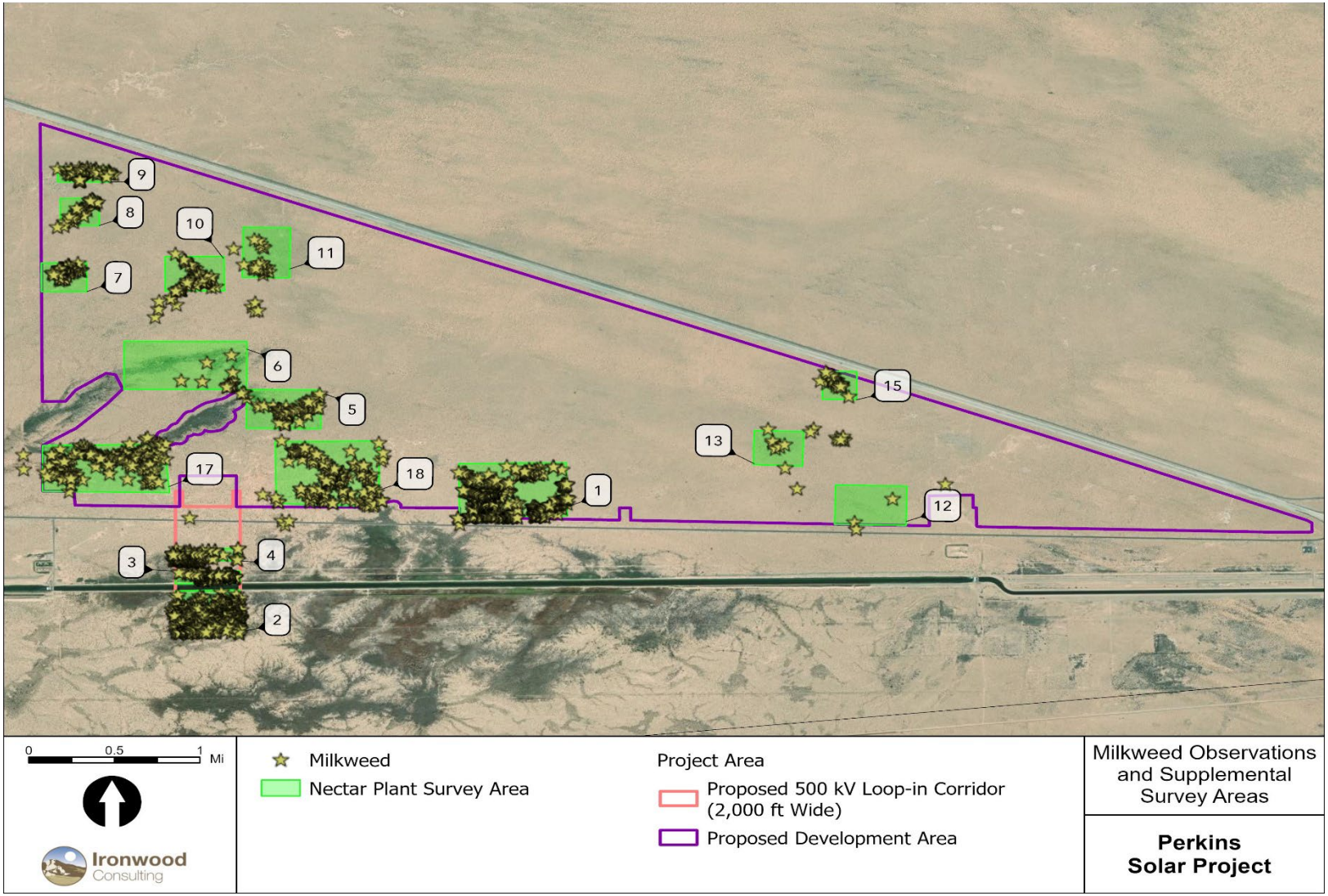


Figure 5. Milkweed Observations

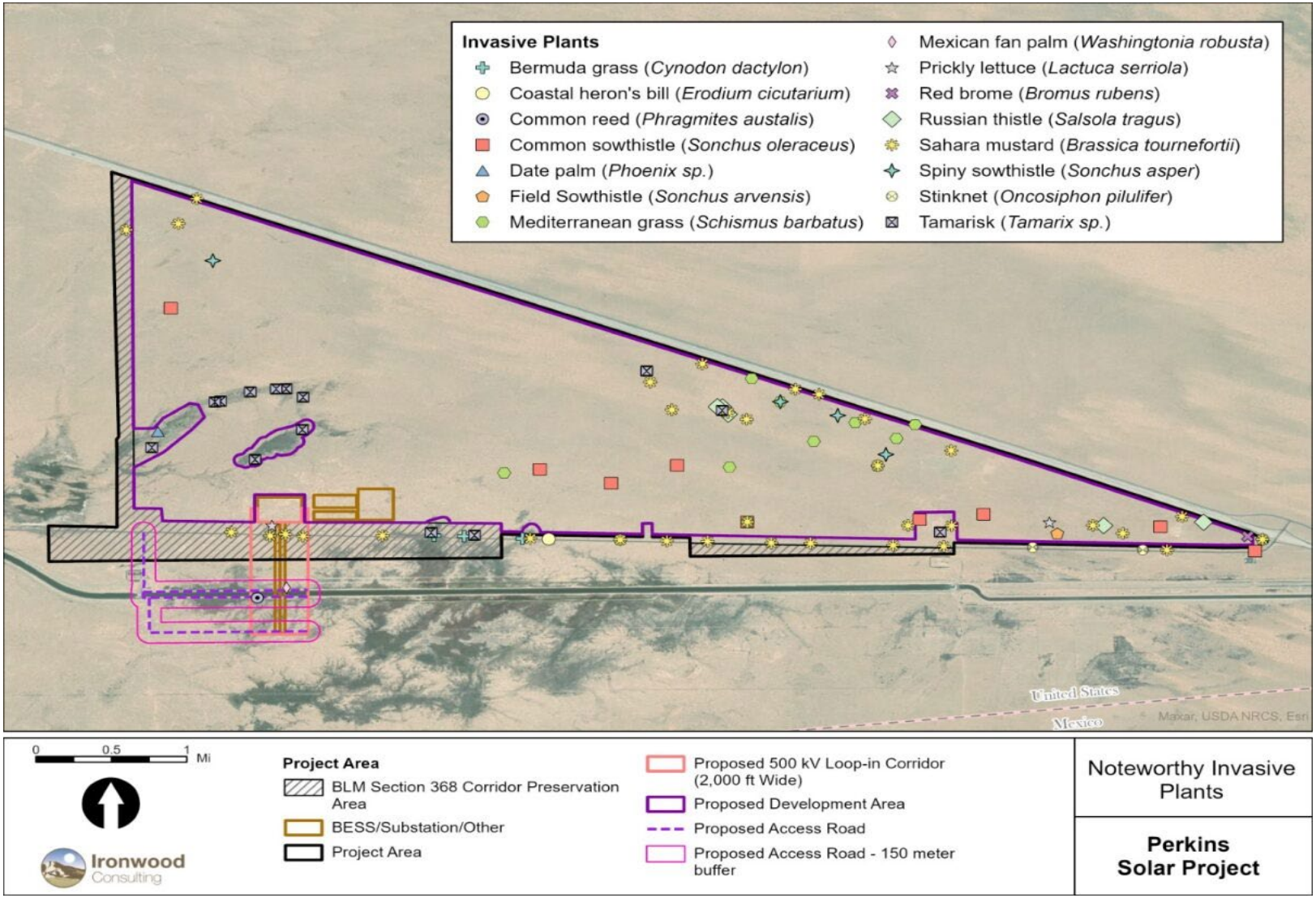


Figure 6. Noteworthy Invasive Plants Observed

Table 1. Supplemental Survey Results for Plants Observed Per Polygon of Surveyed Area

Scientific Name	Common Name	Polygon ID															
		1	2	3	4	5	6	7	8	9	10	11	12	13	15	17	18
POTENTIAL NECTAR PLANTS FOR POLLINATORS																	
Allionia incarnata	windmills												x	x			
Ambrosia dumosa	white bursage	x	x	x	x	x	x		x	x	x		x	x		x	x
***Asclepias subulata**	**rush milkweed**	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
Atriplex canescens	fourwing saltbush		x													x	
***Baccharis sarothroides**	**broom baccharis**			x													
***Baccharis sergiloides**	**desert baccharis**		x														
Chorizanthe rigida	Devil's spineflower	x				x			x					x			x
Chylismia claviformis	clavate fruited primrose	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
Dalea mollis	silky dalea			x	x				x	x	x	x	x	x	x	x	
Eriogonum deserticola	Colorado desert buckwheat								x	x		x					
Eriogonum thomasii	Thomas eriogonum	x			x		x		x			x					x
Euphoria polycarpa	smallseed sandmat	x								x		x		x			x
Geraea canescens	hairy desert sunflower						x		x			x	x	x			
Hesperocallis undulata	desert lily	x				x	x					x	x	x	x		x
Isocoma acradenia	alkali goldenbush		x	x	x	x	x	x	x		x	x	x	x	x	x	x
Johnstonella angustifolia	narrow-leaved johnstonella	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x
Larrea tridentata	creosote bush	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Marina parryi	Parry dalea			x		x	x										
Oenothera deltoides	desert lantern						x					x	x				
Oligomeris linifolia	leaved cambess	x		x	x	x			x	x	x	x	x		x	x	x
Palafoxia arida	Spanish needle			x		x	x				x	x	x	x	x	x	
Phoenix dactylifera	date palm		x	x													
Plantago ovata	desert plantain	x		x	x	x		x	x	x	x	x	x	x	x	x	x
Pluchea sericea	arrow weed		x														
Prosopsis glandulosa	honey mesquite	x			x	x											
Psorothamnus emoryi	Emory's indigobush	x		x	x			x	x	x	x						
Strombocarpa pubescens	screwbean mesquite		x														

Scientific Name	Common Name	Polygon ID															
		1	2	3	4	5	6	7	8	9	10	11	12	13	15	17	18
Suaeda nigra	bush seepweed		x														
Tiquilia plicata	plicate coldenia	x	x	x							x	x	x	x	x	x	
Neltuma odorata	honey mesquite																
NON-NECTAR PLANTS OBSERVED																	
Ephedra trifurca	long leafed ephedra		x						x	x	x	x	x	x	x	x	x
Phragmites australis	common reed		x														
INVASIVE PLANTS OBSERVED																	
Tamarix sp.	tamarisk	x	x	x			x									x	
Brassica tournefortii	Sahara mustard					x	x										
Schismus sp.	Mediterranean grass								x	x	x	x	x	x	x	x	x

Bold*= identified as important nectar plants for monarchs by Xerces Society

Table 2. Plants Observed throughout Project Site

Family	Scientific Name	Common Name
Amaranthaceae	*Atriplex canescens*	four-winged saltbush
Amaranthaceae	*Atriplex lentiformis*	big -saltbush-
Amaranthaceae	*Tidestromia suffruticosa var. oblongifolia*	honeysweet
Apocynaceae	*Asclepias subulata*	rush milkweed
Areaceae	**Phoenix dactylifera*	date palm
Areaceae	**Washingtonia robusta*	Mexican fan palm
Asteraceae	**Lactuca serriola*	prickly lettuce
Asteraceae	**Sonchus asper*	spiny sowthistle
Asteraceae	*Ambrosia dumosa*	burbush
Asteraceae	*Ambrosia dumosa*	white bursage
Asteraceae	*Baileya pauciradiata*	lax flower
Asteraceae	*Baileya pleniradiata*	wooly marigold
Asteraceae	*Bebbia juncea var. aspera*	rush sweetbush
Asteraceae	*Dicoria canescens*	desert twinbugs
Asteraceae	*Encelia farinosa*	brittlebush
Asteraceae	*Geraea canescens*	hairy desert sunflower
Asteraceae	*Geraea canescens*	desert sunflower
Asteraceae	*Isocoma acradenia*	alkali goldenbush
Asteraceae	*Palafoxia arida var. arida*	Desert needle
Asteraceae	*Pectis papposa*	manybristle chinchweed
Asteraceae	*Pectis papposa var. papposa*	chinch weed
Asteraceae	*Pluchea sericea*	arrow weed
Asteraceae	*Stephanomeria pauciflora*	brown-plume wire-lettuce
Asteraceae	*Stephanomeria pauciflora*	wire lettuce
Boraginaceae	*Johnstonella angustifolia*	marrow-leaved johnstonella
Boraginaceae	*Pectocarya heterocarpa*	-hairy leaved comb bur-
Boraginaceae	*Cryptantha angustifolia*	narrow leaved cryptantha
Boraginaceae	*Pectocarya heterocarpa*	chuckwalla pectocarya
Boraginaceae	*Tiquilia plicata*	fanleaf crinklemat
Brassicaceae	**Brassica tournefortii*	Saharan mustard
Brassicaceae	*Dithyrea californica*	spectacle pod
Brassicaceae	*Lepidium lasiocarpum*	Shaggyfruit pepperweed
Caryophyllaceae	*Achyronychia cooperi*	frost mat
Chenopodiaceae	*Suaeda nigra*	bush seepweed
Ehretiaceae (Boraginaceae)	*Tiquilia plicata*	fanleaf crinklemat
Ephedraceae	*Ephedra trifurca*	long leafed ephedra
Euphorbiaceae	*Euphorbia polycarpa*	smallseed sandmat
Fabaceae	*Dalea mollissima*	silky dalea-
Fabaceae	*Prosopis glandulosa*	honey mesquite

Family	Scientific Name	Common Name
Fabaceae	*Psorothamnus emoryi*	dye bush
Fabaceae	*Astragalus aridus*	annual desert milk vetch
Fabaceae	*Dalea mollissima*	silky dalea
Fabaceae	*Neltuma oderata*	honey mesquite
Fabaceae	*Strombocarpa pubescens*	screwbean mesquite
Fabaceae	*Psorothamnus emoryi*	indigo bush
Liliaceae	*Hesperocallis undulata*	desert lily
Loasaceae	*Mentzelia longiloba*	many flowered mentzelia
Nyctaginaceae	*Abronia villosa*	sand verbena
Nyctaginaceae	*Abronia villosa var. villosa*	hairy sand verbena
Nyctaginaceae	*Allionia incarnata*	windmills
Onagraceae	*Chylismia claviformis subsp. yumae*	Yuma clavate fruited primrose
Onagraceae	*Oenothera deltoides*	birdcage primrose
Onagraceae	*Chylismia brevipes subsp. brevipes*	Golden suncup
Orobanchaceae	*Aphyllon cooperi (= Orobanche cooperi)*	desert broomrape
Plantaginaceae	*Plantago spp.*	-
Plantaginaceae	*Plantago ovata*	wooly plantain
Phlox	*Loeseliastrum schottii*	Schott's calico
Poaceae	*Aristida adscensionis*	annual three-awn grass
Poaceae	*Aristida purpurea*	purple three-awn
Poaceae	*Bouteloua barbata*	sixweeks grama
Poaceae	*Bouteloua aristidoides*	needle gramma
Poaceae	*Bouteloua barbata var. barbata*	six-weeks gramma
Poaceae	*Cynodon dactylon*	bermuda grass
Poaceae	*Schismus arabicus*	Mediterranean grass
Poaceae	*Schismus barbatus*	Mediterranean grass
Poaceae	*Phragmites australis*	Common reed
Polygonaceae	*Chorizanthe rigida*	devil's spineflower
Polygonaceae	*Eriogonum deserticola*	Colorado desert buckwheat
Polygonaceae	*Eriogonum thomasii*	Thomas' buckwheat
Polygonaceae	*Eriogonum trichopes*	little desert buckwheat
Polygonaceae	*Chorizanthe rigida*	devil's spineflower
Resedaceae	*Oligomeris linifolia*	Leaved cambess
Solanaceae	*Lycium andersonii*	Anderson's desert thorn
Tamaricaceae	**Tamarix ramossisima*	tamarisk
Tamaricaceae	**Tamarix chinensis*	tamarisk
Zygophyllaceae	*Fagonia laevis*	California fagonbush
Zygophyllaceae	*Larrea tridentata*	creosote bush

* = invasive species

Table 3. Roadside Monarch Habitat Quality components, field measures, and weights

Component	Measure	Function Weight	Sub-weight	Measure Weight
Breeding	Milkweed Abundance	30%	80%	24%
	Milkweed # Species		20%	6%
Adult Foraging	Potential Nectar Plants - % Cover	25%	50%	12.5%
	Potential Nectar Plants - # Species		30%	7.5%
	Potential Nectar Plants - # NATIVE Species		20%	5%
Context	Adjacent Land Use Type	25%	30%	7.5%
/Threats	Road Type		35%	8.75%
	Weeds % Cover		20%	5%
	Weeds # Species		15%	3.75%
Management	Herbicide Application	20%	40%	8%
	Frequency of Full Width Mow		30%	6%
	Width of Mow as Proportion of ROW Width		30%	6%
	TOTAL	100%	100%	100%

OVERWINTERING

Winter roost sites for monarchs extend along the coast from northern Mendocino to Baja California, Mexico. Overwintering sites have specific microhabitat requirements such as protection from wind, exposure to dappled sunlight, and presence of high humidity (Chaplin and Wells 1982, Masters et al 1988, Leong 1999). Overwintering roosts are typically located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.

In the desert southwest, overwintering aggregations are found near rivers or ephemeral creeks, with Gooding's willow (*Salix goodingii*) and Fremont's cottonwood (*Populus fremontii*) utilized as roost trees. The closest overwintering aggregation observed to the Project site is in Yuma, Arizona, (WAFMA 2019), which is 27 miles from the Project site. Unlike the Project site, this area is identified as high suitability for monarchs and milkweed (Figures 1 and 2) and high crucial habitat (Figure 3).

Although there is a body of water south of the Project site with the All-American Canal and there are wetlands from seepage outside of the areas and the canal, trees that could protect the species from wind and provide dappled sunlight, such as willows and cottonwoods, do not occur on or near the Project site. Trees that do occur on and near the Project site, such as tamarisk and mesquite, are less dense and would not provide the dappled shade and wind protection necessary to protect monarchs for overwintering. For these reasons, the Project site does not have suitable habitat for overwintering.

CONCLUSION AND RECOMMENDATIONS

As noted herein, there were no incidental observations of monarch on the Project site; the Project site has low-moderate habitat for reproduction; the Project site does not have suitable habitat for overwintering; the Project site lacks diversity of important nectar plants for monarchs, the Project site lacks large trees suitable for overwintering; and there are adjacent threats to monarchs with roads and agriculture within two miles that may negatively impact monarchs through herbicide/pesticide drift.

In conclusion, the development of the Project site may have some limited impact on breeding for monarchs and no impact for overwintering populations of monarch. Recommended mitigation measures for monarchs are included below:

- Collect data for additional incidental observations of milkweed within the Project development footprint (if observed) and inspect for monarch eggs or larvae for pre-construction surveys. If monarch eggs or larvae are observed, an exclusion buffer of 50 feet will be set until larvae or eggs are no longer observed.
- Collect seed of milkweed within the Project development footprint if timing permits prior to development, and if allowed by BLM seed collection permits. Milkweed seed collected can be included in restoration areas where plant was observed.
- Herbicide application limited to areas without milkweed, with a buffer of 100 feet from observations during pre-construction surveys, provided that this prohibition does not substantially conflict with other weed management objectives.

REFERENCES

Chaplin, S.B., Wells, P.J. Energy reserves and metabolix expendistures of monarch butterflies overwintering in southern California, Ecological Entomology, 1982, vol. 7 (pg 249-56).

Dilts, T. E., M. O. Steele, J. Engler, E. M. Pelton, S. J. Jepsen, S. McKnight, A. R. Taylor, C. Fallon, S. H. Black, E. Cruz, D. R. Craver, and M. L. Forister. 2019. Host plants and climate structure habitat associations of the western monarch butterfly. *Frontiers in Ecology and Evolution.*

Halsch, C.A, Code A, Hoyle, S.M, Fordyce, J.A., Baert, N., and Forister, M.L. June 7, 2020. Pesticide Contamination of Milkweeds Across the Agricultural, Urban, and Open Spaces of Low-Elevation Northern California. Frontiers in Ecology and Evolution. Sec. Conservation and Restoration Ecology. Volunme 8-2020. https://doi.org/10.3389/fevo.2020.00162

Ironwood Consulting, Inc (Ironwood). 2025. Biolgogical Resources Technical Report for Perkins Renewable Energy Project.

Jepson Flora Project (eds.) 2025, *Jepson eFlora*, https://ucjeps.berkeley.edu/eflora/, accessed on April 03, 2025

Kral-O'Brien, K.C., Hovick, T.J., Limb, R.F., Harmon, J.P., and Gillam E.H. February 2020. Incoporating filed behaviors into monarch surveys to promote informed conservation actions. Journal for Nature Conservation , Volume 53.

Leong, K.L.H. 1999. Restoration of an overwintering grove in Los Osos, San Luis Obispo County, California. In 1997 North American Conference on the Monarch Butterfly, edited by J. Hoth, L. Merino, K. Oberhauser, I. Psanty, s. Price, and T. Wilkinson, 221-218.

Masters, A. R., Malcolm S.B., Brower, L.P. Monarch butterfly (*Danaus plexippus*) thermoregulatory behavior and adaptations for overwintering in Mexico, Ecology, 1988, vol. 69 (pg 458-67). https://www.frontiersin.org/journals/ecology-and-evolution/articles/10.3389/fevo.2024.1460363/full#B15

McIntrye, P.J, Cesar H., and Young B.E. November 19, 2024. Mapping migration habitat for western monarch butterfiles reveals need for public-private approach to conservation. Frontiers Ecology and Evolution. Sec. Conservation and Resotration Ecology, vol 12-2024. https://www.frontiersin.org/journals/ecology-and-evolution/articles/10.3389/fevo.2024.1460363/full

Western Association of Fish and Wildlife Agencies (WAFWA). 2019. *Western Monarch Butterfly Conservation Plan*, 2019-2069. Prepared by Western Monarch Working Group. https://wafwa.org/wpdm-package/western-monarch-butterfly-conservation-plan-2019-2069/?wpdmdl=13048&refresh=63e990062787016762511 42&ind=1602171186650&filename=WAFWA_Monarch_Conservation_Plan.pdf.

_____. 2021. Western Monarch Crucial Habitat Assessment Tool (CHAT). https://monarchchat.org/, https://monarchchat.org/?page=page_5.